

Initial Study Document, CEQA Checklist, and Proposed Mitigated Negative Declaration

Poe Hydroelectric Project
(Federal Energy Regulatory Commission Project No. 2107)
North Fork Feather River, Butte County

State Water Resources Control Board

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September 2017

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DRAFT

**Proposed Mitigated Negative Declaration
Pacific Gas and Electric Company
Poe Hydroelectric Project
Federal Energy Regulatory Commission Project No. 2107**

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Introduction

The Poe Hydroelectric Project (Project) is an existing hydroelectric project licensed by the Federal Energy Regulatory Commission (FERC) as FERC Project No. 2107. The Existing Project is owned and operated by Pacific Gas and Electric Company (PG&E or Licensee) and has an installed capacity of 142.83 megawatts (MW). The Project is located on the North Fork Feather River in Butte County, near the community of Pulga. The existing FERC license was issued on October 26, 1953 and expired on September 30, 2003. Since 2003 the Project has operated under an annual license which extends the term of the original license.

PG&E applied to FERC for a new federal license for continued operation of the Project under a new 30-50 year FERC license. The purpose of the Proposed Project is to generate electricity, while adhering to state and federal water quality objectives and be protective of the designated beneficial uses of the North Fork Feather River.

For purposes of this California Environmental Quality Act (CEQA) document, the “Existing Project” refers to the Poe Hydroelectric Project facilities operations and maintenance under current terms and conditions of the existing FERC license. The “Proposed Project” refers to proposed (post-licensing) operations and maintenance as described in PG&E’s application for a new FERC license, conditions proposed for inclusion pursuant to other Federal Power Act (FPA) mandatory conditioning authority, including section 4(e) of the FPA (16 U.S.C. § 797(e)), and any conditions required for water quality certification (WQC) pursuant to Section 401 of the federal Clean Water Act (33 U.S.C. § 1341) necessary to balance the beneficial uses as prescribed in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) (Basin Plan; CVRWQCB 2011).

To receive a new FERC operating license, PG&E is required to request and receive WQC pursuant to Section 401 of the federal Clean Water Act (33 U.S.C. § 1341) from the State Water Resources Control Board (State Water Board). PG&E most recently requested a WQC for the

Project on June 20, 2017. The State Water Board is the lead agency responsible for complying with CEQA (Pub. Resources Code, § 21000 et seq.). For the State Water Board to issue a WQC, an environmental analysis of the Proposed Project that complies with CEQA must be prepared.

This Mitigated Negative Declaration (MND) and associated Initial Study evaluate the potential impacts of implementing PG&E's Poe Hydroelectric Project Final License Application environmental measures, as modified by the FERC staff alternative, plus the mandatory USFS 4(e) conditions and WQC conditions.

Proposed Project

The Proposed Project primarily consists of Poe Dam, Poe Reservoir, Poe Powerhouse, Big Bend Dam and Reservoir, and recreation facilities. Recreation facilities at Poe Powerhouse, Poe Beach, Bardees Bar and Sandy Beach are not included in the existing FERC license but are proposed to be included in the new license by PG&E, FERC, and other relicensing participants. By including Big Bend Dam and recreational facilities in the Proposed Project the footprint will increase from its existing 313 acres to 340 acres. Under the Proposed Project, PG&E would continue to operate the facility to provide baseload and peaking power production.

Avoidance, Protection, and Minimization Measures

Under the Proposed Project a number of PG&E proposed, FERC staff recommended, Forest Service 4(e) mandated and State Water Board proposed conditions would be implemented. Proposed Project measures that would constitute avoidance, protection and minimization of environmental impacts would include increased minimum instream flows, the development of formalized recreational facilities and a number of management and monitoring plans for the protection of biological resources and avoidance of water quality degradation. Implementation of the following proposed mitigation measures will make all impacts in the environmental checklist "less than significant":

- Implement a Fugitive Dust and Emission Control Plan
- Approval of Construction Activities by the State Water Board (Turbidity and Suspended Solids)
- Hazardous Materials Management and Water Quality Monitoring and Protection Plan

FINDINGS AND DETERMINATION

The Proposed Project is defined by PG&E's proposed environmental measures, as modified by the FERC staff alternative, plus the mandatory USFS 4(e) conditions and WQC conditions necessary to ensure the continued operation of the Proposed Project protects the beneficial uses of the NFFR and will avoid or reduce any negative environmental impacts to a point where no significant impact on the environment will occur.

The Initial Study/Environmental Checklist (IS) for the Proposed Project identified less than significant environmental effects for the Proposed Project with the incorporation of mitigation measures. CEQA prohibits an agency from approving a project which will have significant effects, unless the agency can make one or more of a set of three findings set forth in Public Resources Code section 21081:

- 1) Changes or alterations have been required in, or incorporated into the Proposed Project, which mitigate or avoid the significant effects on the environment.

- 2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.
- 3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report. (See also Cal. Code Regs., tit. 14, § 15091.)

CEQA requires public agencies to adopt a program for reporting on or monitoring the changes that it has either required in the project or made a condition of approval to avoid or substantially lessen significant environmental effects. These measures must be fully enforceable through permit conditions, agreements, or other measures. (Cal. Code Regs., tit. 14, §15097.) Mitigation measures necessary to avoid the potentially significant effects on the environment are included in the attached Initial Study. All mitigation measures are adopted as part of the Mitigation Monitoring and Reporting Program.

Based on evaluation of the attached Initial Study the State Water Board concludes:

- a) Implementation of the Proposed Project will not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.
- b) Implementation of the Proposed Project will not have impacts that are individually limited, but cumulatively considerable.
- c) Implementation of the Proposed Project will not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

Once approved, this Mitigated Negative Declaration will be filed pursuant to the CEQA Guidelines.

DRAFT

Leslie F. Grober
Deputy Director for Water Rights
State Water Resources Control Board

Date

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ACRONYMS AND ABBREVIATIONS

ACOE	U.S. Army Corps of Engineers
APE	Area of Potential Effect
BCAPCD	Butte County Air Pollution Control District
BMP	best management practice
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basins
CDFW	California Department of Fish and Wildlife
California DWR	California Department of Water Resources
Caltrans	California Department of Transportation
California Register	California Register of Historical Resources
CAP	Climate Action Plan
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CFR	Code of Federal Regulations
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO _{2e}	carbon dioxide equivalent
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DO	dissolved oxygen
EA	environmental assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
Existing Project	Poe Hydroelectric Project under current (pre-relicensing) conditions
FERC	Federal Energy Regulatory Commission
Forest Service	U.S. Department of Agriculture, Forest Service
FONSI	Finding of No Significant Impact
FPA	Federal Power Act
FWS	U.S. Department of the Interior, Fish and Wildlife Service
FYLF	foothill yellow-legged frog
GHG	greenhouse gas
GWh	gigawatt-hour
GWP	global warming potential
Interior	U.S. Department of the Interior
HPMP	Historic Properties Management Plan
kV	kilovolt
kVA	kilovolt-ampere
license application	application for new license
MCL	maximum contaminant level
mg/L	milligrams per liter
mph	miles per hour
MTBE	methyl tert-butyl ether
MtCO _{2e}	metric tons of CO ₂ equivalent

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MW	megawatt
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NFFR	North Fork Feather River
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NOx	nitrogen oxide
NTU	nepheolometric turbidity unit
OPR	Governor's Office of Planning and Research
PA	Programmatic Agreement
PG&E	Pacific Gas & Electric Company
PM	particulate matter
PM _{2.5}	particulate matter of micrometers 2.5 or less
PM ₁₀	particulate matter of micrometers 10 or less
PM&E	protection, mitigation, and enhancement
Ppm	parts per million
Poe bypass reach	North Fork Feather River from Poe Dam to Poe Powerhouse
RPS	Renewables Portfolio Standard
SB	Senate Bill
SHPO	State Historic Preservation Officer
State Water Board	California State Water Resources Control Board
umhos	a measure of conductivity
UNFFR	Upper North Fork Feather River
USC	United States Code
USGS	U.S. Geological Survey
VOC	volatile organic compound
WQC	water quality certification

Section 1.0 Introduction

On December 15, 2003, Pacific Gas and Electric Company (PG&E) filed an application for new license (license application) for the Poe Hydroelectric Project, FERC Project No. 2107 (Existing Project) with the Federal Energy Regulatory Commission (FERC). The current license for the Existing Project expired September 30, 2003. Certain aspects of the Proposed Project may also require authorization from the U.S. Army Corps of Engineers (ACOE) under Section 404 of the Clean Water Act (CWA).

Before FERC can issue a new license or ACOE can issue permits under CWA Section 404, PG&E must obtain water quality certification (WQC) from the State Water Resources Control Board (State Water Board) under Section 401 of the CWA (33 USC § 1341). Issuance of WQC is a discretionary action that requires the State Water Board to comply with the California Environmental Quality Act (CEQA) (Pub. Resources Code, §§ 21000 et seq.). The Proposed Project includes PG&E's Final License Application for a new FERC license, as modified by FERC staff alternatives, mandatory conditions under Sections 4(e) and 18 of the Federal Power Act (FPA) and potential additional conditions of the WQC. This Initial Study and Environmental Checklist show there is no substantial evidence that the Proposed Project, with incorporated mitigation measures, has the potential to result in any significant impacts to the environment. The State Water Board prepared a Mitigated Negative Declaration for the Proposed Project.

The Existing Project is located on the North Fork Feather River (NFFR), in the vicinity of the community of Pulga, in Butte County, California. The Existing Project occupies 144 acres of lands of the United States, which are administered by the Forest Supervisor of the Plumas National Forest. Figure 1 shows the location of the Existing Project features.

Section 2.0 Compliance

2.1 National Environmental Policy Act

In compliance with the National Environmental Policy Act (NEPA) (42 USC §§ 4321 et seq.), FERC issued a final environmental assessment (final EA) on March 29, 2007, for relicensing the Existing Project.¹ The final EA assessed the scope and objectives of PG&E's proposed resource management and monitoring measures. It also assessed the effects of measures recommended by FERC staff and resource agencies, along with mandatory conditions submitted under Section 4(e) of the FPA (16 USC § 797(e)) by the U.S Forest Service (Forest Service). The U.S. Department of the Interior (Interior) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) have both reserved authority under Section 18 of the FPA (16 USC § 811), to prescribe fishways at the Existing Project.

Under the provisions of Section 10(j) of the FPA (16 USC § 803(j)), each hydroelectric license issued by FERC shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the Proposed Project.

¹ Unless otherwise indicated our information is taken from the license application for the Existing Project (PG&E, 2003) or from the final EA (FERC, 2007).

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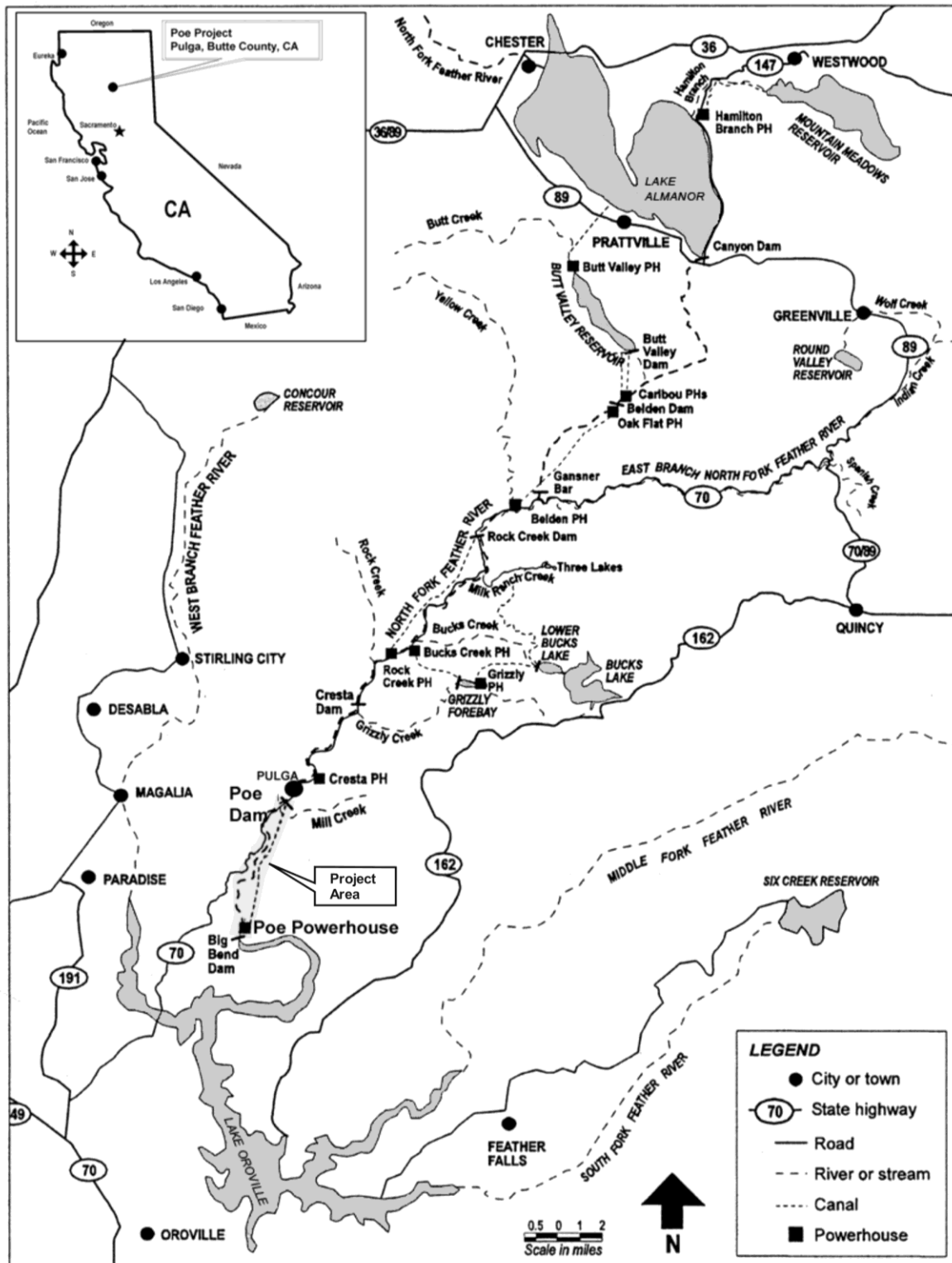


Figure 1. General site location of the Poe Hydroelectric Project within the Feather River basin (Source: FERC, 2007).

Section 10(j) of the FPA states that, whenever FERC believes that any fish and wildlife agency recommendation is inconsistent with the purposes and the requirements of the FPA or other applicable law, FERC and the agency shall attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

In response to FERC's Ready for Environmental Analysis notice dated February 8, 2005, Interior, NMFS, and the California Department of Fish and Wildlife (CDFW) filed letters providing recommendations pursuant to Section 10(j). NMFS withdrew its recommendations on December 12, 2005, and reserved its authority to prescribe fishways pursuant to section 18 of the FPA. FERC staff met with CDFW, Interior, and other interested entities on November 28, 2006, to attempt to resolve potential inconsistencies between the agency recommendations and the FPA. Several of potentially the inconsistent recommendations contained in the draft EA were resolved through the 10(j) process; the recommendations are reflected in the proposed protection, mitigation, and enhancement (PM&E) measures in the final EA.

2.2 California Environmental Quality Act

As stated above, issuance of WQC is a discretionary action that requires the State Water Board to comply with CEQA (Cal. Code Regs., tit. 14, §§ 15002, subd. (i), 15357). The State Water Board is the lead agency under CEQA (Pub. Resources Code, § 21067). This Initial Study (IS) was prepared in accordance with CEQA to assess the environmental effects of the Proposed Project including the WQC issued by the State Water Board. In a CEQA analysis of an existing hydroelectric project, reauthorizing the project potentially would not yield many environmental impacts because most of the impacts have already occurred, and when compared to the current condition, do not register as significant. In contrast, WQC requires an analysis of a project's overall effect on water quality, including whether the designated beneficial uses identified in the water quality control plan are adequately protected. During the process of WQC, the State Water Board may also review a project's effect on public trust resources.

CEQA Guidelines section 15221 states that when a project requires compliance with both CEQA and NEPA, state agencies should use the Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI) rather than preparing and Environmental Impact Report or Negative Declaration if the EIS or FONSI complies with the provisions of CEQA. Consistent with this section, this IS refers to appropriate sections of the final EA to avoid repetition of information. This IS was prepared in compliance with CEQA and assesses the environmental effects of the Proposed Project. To the extent that the Proposed Project incorporates conditions to ensure that potential impacts have been mitigated to insignificance, the applicant agreed to incorporate the conditions into the Proposed Project. The IS includes information necessary to comply with CEQA not included in the final EA.

The State Water Board considered the MND in connection with the development of the WQC for the project. The State Water Board finds that there is no substantial evidence in the record that the Proposed Project will have a significant effect on the environment. The MND reflects the State Water Board's independent judgment and analysis. All documents and other information that constitute the public record for this Proposed Project shall be maintained by the Division of Water Rights and shall be available for public review at the following address: State Water Board, Division of Water Rights, 1001 I Street, 2nd Floor, Sacramento, CA 95814.

2.3 Water Quality Certification

Section 401 of the federal CWA (33 USC § 1341) requires that any entity applying for a federal license or permit for the construction or operation of facilities that may result in any discharge to navigable waters must obtain certification from the state in which the discharge originates and must comply with the applicable water quality parameters under the CWA, as well as other appropriate requirements of State law. In this case, the federal licensing agency is FERC. The state must certify compliance with certain sections of the CWA before issuing a WQC including Sections 301 and 302 (effluent limitations), Section 303 (water quality standards and implementation plans), Section 306 (national standards of performance for new sources), and Section 307 (pretreatment effluent standards).

Under Section 303 of the CWA and under the Porter-Cologne Water Quality Control Act (Water Code, division 7), the Central Valley Regional Water Quality Control Board has adopted, and the State Water Board and U.S. Environmental Protection Agency (EPA) have approved, the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan). The Basin Plan designates the beneficial uses of waters to be protected, as well as the water quality objectives necessary to protect those uses. Existing beneficial uses designated for the North Fork Feather River include municipal and domestic supply, power, water contact recreation, non-contact water recreation, canoeing and rafting, cold freshwater habitat, cold spawning, and wildlife habitat.

2.4 Section 404 of the Clean Water Act

Section 404 of the CWA regulates the discharge of dredged or fill materials into waters of the United States, including wetlands (33 USC § 1344). This program applies to activities in U.S. waters, such as development projects, water resource projects (e.g., dams and levees), and other projects (EPA, 2016). ACOE administers the program, enforces Section 404 provisions, and issues permits, either as individual permits or as general permits, on a nationwide, regional, or state basis. The general permit eliminates individual review and allows certain activities to proceed with little or no delay, if certain general and specific conditions are met. Measures proposed that may require Section 404 permits from the ACOE include:

- Removing the existing steel bridge at Bardees Bar;
- Grading and revegetating Bardees Bar spoil pile and implementing erosion control measures; and
- Changes to streamflow.

Section 3.0 Existing Project

3.1 Environmental Setting

The Feather River is a major tributary of the Sacramento River and drains portions of the west slope of the Sierra Nevada Mountain range in northern California. The confluence of these two rivers is approximately 20 miles north of Sacramento. Four major tributaries of the Feather River (North Fork, West Branch, South Fork, and Middle Fork) unite as arms of Lake Oroville Reservoir (FERC Project No. 2100), 5 miles northeast of the town of Oroville, in the foothills of Butte County (see Figure 1).

Several small creeks, south of Mt. Lassen Peak in northwestern Plumas County, converge to form the headwaters of the North Fork Feather River (NFFR). From there, the NFFR flows through the Upper North Fork Feather River Hydroelectric Project (UNFFR Project), FERC Project No. 2105, and Rock Creek-Cresta Hydroelectric Project (Rock Creek-Cresta Project), FERC Project No. 1962, before reaching the Existing Project. The East Branch converges with the NFFR at the Belden bypass reach of the UNFFR Project (see Figure 1). Waters of the Existing Project include Poe Reservoir, the 7.6-mile-long Poe bypass reach, and Big Bend Reservoir (Poe Afterbay), which is the discharge point for water exiting Poe Powerhouse. Poe Powerhouse and Big Bend Reservoir are just upstream of Lake Oroville. Two major tributaries, Mill Creek and Flea Valley Creek, enter Poe bypass reach approximately 1 mile downstream of Poe Dam.

3.1.1 Aesthetics

The Feather River Canyon, at an elevation of between 900 and 1,400 feet, is a steeply incised landform consisting of rock and granite walls that descend to the winding Feather River and encompasses a unique variety of natural and constructed landscape scenery. State Highway 70 (also known as the Feather River Highway), the lowest route through the Sierra Nevada, traverses Feather River Canyon and provides year-round access to motorists. Jarbo Gap and Pulga are two small rural communities located along the State Highway 70 corridor in the Existing Project vicinity, and the city of Oroville is approximately 20 miles southwest of the Existing Project on State Highway 70. Virtually no opportunities for pedestrian use exist along State Highway 70 in the Existing Project vicinity, so potentially affected viewers of the Proposed Project in this vicinity are motorists traveling through the canyon. Views of the Poe bypass reach are sporadic and brief in duration due to the canyon's steep terrain and intervening vegetation, as well as the varied distance between the highway and the river. The Existing Project is located adjacent to the section of State Highway 70 designated as scenic by the Forest Service, the state of California, and Butte County. A detailed description of the aesthetic resources in the Existing Project region is provided in FERC's final EA (FERC, 2007), Section V.C.6., *Environmental Analysis, Land Use and Aesthetics*, pages 185 through 189, and is incorporated herein by reference.

3.1.2 Biological Resources

3.1.2.1 Aquatic Resources

Twelve species of fish are reported from waters associated with the Existing Project (Table 1). Hardhead, a California species of special concern, is known to occur in the Existing Project area. Sacramento perch (*Archoplites interruptus*), another California species of special concern, is known to occur upstream and has the potential to occur in Existing Project waters if individual fish move downstream. No fish species currently listed or proposed for listing under either the federal Endangered Species Act (ESA) or the California ESA are known to occur in the Existing Project. Anadromous fish are blocked downstream of the Existing Project facilities at the Feather River Fish Hatchery Dam, which is approximately 5 river miles downstream of Oroville Dam, both of which are components of California Department of Water Resource's (California DWR's) Oroville Project.

Stream conditions under Existing Project operations have improved conditions for species such as hardhead and Sacramento sucker, and reduced optimal conditions for rainbow trout. However, recent studies indicate that current conditions are suitable for the maintenance of native and introduced sport and nongame fishes, including hardhead, pikeminnow, and rainbow trout (PG&E, 2003). Sacramento sucker, rainbow trout, and Sacramento pikeminnow are the

Poe Hydroelectric Project (FERC No. 2107)

most abundant species observed in the Existing Project area. The Sacramento sucker was the most abundant species in all habitat types sampled (e.g., pools, runs, riffles, and pocket water). Hardhead and Sacramento pikeminnow were found more frequently in lower velocity pools and runs, and rainbow trout were found predominantly in higher velocity riffles, runs, and in pocket water. In addition to the mainstem river, tributaries such as Flea Valley Creek provide important spawning and rearing habitat for rainbow trout. A detailed description of the fishery resources in the Existing Project region is provided in FERC’s final EA (FERC, 2007), Section V.C.2.a, *Affected Environment, Fishery Resources*, pages 62 through 69, and is incorporated herein by reference.

Table 1. Fish species known or likely to occur in waters of the Existing Project. (Source: PG&E, 2003, as described in FERC, 2007)

	Poe Reservoir	Poe bypass reach	Big Bend Reservoir
Native Species			
Rainbow trout <i>Oncorhynchus mykiss</i>	X	X	X
Sacramento sucker <i>Catostomus occidentalis</i>	X	X	X
Sacramento pikeminnow <i>Ptychocheilus grandis</i>	X	X	X
Hardhead <i>Mylopharodon conocephalus</i>	X	X	X
Riffle sculpin <i>Cottus gulosus</i>		X	
Speckled dace <i>Rhinichthys osculus</i>		X	
Introduced Species			
Brown trout <i>Salmo trutta</i>		X	
Smallmouth bass <i>Micropterus dolomieu</i>	X	X	X
Largemouth bass <i>Micropterus salmoides</i>	X		
Common carp <i>Cyprinus carpio</i>	X		
Spotted bass ^a <i>Micrpterus punctulatus</i>	-	-	-
Brown bullhead ^a <i>Ameiurus nebulosus</i>	-	-	-

	Poe Reservoir	Poe bypass reach	Big Bend Reservoir
Sacramento Perch ^a <i>Archoplites interruptus</i>	-	-	-

^a The current distribution of these species in the NFFR is not well known nor were these fish captured in surveys conducted by PG&E in the Proposed Project; however, they are known to occur in portions of the NFFR watershed upstream of the Proposed Project and thus may occur in waters associated with the Proposed Project.

Poe bypass reach supports a moderately diverse assemblage of benthic macroinvertebrate species with biological metrics between fair and good rankings, overall representing moderate to good conditions as defined by the California Stream Bioassessment Procedure .A detailed description of aquatic macroinvertebrate resources in the Existing Project are provided in FERC’s final EA (FERC, 2007), Section V.C.2.a, *Affected Environment, Macroinvertebrates*, pages 70 through 71, and is incorporated herein by reference.

3.1.2.2 Terrestrial Resources

Vegetation

The Existing Project area is a mosaic of six dominant plant communities outside of the riparian areas, including canyon live oak (*Quercus chrysolepis*), foothill pine (*Pinus sabiniana*), mixed conifer, black oak (*Quercus kelloggii*), wedgeleaf ceanothus (*Ceanothus cuneatus*), and California annual grassland. Canyon live oak is widespread throughout the Existing Project, occurring on both granite and metasedimentary soils. The foothill pine-canyon live oak community occurs on serpentine soils upstream of the Bardees Bar area. The mixed conifer community occurs on relatively gentle slopes within the Existing Project vicinity, away from the steep, rocky river canyon walls. Small pockets of black oak community occur throughout the Existing Project, particularly on north-facing slopes. Small pockets of the wedgeleaf ceanothus community occur on serpentine soils south of Poe Powerhouse. The California annual grassland community occurs as disturbed openings under transmission lines and within small areas of serpentine soils. In addition, nine different riparian plant communities were documented, including torrent sedge (*Carex nudata*), California brickellbush (*Brickellia californica*), arroyo willow (*Salix lasiolepis*), narrowleaf willow (*Salix exigua*), Himalayan blackberry (*Rubus discolor*), foothill sycamore (*Platanus racemosa*)-arroyo willow, white alder (immature; *Alnus rhombifolia*), white alder (mature), and Oregon ash (*Fraxinus latifolia*).

Based on rare plant and noxious weed surveys conducted in the Existing Project area during 1999–2000, PG&E documented 48 occurrences of 12 special-status plant species and 36 occurrences of five noxious weeds.

A detailed description of vegetation, special-status plant species, and noxious weeds in the Existing Project region is provided in FERC’s final EA (FERC, 2007), Section V.C.3.a, *Terrestrial Resources, Affected Environment, Vegetation*, pages 100 through 107, and is incorporated herein by reference.

Wildlife Resources

The Existing Project supports a diverse array of habitats and associated wildlife species. The Existing Project, which is within the French Creek Management Area, as designated by the Plumas National Forest, is managed for winter habitat for band-tailed pigeons (*Patagioenas*

fasciata), northern goshawk (*Accipiter gentilis*), California spotted owl (*Strix occidentalis occidentalis*), mule deer (*Odocoileus hemionus*) winter range, and bald eagle (*Haliaeetus leucocephalus*). Mule deer are the most abundant big game species in the Plumas National Forest. Other mammals occurring in the Existing Project area include beaver (*Castor canadensis*), mink (*Neovison vison*), and muskrat (*Ondatra zibethicus*) in the lacustrine and wetland habitats and black bear (*Ursus americanus*), snowshoe hare (*Lepus americanus*), and bobcat (*Lynx rufus*) in the montane habitats. Water-dependent bird species include Canada goose (*Branta canadensis*), wood duck (*Aix sponsa*), common goldeneye (*Bucephala clangula*), other waterfowl, and shorebirds. Upland bird species include California quail (*Callipepla californica*), mountain quail (*Oreortyx pictus*), blue grouse (*Dendragapus obscurus*), mourning dove (*Zenaidura macroura*), ring-necked pheasant (*Phasianus colchicus*), and wild turkey (*Meleagris gallopavo*). Bullfrogs (*Rana catesbeiana*) are a commonly found amphibian species.

Based on special-status wildlife surveys conducted in the Existing Project during 1999–2000, PG&E documented a single Pacific pond turtle (*Actinemys marmorata*), a single nesting pair of bald eagles, and one adult American peregrine falcon (*Falco peregrinus anatum*). Foothill yellow-legged frogs (*Rana boylei*) (FYLF) were documented in several locations in the Existing Project area during 1999–2006 surveys. Additionally, PG&E, the Forest Service and greater Ecological Resources Committee for the Rock Creek - Cresta Project have monitored FYLF populations in the existing project for much of the last decade and a half.

A detailed description of wildlife resources in the Existing Project region is provided in FERC's final EA (FERC, 2007), Section V.C.3.a, *Terrestrial Resources, Affected Environment, Wildlife Resources*, pages 107 through 113, and is incorporated herein by reference.

3.1.3 Cultural Resources

The Area of Potential Effects (APE) for the Existing Project includes all the lands within the Existing Project boundary and lands outside the Existing Project boundary that may be affected by Existing Project operations, maintenance, and recreation activities. The APE is defined as including the following areas: (1) Poe Reservoir, Dam, and intake structure; (2) access roads or trails to tunnel adit no. 1, adit no. 2, the surge chamber, and Poe Powerhouse; (3) areas around tunnel adits; (4) Poe surge chamber and two penstocks; (5) Poe Powerhouse and switchyard; (6) Big Bend Dam and the area impounded between the dam and Poe Powerhouse tailrace; and (7) areas of proposed recreation development at Poe and Sandy beaches, Poe Powerhouse Beach, and Bardees Bar. A detailed description of cultural resources in the Existing Project region is provided in FERC's final EA (FERC, 2007), Section V.C.7.a, *Affected Environment*, pages 197 through 200, and is incorporated herein by reference.

3.1.4 Geology and Soils

The NFFR in the vicinity of the Existing Project reach is developed in resistant plutonic, metasedimentary, and metavolcanic bedrock (Hietanen, 1973; Saucedo and Wagner, 1992). Quaternary deposits occur as colluvial, debris flow, and rock slope debris; and as fluvial terrace deposits along the main stem and its major tributaries. The dominant hillslope processes in the NFFR Canyon and tributaries include rock falls and rockslides, debris slides, slumps, and debris flows (Stillwater Sciences, 2002 and 2003). Large rainstorms, periods of rapid snowmelt, and periods of extreme freeze-thaw are the dominant mechanisms triggering hillslope mass wasting. Hillslope processes are also influenced by the degree of rock weathering, fracturing, jointing, exfoliation, and root penetration, as well as watershed disturbances such as road construction, timber harvest, and fire. The stream reach affected by the Existing Project is predominantly composed of a steep, bedrock-confined channel with high transport capacity relative to

sediment supply (Stillwater Sciences, 2003). Much of the channel network is developed on resistant bedrock mantled with a discontinuous cover of large boulder and cobble deposits. Steep boulder-bedrock reaches with little stored sediment are punctuated by lower-gradient cascade, boulder step-pool, and boulder-cobble plane-bed reaches (Stillwater Sciences, 2003).

3.1.5 Hydrology and Water Quality

3.1.5.1 Hydrology

Rainfall and snowmelt are the major sources of water in the Existing Project area, with a typical weather pattern of cool, wet winters and mild, dry summers. Precipitation occurs primarily during the winter months, and a substantial snowpack develops during the winter at higher elevations.

The drainage area above Poe Reservoir is approximately 1,940 square miles, of which 1,000 square miles is the East Branch NFFR drainage area. Above the confluence with the East Branch, the NFFR is dominated by Lake Almanor, which was constructed in 1913 and impounds 1,134,00 acre-feet of primary storage for the basin. Butt Valley Reservoir, on Butt Creek, a tributary to the NFFR, has a usable storage volume of approximately 50,000 acre-feet controlling a drainage area of 83.5 square miles. Water supply to Poe Reservoir is substantially influenced by regulated flows from upstream hydroelectric projects, and from the unregulated portions of the watershed during runoff from winter rain events and spring and early-summer snowmelt. Poe Reservoir has a maximum surface area of 53 acres and a maximum storage of 1,203 acre-feet. Poe Reservoir is long and narrow with a maximum width of 400 feet near the dam to a minimum of 150 feet near the upper end of the reservoir. Pool depths in the reservoir not immediately at the dam face range from 10 to 20 feet. PG&E estimates that the average residence time of the reservoir is 7 hours. The reservoir level fluctuates due to the combined operation of the Cresta and Poe powerhouses in a seasonal pattern - in the summer primarily to meet energy load requirements and in the winter mostly as the result of storm/snowmelt runoff. Water-level fluctuations range from 3–9 feet in the summer. Winter fluctuations of more than 3 feet primarily result from operation of one or more of the 50-foot-wide radial gates during storm/snowmelt events; the frequency of radial gate operation depends on year-to-year variations in high flow events.

A detailed description of hydrology in the Existing Project region is provided in FERC's final EA (FERC, 2007), Section V.C.1.a, *Water Resources, Affected Environment, Water Quantity and Use*, pages 30 through 34, and is incorporated herein by reference.

3.1.5.2 Water Quality

The NFFR basin is part of the Sacramento River basin. Water quality standards applicable to surface waters in the Existing Project area are defined in three primary documents: the Fourth Edition of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) (CVRWQCB, 1998); the California Toxics Rule (40 CFR]Part 131); and drinking water standards set in the California Code of Regulations (CCR) Titles 17 and 22. The NFFR downstream of Lake Almanor to Lake Oroville is included on the CWA Section 303(d) list of water-quality-limited water bodies as being impaired for water temperature (potential sources hydromodification, flow regulation/modification) (SWRCB, 2012). Water temperatures in the Poe bypass reach are discussed in section 5.4.10.

The Basin Plan designates existing beneficial uses for water bodies in the basin. Existing beneficial uses designated for the NFFR are hydropower generation, municipal and domestic

supply, water contact recreation, non-water contact recreation, cold freshwater habitat, cold spawning habitat, and wildlife habitat. Drinking water standards in the CCR Title 22 are applicable to surface waters of the NFFR designated for municipal water supply; however because the NFFR is not used for water supply in the Existing Project area and the Proposed Project has no potential to cause adverse changes to the potability of the NFFR, there are no issues related to drinking water supply.

A detailed description of water quality in the Existing Project region is provided in FERC's final EA (FERC, 2007), Section V.C.1.a, *Water Resources, Affected Environment, Water Quality*, pages 34 through 43, and is incorporated herein by reference.

3.1.6 Land Use and Planning

The Existing Project encompasses 313 acres, approximately 158 acres of which are owned by PG&E, approximately 144 acres are National Forest System lands of the Plumas National Forest, and approximately 12 acres are privately owned. The Existing Project encompasses the 1.7-mile-long Poe Reservoir, Poe Dam and associated facilities, the 33,000-foot-long Poe Tunnel and two adits (horizontal access tunnels), Poe Powerhouse and switchyard, and Forest Road 22N37 from its junction with Butte County Road 54545A. The upper end of Poe Reservoir, Poe Tunnel, most of adit no. 1, and all of adit no. 2 are located on National Forest System land; the lower end of the reservoir, dam, and powerhouse are located on PG&E-owned land. Forest Road 22N37 is located primarily on PG&E-owned land, but parts of it are also on National Forest System land and other privately owned land.

In its FERC license application, PG&E proposed to add approximately 21 acres associated with Big Bend Dam and Reservoir into the Existing Project boundary; PG&E owns approximately 20 acres of this land and the state of California owns the remaining acre. Big Bend Dam, which is currently within the Oroville Project boundary, functions as an integral part of operations at the Existing Project, by providing the necessary tailwater elevation for the existing Francis turbines. The reservoir created by Big Bend Dam also re-regulates river flows and discharge from Poe Powerhouse, reducing the magnitude of water elevation changes in the river channel downstream of the powerhouse and the dam. California DWR, in its September 18, 2006, comments on FERC's draft EA, supported including Big Bend Dam in the Existing Project.

Additionally, PG&E proposed to add approximately 6 acres to the Proposed Project to encompass Proposed Project recreational enhancements. With the inclusion of the land around Big Bend Dam and the recreation areas, the Proposed Project would encompass approximately 340 acres: approximately 182 acres owned by PG&E, approximately 145 acres of National Forest System land, approximately 12 acres of privately owned land, and 1 acre of land owned by the state of California.

Management of the National Forest System lands within the Existing Project is subject to the Plumas National Forest Land and Resource Management Plan, which includes management direction that encourages full development of the hydroelectric resource, as long as other resources are sufficiently protected. All National Forest System lands of the Existing Project lands and lands influenced by Existing Project operations fall within one of three management areas designated by the Land and Resource Management Plan: Flea Mountain, Grizzly Dome, and French Creek. The northwest side of Poe Reservoir and Dam is within the Flea Mountain management area and the southeast side of Poe Reservoir and Dam, and the north end of Poe Tunnel is within the Grizzly Dome management area. The management direction for these two management areas includes maintaining pleasing visual corridors and minimizing the visual

effect of the hydroelectric facilities on State Highway 70. The remainder of Poe Tunnel, the majority of adit no. 1, and adit no. 2 are within the French Creek management area. The management direction for this management area includes minimizing the visual effect of the hydroelectric facilities (Forest Service, 1988).

Existing Project lands located in Butte County and owned by private entities, including PG&E, are subject to the policies of the Butte County General Plan and zoning ordinances that regulate land use within the county. Most of the private land within and adjacent to the Existing Project is in timberland production zones, which are state-designated zones reserved for timber production and compatible uses. A small amount of the private land near the Big Bend Dam, proposed for inclusion in the Proposed Project, are designated as foothill area residential, with a minimum parcel size of 40 acres. State Highway 70 is designated in the General Plan as a scenic highway from the Butte County line to north of Pulga Road.

The major road in the vicinity of the Existing Project is State Highway 70, a two-lane paved roadway that parallels most of the Poe bypass reach. Butte County Road 54545A (Bardees Bar Road), located southeast of State Highway 70, is used to access adit no. 1. Access to Poe Powerhouse is via Forest Service Road 22N37, which extends from Bardees Bar Road.

No rivers in the vicinity of the Existing Project are included in or designated for study to be included in the National Wild and Scenic Rivers System.

A detailed description of land use in the Existing Project region is provided in FERC's final EA (FERC, 2007), Section V.C.6., *Environmental Analysis, Land Use and Aesthetics*, pages 184 through 185, and is incorporated herein by reference.

3.1.7 Recreation

The 1.7-mile-long Poe Reservoir is located at the upper end of the Poe Project (see Figure 2). Located a short distance from the local communities of Chico, Paradise, and Oroville, the reservoir provides a year-round flatwater paddling opportunity for nearby residents. No formal recreation facilities are located at Poe Reservoir.

Most of the shoreline may provide for fishing; however, due to the steep grade of the reservoir shoreline, not all of it is accessible. Also, due to limited space along the reservoir shoreline, it is not possible to develop a safe boat launch, so the reservoir is inaccessible for boating except for small car-top boats, canoes, or kayaks. Access to one of the most usable areas, a beach at the upstream end of the reservoir, is from the Cresta Powerhouse access road (non-Project).² PG&E maintains a gate on this road for security purposes to restrict public access near the Cresta Powerhouse and appurtenant facilities. See Figures 2 and 3 for the locations of recreation sites in the Existing Project vicinity.

Sandy Beach (Figure 2), located about 0.6 miles downstream of Poe Dam, is one of the easily accessible and heavily visited locations for NFFR shoreline use in the Poe bypass reach. The NFFR may also be accessed by road at Pulga. However, recreational use at this site is limited due to the railroad tracks and rocky, steep slopes. Bardees Bar, located at about the mid-point of the bypass reach, is another point of public access for whitewater boaters and shoreline

² A distance of about 0.24 mi from Highway 70 to the beach - about 0.17 mi on the access road to the parking area and then about 0.07 mi on pedestrian trail to the beach.

recreationists. This site has an abandoned bridge, building foundations and debris associated with Existing Project construction and user-created fire rings. Bardees Bar Road, a county maintained road, provides vehicular access to this site; however, parts of the road are not wide enough for vehicles traveling in opposite directions to pass each other.

Public access is also available near Poe Powerhouse at the end of the Poe bypass reach where a beach and easily accessible shoreline are located. Existing Project construction debris along the shoreline and in the channel, litter, and signs of improper sanitation are evident at this location.

Flows suitable for whitewater boating in the Poe bypass reach are typically between 500 and 2,500 cubic feet per second (cfs). According to the historical flow records, flows suitable for whitewater boating occurred in every month of the year prior to construction of the Existing Project. Prior to 1958, flows suitable for whitewater boating occurred 100 percent of the time during August, and nearly 100 percent of the time during July, September, and October. Since construction of the Existing Project, flows suitable for whitewater boating have not occurred in August and occur less than 5 percent of the time during July, September, and October (FERC, 2007). Currently, flows suitable for whitewater boating occur approximately 21 percent of the time in March, 16.7 percent of the time in April, 14.6 percent of the time in February, and less than 12 percent of the time in May. The level of difficulty of the first 3.6 miles of the Poe bypass reach is generally characterized as Class V, with possible portages around two Class V–VI rapids. The remaining 4.4 miles of the Poe bypass reach extends from Bardees Bar to Poe Powerhouse and the level of difficulty is generally characterized as Class III to IV. Real-time flow information for the Poe bypass reach is not currently available.

A detailed description of the recreational resources in the Existing Project region is provided in FERC's final EA (FERC, 2007), Section V.C.6., *Environmental Analysis, Land Use and Aesthetics*, pages 185 through 189, and is incorporated herein by reference.

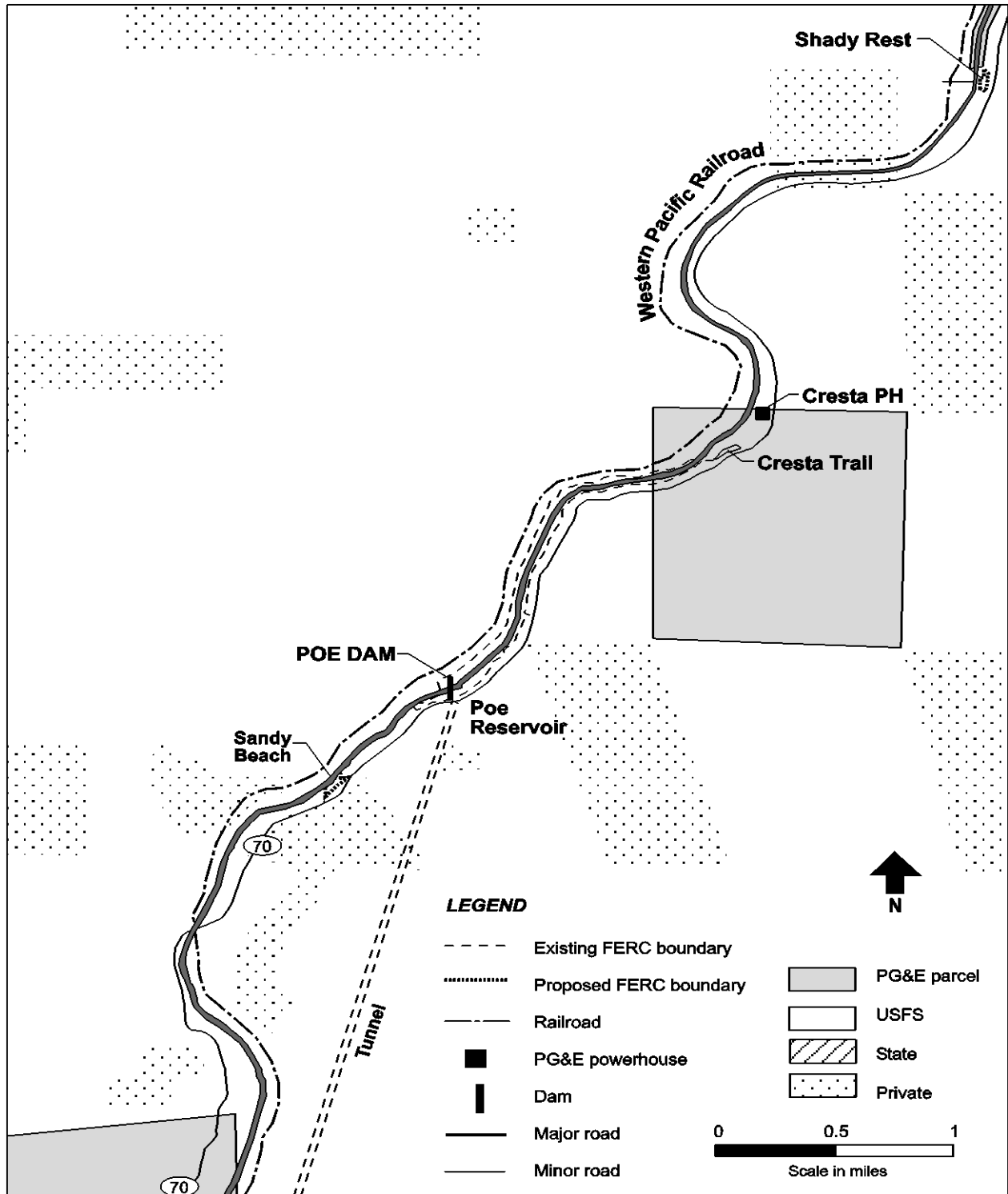


Figure 2. Existing Project features in the upstream end of the Existing Project area (Source: PG&E, 2003, as modified by FERC staff).

3.2 Existing Project

3.2.1 Existing Project Facilities

The Existing Project consists of (1) the 400-foot-long, 60-foot-tall Poe Dam, including four 50-foot-wide by 41-foot-high radial flood gates, a 20-foot-wide by 7-foot-high small radial gate, and a small skimmer gate that is no longer used; (2) the 53-acre Poe Reservoir; (3) a concrete intake structure located on the shore of Poe Reservoir; (4) a pressure tunnel about 19 feet in diameter with a total length of about 33,000 feet; (5) a differential surge chamber located near the downstream end of the tunnel; (6) a steel underground penstock about 1,000 feet long and about 14 feet in diameter; (7) a reinforced concrete powerhouse, 175-feet-long by 114-feet-wide, with two vertical-shaft Francis-type turbines rated at 76,000 horsepower connected to vertical-shaft synchronous generators rated at 79,350 kilovolt-ampere (kVA) for a total authorized installed capacity of 142.83 MW and an average annual generation of 583 gigawatt-hours (GWh); and (8) a switchyard including two 3-phase 69,000-kVA transformers and two 230-kilovolt (kV) circuit breakers with accompanying equipment. There are no transmission lines as part of the Existing Project. Existing Project power is delivered directly to the Rock Creek-Rio Oso No. 1 230-kV transmission line, which loops into the Poe Switchyard. Figures 2 and 3 show the major features of the Existing Project.

The Existing Project encompasses 313 acres of land, including 157 acres of PG&E-owned land, 144 acres of National Forest System land, and 12 acres of private land. The boundary includes Poe Reservoir; Poe Dam and intake, and a short length of river bank below the dam; the footprint of the pressure tunnel; land in the immediate vicinity of tunnel adits no. 1 and no. 2; the Poe Powerhouse access road; and the land surrounding Poe Powerhouse and Switchyard. None of the informal recreational areas in the Existing Project vicinity are included within the Existing Project.

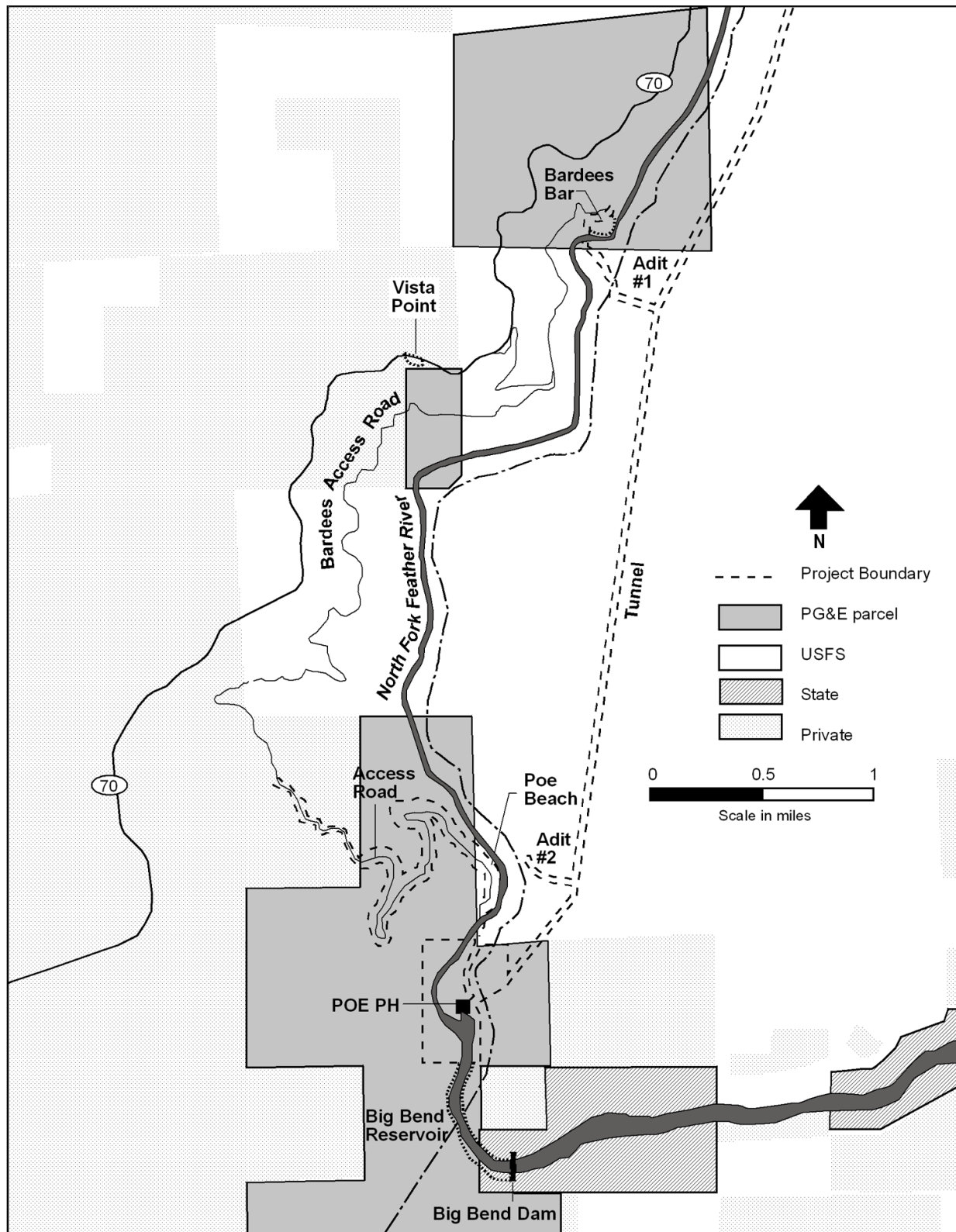


Figure 3. Existing Project features in the downstream end of the Existing Project area. (Source: PG&E, 2003, as modified by FERC staff).

3.2.2 Existing Project Operation

The Existing Project is operated in conjunction with other PG&E projects on the UNFFR (UNFFR Project, FERC Project No. 2105; Rock Creek-Cresta Project, FERC Project No. 1962; and Bucks Creek Hydroelectric Project, FERC Project No. 619) to maximize generation benefits for the system. During dry and average water years, the Existing Project is operated in a peaking mode, with generation varying on an hourly basis from zero to maximum powerhouse capacity, although it is operated near its most efficient load if possible. During high-flow periods, PG&E operates the Existing Project at maximum capacity to minimize spill at Poe Dam, but during severe floods (more than 45,000 cfs), the Existing Project is shut down, and all flow is spilled at the dam. The Existing Project's maximum hydraulic capacity under normal operation is 3,700 cfs, with both units operating. The normal daily reservoir fluctuation is about 3 feet, but on a seasonal basis, the reservoir may fluctuate nearly 10 feet, from a maximum elevation of 1,389.8 feet (U.S. Geological Survey [USGS] datum) to elevation 1,380.2 feet.

With the exception of the current minimum flow of 50 cfs released from Poe Dam, flow from the NFFR (Poe Reservoir) is diverted at Poe Dam into the adjoining intake structure and from there into a 19-foot-diameter, 33,000-foot-long pressure tunnel. The tunnel transitions into a 14-foot-diameter, 1,000-foot-long steel penstock, from which flow is distributed to the two turbine-generators (located in Poe Powerhouse), each of which has a maximum hydraulic capacity of 1,850 cfs. Flow from both units is discharged into the powerhouse tailrace and from there into the Big Bend Reservoir, which serves as the afterbay for Poe Powerhouse.

3.2.3 Existing Environmental Measures

3.2.3.1 Aesthetics

No measures in the existing license relate to aesthetic resources.

3.2.3.2 Biological Resources

Aquatic Resources

Operations under the current license require that PG&E maintain a minimum instream flow of no less than 50 cfs at PG&E stream gage NF23 at Pulga (also known as USGS gage no. 11404500), approximately 1.6 miles downstream of Poe Dam provided that the release for the dam is no less than 25 cfs. Leakage on the gate seals has resulted in typical releases of around 110 cfs. Starting in 2014, PG&E began work on repairs that would minimize leakage at all radial gates. Radial gate retrofitting is anticipated to be completed in 2018. Existing releases, combined with dam leakage supports a trout and smallmouth bass fishery (PG&E, 2003). These flows also support a population of hardhead, a California species of concern and Forest Service sensitive species (PG&E, 2003).

Operation of the Poe radial gates allows for movement of gravel through Poe Reservoir, which contributes to the deposition of spawning gravels in the Poe bypass reach of the NFFR.

Terrestrial Resources

One of the most productive bald eagle nests in California is located near Poe Powerhouse. Bald eagles spend a significant amount of time foraging in the Big Bend Reservoir and the reach of the NFFR above Poe Powerhouse. PG&E's current land management practices in the vicinity of the active Poe bald eagle nest territory are governed by a bald eagle management plan (Section E3.2.4 PG&E, 2003).

3.2.3.3 Cultural Resources

The Existing Project license does not contain any existing measures for the protection of cultural resources. However, any activities that require the approval of FERC or the Forest Service and may result in effects on cultural resources are subject to Section 106 of the National Historic Preservation Act (36 CFR 800, as amended), which requires consultation with the State Historic Preservation Officer (SHPO) throughout the process.

3.2.3.4 Geology and Soils

No existing environmental measures relate to geology and soils.

3.2.3.5 Hydrology and Water Quality

For the protection of water resources, PG&E currently provides a current year-round minimum instream flow of 50 cfs from Poe Reservoir as measured at the PG&E stream gage NF23 at Pulga (USGS gage no. 11404500), which is located approximately 1.6 miles downstream of the Poe dam.

3.2.3.6 Land Use and Planning

No measures in the existing license relate to land use.

3.2.3.7 Recreation

No measures in the existing license relate to recreation resources.

Section 4.0 Proposed Project

A project is defined under CEQA as “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment” and that requires a discretionary approval from a public agency (Cal. Code Regs., tit. 14, § 15378, subd. (a)(3)). In this IS, the whole of the action is the continued operation of the Existing Project under a new FERC license consistent with a number of PM&E measures (as described in FERC’s final EA) and State Water Board measures necessary to protect water quality standards.

In this case, the Proposed Project includes measures proposed by PG&E in its license application, final FPA section 4(e) conditions issued by the Forest Service, measures proposed by FERC staff in the final EA (issued March 2007), and measures required by the conditions of the WQC. PG&E has agreed to all conditions as set out in its letter dated August 22, 2017.

4.1 Proposed Project Facilities

PG&E did not propose any new non-recreational facilities in its license application.

PG&E proposed to expand the Existing Project by incorporating Big Bend Dam and Reservoir (up to the Existing Project boundary downstream of the powerhouse tailrace) into the Proposed Project boundary. Big Bend Dam and part of the reservoir are currently within the boundary of the downstream Oroville Project.

4.2 Proposed Project Operation

PG&E proposed to continue operating the Proposed Project in a peaking mode, although it proposed to increase minimum flows in the Poe bypass reach. The Proposed Project would continue to operate in a base-load mode during periods of high river flow. PG&E did not propose new construction or additional capacity.

4.3 Proposed Environmental Measures

In its license application, PG&E proposed that the following measures be included in any new license issued by FERC.

4.3.1 General Measures

- PG&E did not propose additional general PM&E measures as part of its license application.

4.3.2 Geology and Soils

- PG&E did not propose additional PM&E measures related to geology and soils as part of its license application.

4.3.3 Aquatic Resources

- Increase the minimum flow in the bypass reach of the NFFR below Poe Dam to 150 cfs from the existing 50 cfs, as measured at PG&E stream gage NF23 at Pulga (USGS gage no. 11404500) about 1.6 miles downstream of Poe Dam, and monitor the effects of the higher minimum flow on water temperature, fishery resources, bald eagle usage, and on the FYLF, a Forest Service sensitive species.

Continue the operation and maintenance of PG&E stream gage NF23 at Pulga (USGS gage no. 11404500) for the measurement of minimum flows below Poe Dam and discontinue the use of PG&E stream gage NF66, a staff gage immediately below Poe Dam.

- At spill flows below 3,000 cfs, implement ramping rates for spillway operations at Poe Dam, as follows: March/April/May—250 cfs/hour up-ramp and 150 cfs/hour down-ramp; June 1 to 15—300 cfs/hour up-ramp and 150 cfs/hour down-ramp; June 16 to February 28—400 cfs/hour up-ramp and 150 cfs/hour down-ramp.

4.3.4 Terrestrial Resources

PG&E did not propose additional PM&E measures generally related to terrestrial resources as part of its license application.

4.3.5 Threatened and Endangered Species

- Protect special-status plants by managing existing recreational use and implementing noxious weed control.
- Conduct surveys for sensitive wildlife species and coordinate with resource agencies for protection of these species if additional activities that could affect sensitive species occur in the Proposed Project area.

4.3.6 Recreation, Land Use, and Aesthetics

- Provide recreational improvements at Sandy Beach, including a portable toilet and garbage facilities (during the recreation season), additional signage, re-gravelling the existing road and parking area, and trimming vegetation.
- Provide recreational improvements at Bardees Bar, including a permanent picnic table, trash receptacle, vault toilet, and additional signage, with “pack-it-in/pack-it-out” policy.
- Provide recreational improvements at Poe Beach, including better site access (stairs or trail) and additional signage, with “pack-it-in/pack-it-out” policy.
- Provide recreational improvements at Poe Powerhouse, including a permanent vault toilet, garbage facilities, additional parking along the road to the beach, and additional signage. Regrade and gravel the access road that leads to the area where there is a beach. Install warning signs upstream of Big Bend Dam.
- Provide recreational improvements at Shady Rest, including an Americans with Disabilities Act-accessible trail to the river (developed with the Forest Service), and rehabilitation of existing facilities when necessary.
- Provide recreational improvements at Poe Reservoir, including an improved trail from the Cresta Powerhouse access road to the reservoir, and additional signage, with “pack-it-in/pack-it-out” policy.
- Pave an existing scenic viewpoint on State Highway 70, if acceptable to California Department of Transportation (Caltrans), and provide additional signage.
- Provide a one-time contribution of seed money to a government agency or non-profit organization for possible development of a visitor center. This contribution is contingent on having matching funding from at least two other entities and negotiating the amount of funding.
- To enhance visual resources, conduct minor painting at Poe Dam, remove the steel bridge at Bardees Bar, initiate revegetation of the Bardees Bar spoil pile, and implement erosion control measures at the toe of the spoil pile near the NFFR.
- Modify the Existing Project boundary to include approximately 21 acres of land associated with the Big Bend Dam and Reservoir; 20 acres of PG&E land, and 1 acre of land owned by the state of California.
- Modify the Existing Project boundary to include approximately 6 acres of land associated with proposed recreational enhancements at Sandy Beach, Bardees Bar, Poe Beach, and a scenic viewpoint along State Highway 70.

4.3.7 Cultural Resources

- Implement the Cultural Resources Inventory and Management Plan (PAR, 2001).
- Monitor two archaeological sites (CA-BUT-42H and CA-BUT-1665) after the recreation season each fall for 5 years.

4.3.8 Air Quality

PG&E did not propose additional PM&E measures related to air quality as part of its license application.

4.4 Modifications to Applicant's Proposal

The proposed measures described below are the modifications to the PG&E proposal. Conditions in this section are incorporated through the FPA and do not include WQC conditions. Proposals that are the same as PG&E's are not repeated in this section.

4.4.1 Section 18 Prescriptions

NMFS and the U.S. Fish and Wildlife Service (FWS) have reserved the right under Section 18 of the FPA to prescribe fish passage at a later date if needed.

4.4.2 Section 4(e) Land Management Conditions

Section 4(e) of the FPA gives the Secretary of the Interior authority to impose conditions on licenses issued by FERC for hydropower projects located on land under the Secretary's supervision (16 USC § 797(e); 16 USC 823d). Section 241 of the Energy Policy Act of 2005 (Pub. Law 109-58) ("2005 EAct") added section 33 to the FPA, providing license applicants and other license parties with an opportunity to submit alternative license conditions to agencies possessing mandatory conditioning authority pursuant to, *inter alia*, section 4(c) of the FPA such as the Department of Agriculture (DOA) for their consideration pursuant to the criteria set forth in section 33. The Forest Service filed their preliminary Section 4(e) conditions with FERC on April 6, 2005. On December 19, 2005, PG&E filed with the Forest Service alternative Section 4(e) conditions. American Whitewater and Butte County filed late alternative Section 4(e) conditions on January 3, 2006. The Forest Service filed 37 final Section 4(e) conditions and a supplemental rationale statement on May 28, 2007. Conditions 1 through 23 are standard conditions that are administrative in nature, and include obtaining Forest Service approval on final Proposed Project design and Proposed Project changes, and yearly consultation with the Forest Service to ensure the protection and development of natural resources. The remaining Forest Service Section 4(e) conditions include:

4.4.2.1 Geology and Soils

Condition No. 33: Revegetation of the Bardees Bar Tunnel Spoil Pile—requires PG&E to prepare a Bardees Bar tunnel spoil revegetation plan. This plan will be implemented in coordination with the removal of Bardees Bar Bridge and access roads.

4.4.2.1 Aquatic Resources

Condition No. 24: Streamflow

Minimum Streamflows. Requires PG&E to release 180 to 500 cfs minimum flows below Poe Dam based on water year type and to control out-of-season flow events so that flows are not greater than twice the required minimum streamflow in Poe bypass reach (Table 2).

Table 2. USFS 4(e), Minimum Streamflows

Release from Poe Dam (cfs)				
Month	Water Year Type			
	Wet	Normal	Dry	Critically Dry
October	250	250	180	180
November	275	275	180	180
December	300	300	180	180
January	325	300	180	180
February	350	325	225	225
March	350	350	300	300
April	400	400	325	300
May	500	400	350	300
June	500	400	350	300
July	500	400	350	300
August	500	400	350	300
September	400	350	300	250

Water Year Type: Water years have been classified into four Water Year Types based on the California Department of Water Resources (DWR) records of annual inflow to Lake Oroville(Oroville) from 1930-1999: Wet, Normal, Dry, and Critically Dry. Licensee shall determine Water Year Type based on the predicted, unimpaired inflow to Oroville and spring snowmelt runoff forecasts provided by Licensee and DWR each month from January through May. The May forecast shall be used to establish the Water Year Type for the remaining months of the year until the next February, when forecasting shall begin again. The Water Year Types are defined as follows:

Table 3. USFS 4(e) Water Year Types, Based on inflow into Lake Oroville

Water Year Types	
Wet	Greater than or equal to 5,679 thousand acre-feet (TAF)
Normal	Less than 5,679 TAF
Dry	Less than 3,228 TAF, but greater than or equal to 2,505 TAF
Critically Dry	Less than 2,505 TAF

If the Water Year Forecast on March 10 is for a Dry or Critically Dry water year and the previous two water years were Critically Dry, the Licensee may request a modification of flow requirements based on drought concerns by notifying the Forest Service and other interested governmental agencies including Butte and Plumas Counties.

Representatives from the State Water Board, Forest Service and other interested governmental agencies including Butte and Plumas Counties, shall meet with the Licensee to discuss operational plans to manage the drought conditions by May 1.

Discretionary Out of Season Flow Events Below Poe Dam. The Licensee shall operate the Project in a manner that does not result in discretionary, out-of-season flow events that are greater than twice the required minimum streamflow in the Poe Reach. An out-of-season event is defined as a flow event that occurs during the egg, metamorph, and juvenile phases of FYLF life stages.

If an out-of-season discretionary flow event occurs, the Licensee shall take reasonable controllable actions to minimize the magnitude, duration, and potential adverse ecological impacts of such flow. The Licensee shall prepare, maintain, and on an annual basis provide to FERC, the Forest Service, and other interested governmental agencies, a record of any discretionary out-of-season flow events, identifying the affected reach, hourly discharge, the maximum flow magnitude, dates and duration, and cause of the event.

Sediment Management in the North Fork Feather River. The Licensee shall, within 12 months of license issuance, develop and submit to FERC a Sediment Management Program Plan. The plan shall be prepared in consultation with the Forest Service and other interested governmental agencies. The Sediment Management Program Plan shall be approved by the Forest Service and filed with FERC before implementation. The objective of the Sediment Management Program is to manage the accumulation of fine-grained sediment and organic material in riffles and spawning sized stream substrate within the Poe Reach. If monitoring shows that fine grained sediment and organic material accumulation has increased by more than 25 percent as compared to the initial sediment measurements, the licensee shall either release or augment a spill flow prior to April 1 of the following year following the regime shown in the schedule and contingent to the following requirements.

Table 4. Pulse Flow Schedule

Hour	Duration (Hours)	Flow (Downramp in approximately 0.5 foot stage drops)
1	1	Baseflow to 750 cfs
2	1	1500 cfs
3-8	6	2000 cfs
9-10	2	1600 cfs
11-12	2	1300 cfs
13-14	2	1100 cfs
15-16	2	800 cfs
17-18	2	600 cfs
19-20	2	450 cfs
		450 cfs to baseflow

- The pulse flow shall be scheduled prior to the temperature of the North Fork Feather River at NF-23 exceeding 10 degrees C mean daily water temperature on two successive days.
- For the protection of FYLF and macroinvertebrate populations, the pulse flow will occur prior to the onset of frog breeding through FYLF metamorph emigration from the Poe main channel.

- Pulse flows shall also not take place if rainbow trout spawning in the Poe reach is observed and reported to Licensee by the California Department of Fish and Wildlife or Forest Service.

In no case will the pulse flow modifications require the release of more than 2,600 acre-feet of water in excess of the required minimum streamflow.

Streamflow Measurement. For the purpose of determining the river stage and Minimum Streamflow below Poe Dam, Licensee shall operate and maintain the existing gage at NF-23 (United States Geological Survey (USGS) gage 11404500) consistent with all requirements of FERC and under the supervision of the USGS.

Ramping Rates. For the preservation and improvement of aquatic resources in the Project area, Licensee shall control river flows by ramping streamflow releases from Poe Dam. The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency and law enforcement activity, and critical electric system emergencies beyond the control of the Licensee. As streamflow recedes in the uncontrolled spill event, and becomes controllable, the Licensee shall attempt to ramp the remaining flow down, using the ramping rates described in paragraph (a) below. In the event that studies or monitoring during the term of the License identify the need for modifications to ramping rates, the Licensee shall consult with the Forest Service and other interested governmental agencies to establish more appropriate rates. The revised ramping rates shall be submitted to and approved by the Forest Service and filed with FERC before implementation.

- a) Ramping Rate for Controllable Spills Not Resulting from Powerhouse Outages: A controllable spill is defined as a release into the Poe bypass reach greater than the required baseflow but less than 3000 cfs that can be controlled by regulating flow through the generating units. The ramping rate for controllable spill releases outside the time period when the egg, metamorph, or juvenile life stages of FYLF are present in the Poe bypass reach shall be 1.0 foot/hour or less up and 0.5 foot/hour or less down. The down ramping rate for controllable, non-discretionary (i.e. "natural") spill events when egg, metamorph, or juvenile life stages of FYLF are present in the Poe bypass reach cfs shall be 0.5 foot/hour or less with a two hour separation between each step down. The final step to the required minimum streamflow can occur when the difference between the spill flow and required minimum streamflow is less than 200 cfs. Controllable, discretionary spills when the egg, metamorph, or juvenile life stages of FYLF are present in the Poe bypass reach will follow the requirements outlined in Part 2 of this Condition.
- b) Ramping Rate after Spills Influenced by Powerhouse Outages: Some spills may include or be composed entirely of flow that should be passing through a powerhouse but is released as spill due to a powerhouse outage. When returning the powerhouse to full load, the daily decrease of such spills should not exceed 50 percent of the difference between the flow passing a dam and the required minimum streamflow for the reach. The final step to the required minimum streamflow can occur when the difference between the spill flow and required

minimum streamflow is less than 200 cfs. The ramping rate for the downstream reach shall be 0.3 foot/hour or less and there shall be a three-hour separation between each step until the daily decrease in spill is reached.

- c) Ramping Rate for Recreation Streamflow Releases: The ramping for recreation streamflow releases outside the time period when the egg, metamorph, or juvenile life stages of FYLF are present in the Poe bypass reach shall be 1.0 foot/hour or less up and 0.5 foot/hour or less down with a two hour step between each step down.

Tributary Access (Sept 26, 2006 Settlement). Within 6 months after license issuance, the Licensee shall develop, in consultation with the Forest Service and other interested agencies, a tributary access observation program. The purpose of the observations shall be to evaluate whether trout access into Mill and Flea Valley creeks from the NFFR is blocked during the spawning and annual low flow season as a result of the implementation of the flow regime required by the new license or other project operations.

Condition No. 28: Poe Reach Biological Monitoring—requires monitoring plan development for fish populations, benthic macroinvertebrate, and amphibians.

4.4.2.2 Terrestrial Resources

Condition No. 37: Invasive Weed Management Plan—requires PG&E to prepare a plan that includes inventories, prevention and control strategies, scheduling, monitoring, and an adaptive management approach for implementation methods related to weed populations. PG&E is required to share invasive weed monitoring information with the Forest Service during annual consultation on affected resources. The condition also requires controlling new infestation of A and B rated weeds within 12 months or as soon as practical and feasible and restoring or revegetating area treated to remove invasive weeds.

Condition No. 38: Bald Eagle Management Plan—requires PG&E to consult with agencies to review and update the existing plan.

4.4.2.3 Threatened and Endangered Species

Condition No. 35: Special-Status Species—requires annual consultation with the Forest Service to determine if there are new special-status species listed that could potentially be affected by the Proposed Project. For any such species identified, this condition also requires PG&E to develop and implement a study plan to assess the effects of the Proposed Project and recommend any necessary resource management measures.

Condition No. 36: Protection of Forest Service Special-Status Species—requires PG&E to prepare biological evaluations for Forest Service approval prior to undertaking any actions to construct new Proposed Project features on National Forest System lands.

4.4.2.4 Recreation, Land Use, and Aesthetics

Condition No. 27: Recreation River Flow Management—requires PG&E to provide 6,000 acre-feet of water annually in normal and wet water year types to provide recreational boating opportunities in the Poe bypass reach. The condition specifies timing and ramping

considerations for recreation users, as well as effects on FYLF and other biota, and describes the consultation process for scheduling flows and circumstances for postponement.

Condition No. 29: Recreation—requires development of a recreation site improvement and monitoring plan as well as an interagency river management plan to address management and integration of river recreation opportunities. This plan includes specific improvements, timelines and triggers for review of existing recreation areas. Recreational improvements for Sandy Beach include paved transition from Highway 70 to parking lot, re-graveled parking lot, access trails, portable toilets, regulatory signage, and trash receptacle and gate maintenance. Poe Beach recreational improvements include switchback trail and regulatory signage.

Condition No. 30: River Ranger—requires PG&E to provide \$12,000 (2007 dollars) to the Forest Service for funding a river ranger who will conduct light maintenance, provide visitor information/assistance, and collect information about visitor and facility use; duties do not include law enforcement.

Condition No. 31: River Flow Information—requires PG&E provide public flow information from PG&E stream gage NF23 at Pulga (USGS gage no. 11404500) via toll-free phone and/or internet within 4 hours of collection for the current and prior 6 days for the entire year. This requirement is subject to change if this information appears to adversely affect PG&E's bidding activities and power or ancillary service prices.

Condition No. 32: Fuel Treatment Plan—requires PG&E prepare a plan that: (1) analyzes live and dead fuel loading and potential fire behavior within 300 feet of Proposed Project features; (2) lists treatments to reduce hazard; (3) provides an implementation schedule; and (4) provides for reassessment at 5- to 8-year intervals.

Condition No. 39: Land Management and Visual Resource Protection—requires development of a plan that addresses Proposed Project facility configuration, alignment, building materials, colors, landscaping, and screening, and removal or stabilization of spoil piles.

Condition No. 40: Road Management Plan—requires mapping and describing roads used for Proposed Project access and identifying ownership, easements or other authorizing use instruments, as well as the party responsible for maintenance for each road within 1 year of license issuance. The condition also requires consulting the Forest Service before taking actions involving National Forest System roads or lands; performing a road condition survey; preparing an annual road maintenance plan; and obtaining permits or entering into road use agreements for using roads for the Proposed Project that are not included within the Proposed Project boundary.

4.4.2.5 Cultural Resources

Condition No. 34: Heritage Properties Management Plan—requires PG&E to consult with the SHPO, Forest Service, Native American Tribes, and others to develop and file a heritage properties management plan for the purpose of protecting and interpreting heritage resources within 1 year of license issuance.

4.5 FERC Staff Alternative

In addition to PG&E's proposed measures listed above, FERC staff alternative would include the following measures:

4.5.1 Water Resources

Prepare and implement a Poe bypass reach water temperature monitoring plan to evaluate changes in temperature resulting from new minimum instream flows and to monitor water temperatures of the inflow to the Proposed Project. The plan would be prepared in consultation with the resources agencies, filed with FERC for approval, and consist of continuous temperature monitoring from June 1 through September 30 for the 3 years following issuance of a new license, provision of monitoring results to the resource agencies and FERC on a timely basis, and an annual report to be submitted by October 31. The plan would include provisions for possible modification of the monitoring program after the completion of the first 3 years of monitoring, and depending on the monitoring results, changes in the instream flow releases in the reach, if such changes would result in beneficial reductions in water temperatures. At the completion of the 3-year monitoring program, and following implementation of any operational changes, PG&E would continue to monitor water temperature in the Poe bypass reach for the duration of the license term.

4.5.2 Biological Resources

Release the following minimum instream flows, as measured at the PG&E stream gage NF23 at Pulga (USGS gage no. 11404500) about 1.6 miles downstream of Poe Dam.

Table 5. FERC Staff Alternative Minimum Instream flows

Month	Wet Year (cfs)	Normal Year (cfs)	Dry Year (cfs)	Critically Dry Year (cfs)
October	200	200	150	150
November	215	200	150	150
December	225	225	165	150
January	250	225	165	150
February	250	225	190	190
March	250	225	215	210
April	275	250	215	210
May	300	275	200	200
June	250	225	180	180
July	225	200	180	165
August	225	200	180	165
September	225	200	165	165

As an interim measure, release a single 24-hour, 2,000-cfs pulse flow by February 15 in water years classified as dry or critically dry, if a natural or Proposed Project-related release of the same magnitude has not occurred in the preceding 18 months. Licensee would ramp-up to 2,000 cfs through the implementation of staff-recommended ramping rates; hold the pulse flow for a period of 24 hours, and then ramp-down at the recommended rate. For the protection of rainbow trout spawning, any pulse flow releases should be made by February 15. Also, pulse flows should not be made if two successive days of water temperatures have exceeded 10 degrees C, or if rainbow trout spawning has been observed by CDFW or other entities. Upon completion of the recommend pulse flow monitoring (see below), the interim pulse flow could be modified accordingly, if study results indicate that a change is appropriate. Total duration of an individual interim pulse flow event would be approximately 41 hours, including ramping.

Within 1 year of license issuance, prepare, in consultation with the resource agencies, and file with FERC for approval, a pulse flow monitoring plan, in accordance with Forest Service final 4(e) condition no. 24(3) to evaluate the movement of organic and fine-grained materials in the Poe bypass reach during pulse flows. The monitoring would be designed to identify the appropriate magnitude and duration of pulse flows needed to effectively remove fine-grained sediments and organic materials from spawning gravels. Long-term monitoring would include provisions for possible modifications to the pulse flow schedule depending on the study results, after implementation of the first three pulse flow events.

Within 1 year of license issuance, prepare, in consultation with the resource agencies, and file with FERC for approval, a ramping rate plan, schedule, and effectiveness monitoring plan. The ramping rate plan should consider the 5th year Rock Creek-Cresta Project ramping rate report that is due in May 2007, and address the operational and equipment issues at the Rock Creek-Cresta Dam that currently limit the control of Existing Project ramping rates.

In the interim, until the ramping rate plan and schedule are developed and ramping rate controls at Rock Creek-Cresta Dam are addressed, PG&E shall implement ramping rates for spillway operations at Poe Dam as follows: 250 cfs/hour up-ramp from March 1 through September 30 to protect breeding FYLFs, egg masses, tadpoles, frog metamorphs,³ and juvenile frogs; 400 cfs/hour up-ramp from October 1 through February; and down-ramp of 150 cfs/hour year-round. These interim ramping rates would be implemented at all Poe Dam spillway flows under PG&E's control, or below about 3,000 cfs.

Develop a streamflow gaging management plan for PG&E stream gage NF23 at Pulga (USGS gage no. 11404500) in consultation with the resource agencies, and file the plan with FERC for approval. Operate and maintain PG&E stream gage NF23, implement the streamflow gaging management plan, and forecast the water year type.

Within 1 year of license issuance, prepare in consultation with the resource agencies and file with FERC for approval, a Poe bypass reach fisheries monitoring plan. Monitoring would be conducted separately from any related macroinvertebrate and amphibian studies that are ordered as conditions of a license. Consecutive annual monitoring in the Poe bypass reach for fish would begin in years 4 and 5 after license issuance and would continue as such in 5-year intervals for the duration of the license term. Annual reports would be required within 6 months following completion of each study and would compare, contrast, and summarize results from previous monitoring. The plan would include provisions for possible modification to the flow regime if the results indicate that such a modification is necessary. Specific thresholds and criteria for evaluating the response of biotic communities to license conditions would be developed and included in the study plan, after consultation with the resource agencies. The plan would include specific objectives and criteria/decision points for determining whether the objectives are met, including wild trout age class, average size (length and weight), length-frequency distribution, total biomass (pounds/acre), harvestable component, and angler catch rate (including catch and release).

Within 1 year of license issuance, and in consultation with the resource agencies, prepare and file with FERC for approval, a plan to evaluate the effects of Proposed Project operations on out-migrating juvenile rainbow trout from Flea Valley Creek and Mill Creek, and the accessibility of these tributaries as coldwater refugia for adult or sub-adult rainbow trout during the summer months. PG&E's plan and subsequent evaluation would include an assessment of hydrologic connectivity between the NFFR and Flea Valley Creek and Mill Creek during the summer and fall months (July through October) under any new license conditions. PG&E's plan would also include provisions for long-term monitoring to assess whether geomorphic stream alterations (e.g., gravel deposition) adversely affect tributary access. Long-term monitoring of tributary access for rainbow trout would be done in conjunction with other monitoring efforts required by FERC (e.g., fisheries, amphibians, and macroinvertebrates). PG&E would consult with the Forest Service, CDFW, Interior, and other interested parties by January 31 after each study period to review study results. If, after review and consultation, PG&E and the resource agencies determine that Proposed Project operations are adversely affecting the outmigration of juvenile rainbow trout or adult or sub-adult rainbow trout access to coldwater refuge habitat during the summer months, PG&E would develop modifications to Proposed Project operations or other measures to ensure fish accessibility to these tributary streams.

Within 1 year of license issuance, prepare a Poe bypass reach benthic macroinvertebrate monitoring plan. The plan would be prepared in consultation with the resources agencies, and

³ A metamorph is the life stage during metamorphosis from tadpole to adult frog.

be filed with FERC for approval. The plan would include specific objectives and criteria/decision points for determining whether the objectives are met, including biodiversity, total biomass, species richness, and condition of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Tricoptera (caddisflies). Monitoring in the Poe bypass reach would begin in years 4 and 5 after license issuance. After the initial 2-year monitoring period, two consecutive annual surveys would be implemented every 5 years for the remainder of the license to evaluate long-term responses to measures implemented in the new license, and any subsequent modifications to Proposed Project operations. Macroinvertebrate surveys would be conducted during late summer/fall and be coordinated with the fish and amphibian monitoring studies, but would be separate from those studies to avoid compromising the results. Annual reports would be required within 6 months following completion of monitoring, and would compare, contrast, and summarize results from previous monitoring studies. The plan would include provisions for possible modification of the flow regime depending on the monitoring study results.

Develop and implement an amphibian monitoring plan, to be developed in consultation with the agencies and filed with FERC for approval. The plan would include annual surveys for the duration of the license to determine the long-term effects from changes in minimum flows on breeding FYLF frogs, frog egg masses, tadpoles, and frog metamorphs. Monitoring would be conducted separately from fisheries and macroinvertebrate monitoring to avoid compromising the results. The plan would include a requirement for regular reporting to the resource agencies and FERC, and include provisions for possible modification of the flow regime depending on the monitoring study results.

Every 6th year after license issuance for the term of the license, file with FERC, an instream flow effects monitoring report to comprehensively describe and summarize the results of all monitoring activities associated with Proposed Project minimum flows. These reports would summarize all monitoring activities associated with Proposed Project minimum flows conducted since the issuance of the license or since the previous instream flow effects monitoring report. During preparation of the report, consult with the resource agencies to review results and assess conditions pertaining to the biotic community and abiotic riverine characteristics in response to Proposed Project operations. If, after review, the resource agencies determine that aquatic species or other ecological attributes may benefit from modifications to the minimum instream flows required by the license, PG&E and the resource agencies would evaluate and determine whether such instream flow modifications: (1) can be implemented within PG&E's operational capabilities; (2) would maintain the total annual volume of water that has been allocated for minimum instream flows in any given water year, and (3) would not adversely affect other beneficial uses, including hydroelectric power generation and recreation. Any new instream flow recommendation made by PG&E in consultation with the resource agencies would be filed with FERC for approval at the same time as the filing of the instream flow effects monitoring report. This 6-year report would be supplemented by annual reports that would provide monitoring and study results occurring in years that the 6-year report is not prepared.

Annually review the list of special-status species and consult with the Forest Service to determine if study plans are needed for newly listed species and survey areas within National Forest System lands in the Proposed Project area directly affected by Proposed Project operations to determine possible Proposed Project effects on newly listed species.

Develop, file with FERC for approval, and implement a noxious weed management plan for control of noxious weeds on Proposed Project lands related to Proposed Project activities.

Develop, file with FERC for approval, and implement a riparian monitoring plan, including surveys in years 1–4 and at sampling intervals thereafter to be determined during development of the plan to determine the effects on riparian vegetation from changes in instream flows.

Within 6 months of license issuance, update, file with FERC for approval, and implement the bald eagle management plan for the Poe Powerhouse nesting territory.

4.5.2 Recreation and Land Use

Within 1 year of license issuance, prepare a recreation management plan in consultation with appropriate federal, state, and local agencies (including, but not necessarily limited to, the Forest Service; FWS; NMFS; the State Water Board; CDFW; California Department of Boating and Waterways; and Butte County) and file with FERC for approval. The plan would provide for monitoring recreational visitor use at Sandy Beach, Bardees Bar, Poe Beach, and Poe Powerhouse to assess use levels to determine if additional facilities are needed.

Conduct a feasibility study on improving an existing abandoned trail between Bardees Bar and the road to Poe Powerhouse and compare the results of this study with the information provided in PG&E's September 2006 feasibility report about modifying the abandoned construction road for use as a trail; and develop an all-weather hiking trail in one of the two locations, based on the results of the study.

Implement measures at Sandy Beach, Bardees Bar, and Poe Powerhouse to improve and protect public access for angling, such as providing additional public parking, public rest rooms, and public hiking trails to allow anglers to safely access the NFFR. Do not implement the proposed recreation developments at Cresta Powerhouse and Shady Rest.

Do not provide a one-time contribution of seed money for developing a visitor center.

Within 1 year of license issuance, provide stream flow information from PG&E stream gage NF23 at Pulga (USGS gage no. 11404500) on the NFFR to the public, via a toll-free phone number and/or via the Internet.

Within 1 year of license issuance, prepare a road management plan and file with FERC for approval.

Within 1 year of license issuance, prepare a fire prevention and response plan and a fuel treatment plan for lands within the Proposed Project boundary and file with FERC for approval.

Within 1 year of license issuance, prepare a Bardees Bar tunnel spoil pile revegetation plan and file with FERC for approval.

Include the following areas within the Proposed Project boundary: Sandy Beach, Bardees Bar, Bardees Bar Trail (if constructed based on the results of the feasibility study), Poe Beach, scenic viewpoint on State Highway 70 and the last 1.19 miles of Bardees Bar Road that is located on PG&E-owned lands.

4.5.3 Aesthetic Resources

Within 1 year of license issuance, prepare a visual management plan and file with FERC for approval.

4.5.4 Cultural Resources

Within 6 months of license issuance, prepare a final Historic Properties Management Plan (HPMP) in consultation with appropriate federal, state, and local agencies and file with FERC for approval.

4.6 State Water Board Staff Measures

The Environmental Checklist considers a range of options when evaluating the environmental impacts associated with the Proposed Project. As stated above, the WQC will contain conditions necessary to ensure the continued operation of the Proposed Project protects the beneficial uses of water. The conditions in the WQC will not result in impacts beyond those anticipated for the FERC staff alternatives or mandatory conditions. Conditions in the WQC may differ from conditions recommended by FERC staff or other agencies that are necessary to protect the beneficial uses. A Mitigation Monitoring and Reporting Plan was developed and will be included in the WQC. While some of the mitigation measures were not originally proposed by PG&E, PG&E agreed to incorporate the mitigation measures in their entirety as part of the Proposed Project (PG&E, 2017).

In summary, the Proposed Project being analyzed in this document consists of PG&E's proposed environmental measures as modified by the FERC staff alternative plus the mandatory USFS 4(e) conditions and WQC conditions necessary to ensure the continued operation of the Proposed Project protects the beneficial uses of the NFFR.

Section 5.0 Environmental Checklist and Analysis

5.1 Introduction

1. **Proposed Project Title:**

Poe Hydroelectric Project, FERC Project No. 2107

2. **Lead Agency Name and Address:**

State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

3. **Contact Person and Phone Number:**

Nathan Fisch
Environmental Scientist
(916) 322-6796

4. **Proposed Project Location:**

The Poe Hydroelectric Project is located on the North Fork Feather River in Butte County, California.

5. **Proposed Project Sponsor's Name and Address:**

Pacific Gas and Electric Company
Mail Code N 11 C
Post Office Box 770000
San Francisco, CA 94177

6. **General Plan Description:**

Not applicable

7. **Zoning:**

Not applicable

8. **Description of Proposed Project:**

The State Water Board will use this Initial Study in its decision making process for issuance or denial of a Water Quality Certification for the following actions requiring approval by FERC or ACOE:

- a. Issuing a new license for the Poe Hydroelectric Project (FERC Project No. 2107);
- b. Operating and maintaining Poe Hydroelectric Project;
- c. Conducting construction associated with the implementation of license conditions including, but not limited to, recreational improvements and road maintenance;
- d. Removing the steel bridge at Bardees Bar; and
- e. Regrading, revegetating, and controlling erosion at Bardees Bar spoil pile.

9. Surrounding Land Use and Setting:

Land use in the area of the Proposed Project is forest land owned by PG&E, Sierra Pacific Industries, and other private land holders or National Forest System lands administered by the Forest Service.

10. Other Public Agencies Whose Approval is Required:

Federal Agencies

- FERC
- ACOE
- Forest Service
- FWS

State Agencies

- State Water Board
- Division of Safety of Dams
- California Department of Transportation
- SHPO

5.2 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the Proposed Project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages. No environmental factor is identified as a “Potentially Significant Impact”.

	Aesthetics		Agricultural and Forestry Resources		Air Quality
	Biological Resources		Cultural Resources		Geology/Soils
	Greenhouse Gas Emissions		Hazards and Hazardous Materials		Hydrology/Water Quality
	Land Use/Planning		Mineral Resources		Noise
	Population Housing		Public Services		Recreation
	Transportations/Traffic		Utilities/Service Systems		Mandatory Findings of Significance

5.3 Determination

On the basis of this initial evaluation:

	I find that the Proposed Project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.
X	I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Proposed Project have been made by or agreed to by the Proposed Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	I find that the Proposed Project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures in the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable legal standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

Diane Riddle for LFG
 Leslie F. Grober
 Deputy Director for Water Rights
 State Water Resources Control Board

9/6/17
 Date

5.4 Evaluation of Environmental Impacts

5.4.1 Introduction

In a CEQA analysis of an existing hydroelectric project, reauthorizing the project is not likely to yield many environmental impacts because most of the impacts have already occurred, and, when compared to the current condition, do not register as significant. Environmental impacts that may or could occur are usually the result of new conditions necessary to bring the Proposed Project into compliance with existing laws including the CWA and ESA. The following sections present the potential impacts of the Proposed Project on the resources in the Proposed Project area. Unless otherwise noted the source of information is FERC's final EA (FERC, 2007).

5.4.2 Aesthetics

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Have a substantial adverse effect on a scenic vista?	FERC (2007), PG&E (2003)			X	
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	FERC (2007), PG&E (2003)			X	
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	FERC (2007), PG&E (2003)			X	
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	PG&E (2003)				X

- a. Less Than Significant Impact.** During the construction phase of the planned scenic overlook, construction equipment and activities would be visible along State Highway 70. Constructing the scenic overlook would require Caltrans approval and visual measures would be identified through this permitting process that would minimize any visual impacts. Following construction of the scenic overlook, visitor experience overlooking Bardees Bar would be enhanced. Planned actions at Bardees Bar (bridge removal and spoil pile

stabilization) would be visible from the location of the planned scenic overlook. During implementation, visitors would see vehicles and equipment from this location. However, after implementation, the spoil pile would have less contrast with the surrounding landscape, thereby lessening its appearance and improving the view from the scenic overlook. Removing the bridge would also improve the view from the scenic overlook by eliminating this human-made feature from the otherwise mostly natural-appearing view.

- b. Less Than Significant Impact.** Trimming vegetation and access to Poe Reservoir, Sandy Beach trail construction and constructing the scenic overlook would disturb vegetation and grade soil/rocks along a designated state scenic highway. This disturbance would not be significant because it would be (1) localized at these three sites; (2) only momentarily visible to visitors as they drive past these three sites; and (3) would not be noticeable after construction. The type of disturbance would be similar to activities associated with routine road maintenance activities that already occur along the highway.
- c. Less Than Significant Impact.** Although many Proposed Project features are visually evident to visitors traveling along State Highway 70, preparation and implementation of a visual resource plan, as required by Forest Service 4(e) Condition 39, would improve long-term aesthetic conditions at the Proposed Project by identifying actions (e.g., painting) to make them less evident. During the construction phase, construction equipment and construction activities would be visible at planned recreation sites. Following construction, most of these improvements would improve rather than detract from the view.
- d. No Impact.** The Proposed Project would not create a new source of light or glare that would adversely affect day or nighttime views in the area.

5.4.3 Agricultural and Forest Resources

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.</p> <p><i>Would the Proposed Project:</i></p>					
<p>a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</p>	<p>California DOC (2014)</p>				<p>X</p>
<p>b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?</p>	<p>California DOC (2014)</p>				<p>X</p>
<p>c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?</p>	<p>FERC (2007)</p>				<p>X</p>

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d. Result in the loss of forest land or conversion of forest land to non-forest use?	FERC (2007)				X
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	California DOC (2014)				X

- a. **No Impact.** Given the location of the Proposed Project and the topography of the region, no agricultural lands would be affected by the Proposed Project.
- b. **No Impact.** No agricultural lands or lands reserved for agriculture under the Williamson Act would be affected by the Proposed Project.
- c. **No Impact.** The Proposed Project is in conformance with local land use designations and zoning ordinances, and would not cause rezoning or forest land or timberland.
- d. **No Impact.** Although the Proposed Project lies on forested lands in the Plumas National Forest, each of the recreation developments (e.g., trails, day use areas) would be included in the Recreational Improvement and Monitoring Plan, a WQC condition, and require consultation from the Forest Service ensuring improvements are compatible with the existing forest land uses.
- e. **No Impact.** Proposed Project operations would not affect water downstream in a manner that would cause any farmland to be converted to non-agricultural purposes.

5.4.4 Air Quality

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<p>Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.</p>					
<p><i>Would the Proposed Project:</i></p>					
<p>a. Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan?</p>	<p>BCAQMD (2012); Butte County (2015a, 2016)</p>				<p>X</p>
<p>b. Violate any stationary source air quality standard or contribute substantially to an existing or projected air quality violation?</p>	<p>BCAQMD (2014); FERC (2007)</p>				<p>X</p>
<p>c. Result in a net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?</p>	<p>BCAQMD (2014); EPA (2016); FERC (2007)</p>		<p>X</p>		
<p>d. Expose sensitive receptors to substantial pollutant concentrations?</p>	<p>FERC (2007)</p>				<p>X</p>
<p>e. Create objectionable odors affecting a substantial number of people?</p>	<p>FERC (2007)</p>				<p>X</p>

a. No Impact. The continued operation of the Proposed Project under a new FERC license would not conflict with or obstruct the implementation of applicable air quality plans. These

plans include the Northern Sacramento Valley Planning Area Triennial Air Quality Attainment Plan, the Butte County Butte County Regional Transportation Plan in coordination with the Butte County Association of Governments, and policies established in the Air Quality Element of the Butte County General Plan in coordination between the Butte County Air Quality Management District and the California Air Resources Board (CARB) under CEQA. The Proposed Project would not result in population growth or criteria air emission increases that would exceed estimates in the applicable plans or require additional measures beyond the local air quality policies.

- b. No Impact.** Butte County is located within the Sacramento Valley Air Basin. The Sacramento Valley Air Basin is composed of nine air districts, including Butte County Air Pollution Control District (BCAPCD). BCAPCD is responsible for implementing programs and regulations required by the federal and state Clean Air Acts. Butte County is in nonattainment for state 1-hour ozone, state and federal 8-hour ozone, state 24-hour PM₁₀, federal 24-hour PM_{2.5}, and state annual PM_{2.5} standards.

There would be no increase in air pollutant emissions during Proposed Project operation. Consequently, there would be no contribution to violations of air quality standards as a result of the Proposed Project development during operation. Temporary air quality effects due to construction activities would be minimal and mitigated by appropriate measures.

- c. Less Than Significant Impact with Mitigation Incorporated.** Butte County is an attainment area for the federal and state carbon monoxide (CO), nitrogen dioxide, and sulfur dioxide standards. The CARB has classified Butte County as a moderate nonattainment area for the 1-hour ozone standard and as a nonattainment area for the 8-hour ozone standard. The EPA has recently designated the entire county as a nonattainment area for the 8-hour ozone standard. CARB has designated the county as a nonattainment area for the state's annual particulate matter standard of micrometers 10 or less (PM₁₀) and the 24-hour standard of 2.5 micrometers or less (PM_{2.5}). EPA has classified the entire county as an unclassified/attainment area for the PM₁₀ standard and the lower elevations of Butte County as a nonattainment area for the PM_{2.5} standard. For the carbon monoxide standard, CARB has classified Butte County as an attainment area.

The Proposed Project would cause no operation-related, long-term, net increase of any criteria pollutant for which the Proposed Project region is classified as a non-attainment area under an applicable federal or state ambient air quality standard. However, Proposed Project construction would result in short-term emissions of air pollutants. Potential short-term air pollutants released during construction would include fugitive dust and PM emissions from demolition, structures construction, alternation, and land clearing; and nitrogen oxide (NO_x), volatile organic compounds (VOCs), CO, and PM emissions from mobile sources including construction equipment, heavy construction trucks, on-site activities, and contractor's activities. VOCs and NO_x are ozone precursors. The following mitigation measure would reduce these impacts to less-than-significant with mitigation incorporated:

Mitigation Measure AQ-1: Implement a Fugitive Dust and Emission Control Plan

During ground disturbing construction projects, PG&E shall implement the following requirements:

Construction access roads and the construction site will be sufficiently watered to prevent excessive amounts of dust.

Pursuant to the California Vehicle Code (Section 23114), cover or maintain adequate freeboard of all trucks hauling soil or other loose material to and from the activity area to ensure retention of materials within the truck bed (e.g., ensure 1 to 2 feet vertical distance between top of load and the trailer).

Suspend all ground-disturbing activities with the potential to generate dust when winds exceed 20 miles per hour.

Designate a monitor to monitor dust control and order increased watering as necessary to prevent transport of dust offsite. This person would also respond to any citizen complaints. In the event that conditions become unfavorable, the monitor would have the authority to modify or slow down operation until conditions are acceptable again.

After construction is complete the construction site will be seeded with native grasses or plants.

Equipment engines will be maintained in good conditions and in proper tune as set forth in manufacturers' specifications.

This mitigation measure falls outside of the purview of the State Water Board. However, PG&E has agreed to implement Mitigation Measure AQ-1, as proposed, in an email dated August 22, 2017. Implementation of Mitigation Measure AQ-1 would reduce fugitive dust and particulate matter emissions to a less-than-significant level.

- d. No Impact.** No sensitive receptors would be exposed to substantial pollutant concentrations from operation or construction activities in the vicinity of the Proposed Project.
- e. No Impact.** Neither operation nor construction of the Proposed Project would create or cause objectionable odors.

5.4.5 Biological Resources

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	FERC (2007), Final 4(e) Condition Nos. 24, 27, 28, 35, 36, 37, and 38			X	
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	FERC (2007), Final 4(e) Condition no. 28 and Condition no. 28 rationale			X	
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	FERC (2007), Final 4(e) Condition Nos. 28 and 33			X	

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	FERC (2007)				X
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	FERC (2007)				X
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	FERC (2007)				X

- a. **Less Than Significant Impact with Mitigation Incorporated.** The Proposed Project has the potential to affect some of the special-status species identified below.

Bald Eagle: The bald eagle nesting territory near Poe Powerhouse has been successful under Existing Project conditions. However, several changes in operating conditions and recreation facilities that are proposed by PG&E and recommended by resource agencies could adversely affect bald eagles.

Changes in Proposed Project operations could have the potential to affect bald eagle foraging conditions. Although the bald eagle prey base in the NFFR should increase due to proposed changes in Proposed Project operations, increased minimum flows could reduce or redistribute the amount of shallow water foraging opportunities in the 7.6-mile-long Poe bypass reach.

Bald eagles could also be affected by an increase in recreational activities. The area surrounding Poe Powerhouse currently has a fair amount of human disturbance. Construction, maintenance, and future use of recreational enhancements throughout the Proposed Project area, especially those around Poe Powerhouse, could create additional human disturbance to eagles while foraging or during the nesting season. Although the nesting pair appears to be accustomed to human disturbance, it is unknown what their tolerance level is and whether or not the additional disturbance associated with the

proposed enhancements would have an adverse effect on nest productivity. Construction projects in the vicinity of Poe Powerhouse, including improvements to roads and existing facilities, can be timed to occur outside the breeding season to prevent disturbance to nesting birds, but increased use of this site could cause long-term disturbance to bald eagles.

Forest Service mandatory 4(e) Condition No. 38 includes a review and update of the existing monitoring plan for bald eagles in consultation with the Forest Service and other appropriate agencies. Updating and implementing this plan would appropriately identify potential adverse effects on bald eagles resulting from changes in Proposed Project operations and facilities, and human disturbance resulting from recreation use and provide a mechanism to determine the need for, development of, and enforcement of protection measures, which would reduce Proposed Project effects to less than significant.

Foothill Yellow-Legged Frog: The draft WQC and the Forest Service 4(e) both prescribe and FERC staff recommends, various changes in Proposed Project operations that have the potential to affect FYLF, including increasing base flows, implementing ramping/recession rates and pulse flows, addressing out-of-season discretionary flow events, and implementing recreation flows.

Increase in Base Flows

Draft WQC Condition 1 and Forest Service 4(e) Condition No. 24(1) include higher minimum streamflows (base flows) below Poe Dam. The results of 2005 and 2006 FYLF monitoring indicate that higher base flows do not appear to limit FYLF habitat availability (FERC, 2007). In addition, higher minimum base flows may lessen the risk of egg mass desiccation and tadpole stranding because higher minimum base flows would reduce the difference between operational flow fluctuations and normal operating conditions. As noted by the National Park Service, low base flows would have increased potential to be over-topped by spill events, turbine trips, or fluctuations caused by upstream projects; increasing the base flows during the breeding season would reduce the risk of affecting eggs masses from any of these flow variations. An important means of protecting FYLF during the breeding season is to provide higher, stable instream flows during the FYLF breeding and rearing periods.

The increase in minimum base flows is anticipated to decrease water temperatures in the Poe bypass reach during the summer months. Reductions in summer water temps should not strongly affect onset of FYLF breeding since spring temperatures would continue to be within the range required to initiate FYLF breeding (10–16°C) (FERC, 2007). However, the cooler mainstem temperatures during the FYLF rearing period may slow development of FYLF eggs, tadpoles, and metamorphs to some unknown degree. FYLF monitoring has previously suggested that higher temperature may shorten the duration of FYLF egg, tadpole and metamorph development (Catenazzi et al., 2017). However, because of somewhat natural environmental stochasticity associated with the timing and duration of FYLF development reported as part of the Rock Creek-Cresta Project License (FERC Project No. 1962) it may be difficult to quantify how much any temperature decrease would affect development duration. Possible effects include increased risk of predation or displacement due to longer periods of immobility or low mobility. Monitoring FYLF populations and their response to the new flow regimen (discussed below) would provide a means to monitor the response of FYLF to reductions in temperature as a result of increased base flows.

Recession Rates

FYLF egg masses and tadpoles have the potential to be impacted by flow fluctuations during the spring breeding and summer/fall tadpole rearing seasons. An abrupt reduction of high spill flows down to lower base flows may result in stranding and subsequent desiccation of tadpoles or immobile egg masses. Egg mass stranding can occur when recession rates are too fast relative to water depth at the egg mass site and egg development time (Lind and Yarnell, 2011). Based on the best available data for FYLF across multiple Sierra rivers, at least 40% of FYLF egg masses are deposited in water depths less than 1 foot and egg mass development times range between 2–3 weeks in cool to moderate water temperatures (12–16°C) (Lind and Yarnell, 2011). Based on these data combined with population modeling,⁴ a protective recession rate to reduce the long-term probability of extinction of a local population would need to be a stage change of less than 1 foot over 3 weeks, or 1/3 foot per week (Lind and Yarnell, 2011). It is presumed that this stage change is similar to natural, unimpaired recession rates that FYLF are habituated to in similar Sierra systems.

In order to protect FYLF egg masses from stranding, PG&E must operate the recession of flows from controllable discretionary or non-discretionary spill events in the Poe bypass reach in a manner that generally mimics the natural, unimpaired hydrograph.

Ongoing monitoring of FYLF in the Rock Creek – Cresta Project indicated that certain recession rates and flow measures required by the license were not protective of the FYLF in the Cresta reach. As a result, PG&E worked with stakeholders and agencies to develop new measures that were protective of the FYLF population in the Cresta reach of the NFFR. These measures are outlined in the Revised 4(e) Condition 5, Part A issued by the USFS and incorporated into the Rock Creek – Cresta FERC license (FERC No. 1962) on December 5, 2014. Under the new conditions, for flows between 3000 cfs and 1,000 cfs PG&E shall operate with the goal that the recession flows below Cresta Reservoir follow the recession flows of the East Branch of the NFFR. Once flows reach 1000 cfs PG&E follows a 21 day ramp down to the prescribed baseflow. The daily step targets were developed to mimic a stage change of approximately 1 foot over three weeks.

FERC is requiring PG&E to develop, in consultation with resource agencies, a ramping rate plan that will address operations of the Rock Creek – Cresta Project and consider ramping rate reports submitted as part of the Rock Creek – Cresta license. FERC is also requiring interim ramping rates for spillway operations at Poe Dam.

Ramping Rates

When non-discretionary, controllable spill events occur, the Forest Service mandates downramping rates of 0.5 foot/hour or less with a 2-hour separation between each step down, while FYLFs are present, under 4(e) Condition No. 24(5). This ramping rate would likely offer protection to prevent stranding of FYLF tadpoles during the summer/fall rearing season when other recession rates would not be applicable. Downramping rates

⁴ Lind and Yarnell (2011) conducted a population modeling exercise that isolated the effects of FYLF egg mass stranding and scouring, which demonstrated that increasing the rate of egg mass stranding can have substantial effects on the long-term extinction probability of a population. They found that if 40% or more of egg masses are stranded each year, the probability of extinction of the local population increases substantially and may be as much as four times that of a population with limited egg mass stranding.

do not provide a means to prevent egg mass desiccation because egg masses are immobile.

Pulse Flows

FYLF egg masses and tadpoles have the potential to be affected by flow fluctuations during the spring breeding and summer/fall tadpole rearing seasons. As part of a sediment management program plan described in draft WQC Condition 4 and Forest Service 4(e) Condition No. 24(3), pulse flows should occur before April 1 and “prior to the onset of frog breeding through FYLF metamorph emigration from the Poe main channel.” The timing of these pulse flows would avoid the FYLF breeding and rearing seasons and subsequent potential impacts to FYLF.

Out-of-Season Discretionary Flow Events

PG&E may operate the Proposed Project in a manner that results in discretionary, out-of-season flow events, as long as they are less than twice the required minimum streamflow in the Poe Reach. An out-of-season discretionary flow event is defined as a flow that PG&E chooses to spill into the Poe bypass reach above the required minimum instream flow when there is flow capacity available in the generating units that could capture the spill flow event, during FYLF breeding or rearing seasons. In the event of an out-of-season discretionary flow, Forest Service 4(e) Condition No. 24(2) mandates that PG&E “take reasonable controllable actions to minimize the magnitude, duration, and potential adverse ecological impacts of such an event.” Reasonable, controllable actions to minimize ecological impacts include prolonged recession rates as well as to “develop and implement reasonable actions to mitigate for identified adverse ecological impacts resulting from the event” in consultation with the Forest Service and other interested governmental agencies. Though such discretionary flow events may have potential to affect FYLF through scour of egg masses, tadpoles, or metamorphs, impacts are minimized to less-than-significant through this measure.

Recreational Flows

Whitewater recreation flow releases described under Forest Service 4(e) Condition No. 27 have the potential to adversely affect FYLFs if such flows are implemented during the FYLF breeding and/or rearing seasons. This condition states that recreation flows “shall only be provided at times in which there are no adverse effects on biota in the Poe reach.” However, it does not explicitly describe when such flows should be implemented or state that recreation flows should occur outside of the FYLF breeding and/or rearing seasons. In addition, the condition states that flows should occur between the hours of 10 to 4, which implies daily fluctuation in flows that could affect FYLFs. Repeatedly increasing and decreasing streamflows for recreation throughout the FYLF breeding and/or rearing seasons could significantly impact FYLFs through scouring or, conversely, desiccation of egg masses, tadpoles, and/or metamorphs. Unstable flows during the breeding season may cause egg mass desiccation from decreased flows, egg mass scouring from increased flows, and tadpole stranding from flows receding and draining from isolated pools. Indirect effects of recreation flow includes reduction of algae and detritus—important food and cover habitat components for tadpoles—through scouring. In addition, uncontrollable and untimely whitewater recreation pulse flows may cause FYLFs to mis-time initiation of egg deposition or site selection, possibly resulting in desiccation or detachment of egg masses when the flows then recede. Stable flows during the breeding and rearing seasons are most beneficial to avoid egg mass and/or tadpole scouring or desiccation. The only specific FYLF protection measure outlined in this recreation flow condition is that recreational boating flows “may not cause more than

a 0.2 foot stage change (approximately 100 cfs) from the onset of FYLF breeding through metamorph emigration from the Poe main channel” (Forest Service 4(e) Condition No. 27).

Draft WQC Condition 6 includes the development of a Recreational Technical Review Group (RTRG) and an MOU that establishes goals and responsibilities of RTRG members. In conjunction with Ramping Rate Plan, when implemented between April through September, would minimize effects on FYLFs from flow fluctuations during the breeding and rearing seasons to less than significant.

Monitoring

Draft WQC Condition 9 and Forest Service 4(e) Condition No. 28 includes an amphibian monitoring plan, to be developed by PG&E, approved by the Forest Service, and implemented for the term of the license in order to analyze the response of FYLFs to new streamflow conditions. FYLF monitoring studies would include, at a minimum: (1) FYLF population distribution and viability analysis, (2) FYLF reproductive success analysis, (3) verification of suitable habitat, and (4) an inventory of available habitat as compared to used habitat. In addition, elements to be examined in the context of new streamflow conditions and FYLF breeding and rearing habitats include: temperature regimes, riparian vegetation, abiotic habitat conditions (e.g., water depths, velocities, bank slopes), and river bar formation/loss. Monitoring would occur annually for the term of the license.

Monitoring would focus on determining the direct and indirect effects of the new streamflow regimen on all life stages of FYLFs and their habitats, as well as identifying some of the limiting factors affecting the Poe bypass reach population. Monitoring would provide a means to examine potential Proposed Project impacts to FYLFs, and adaptively manage to improve conditions for the species in this reach.

California red-legged frog: Because limited suitable habitat is available and no California red-legged frogs have been identified in the Proposed Project area, the Proposed Project would not be likely to adversely affect the California red-legged frog. In addition, staff- and agency-recommended amphibian monitoring plans would provide an added opportunity for California red-legged frogs to be identified—and for protection and enhancement measures to be put into place—if they move into the Proposed Project area in the future.

Hardhead (*Mylopharodon conocephalus*): Hardhead, a California species of special concern and a designated Forest Service sensitive species for the Plumas National Forest, is known to occur in the Proposed Project area. Hardhead are typically most abundant in larger, middle, and low elevation well-oxygenated stream reaches where summer temperatures typically exceed 20°C (Moyle, 2002). Hardhead were found primarily in lower velocity pools and runs in the Poe bypass reach. Along with Sacramento sucker and smallmouth bass, hardhead are one of the predominant species in the two Proposed Project reservoirs: Poe and Big Bend. The Forest Service prescribes and FERC staff recommends changes in Proposed Project operations that have the potential to affect hardhead, including increasing base flows and implementing recreation flows described below.

Increase in Base Flows

The flow schedule as described in Condition 1 of the draft WQC and the Forest Service 4(e) Condition No. 24 would increase the amount of available habitat for native minnow species; however, the amount of available habitat for adult hardhead would be increased only minimally and may be reduced during some months as compared to baseline

conditions. The amount of suitable habitat available for adult hardhead could be reduced in May of wet years by as much as 16 percent as a result of the 4(e) condition 24 and WQC condition 1 flow schedule because the higher flows would increase water velocity. Despite some seasonal impacts to hardhead, increased minimum instream flow releases would likely generally benefit most other fish and aquatic resources in the Poe bypass reach.

An objective of increasing the minimum streamflow (base flow) requirements in the Poe bypass reach is to reduce stream water temperatures, though relicensing studies indicate that such flow releases would have a limited capability to lessen warmer water temperatures in the bypass reach. The State Water Board has targeted a daily mean water temperature in the NFFR of less than or equal to 20°C to protect coldwater fish habitat, which is a designated beneficial use of the NFFR. Additionally, the signatories⁵ to the Rock Creek-Cresta settlement agreement set a 20°C target for the protection of a coldwater fishery.

Based on the life history and water temperature preference information reported for resident fish species in the Poe bypass reach, existing summer water temperatures in the bypass reach may already favor hardhead (Moyle, 2002). Cooler water temperatures may adversely affect hardhead because ambient temperatures would likely be below the species' preferred temperature range. Although the increased instream flow releases would cool the water in the upper bypass reach to benefit native coldwater species (e.g., rainbow trout), any effects from the degree change on hardhead would be monitored as part of the fish monitoring plan (draft WQC Condition 9 and Forest Service 4[e] Condition No. 28).

Recreation Flows

Untimely or daily whitewater recreation flow releases have the potential to displace or strand fish species, including hardhead. Forest Service 4(e) Condition No. 27 mandates that PG&E provide 6,000 acre-feet of water annually for recreation purposes. A requirement of this condition is that such flows “only be provided at times in which there are no adverse effects on biota in the Poe reach.” In addition, the Poe Recreation River Flow Technical Review Group—comprised of the Forest Service and other interested governmental agencies—would be responsible for scheduling recreation flow releases that would not negatively affect aquatic biota. Therefore, any potential negative impact to hardhead associated with the recreation flow release schedule is expected to be less than significant.

Sacramento perch (*Archoplites interruptus*): Sacramento perch, a California species of special concern, is known to occur upstream of the Proposed Project area. Although Sacramento perch have not been documented in the Proposed Project area, populations exist in reservoirs in the UNFFR drainage (e.g., Lake Almanor). Individuals could be transported downstream to the Proposed Project area during high flow periods or through other natural or unnatural displacement mechanisms (e.g., entrainment at upstream projects). Since there are currently no Sacramento perch in the Proposed Project area, this species would not be affected.

⁵ Signatories to the Rock Creek Cresta Settlement agreement include: PG&E, Forest Service, CDFW, USFWS, National Heritage Institute, Butte County, Plumas County, Friends of the River, California Outdoors, Chico Paddleheads, Shasta Paddlers, California Trout, American Whitewater, and the State Water Board.

Cold Freshwater Species

Pulse Flows: Pulse flows of 2000 cfs and the associated ramping rates have the potential to cause out of season fluctuations in stage on the NFFR. Condition 4 of the Poe Hydroelectric Project draft water quality certification stipulates that pulse flows shall occur prior to two consecutive days of temperatures greater than 10 degrees Celsius. This measure protects against sediment management flows negatively impacting the reproductive success of spawning coldwater species.

Habitat Availability: The Proposed Project includes a number of measures that would increase the habitat for coldwater species as compared to baseline conditions. Under the Final 4(e) and draft WQC flow schedules the weighted usable area (WUA) as compared to the 50 cfs current license condition flows for Rainbow trout would increase by between 69 and 105% for juveniles and 133 and 245% for adults. Table 21 on page 79 of FERC's 2007 EA outlined ranges of changes in the expected WUA for targeted fish species habitat in the Proposed Project.

An evaluation of temperature impacts of the Proposed Project is included in section 5.4.10.

Special-Status Plant Species: Potential impacts to special-status plant species would be minimized through the implementation of measures described for all special-status species and the development and implementation of an invasive weed management plan to cover all Proposed Project lands (Forest Service 4(e) Condition No. 37).

All Special-Status Species: In addition to the taxa-specific measures summarized above, other potential impacts to special-status species caused by Proposed Project operations and maintenance would be minimized by implementing the following measures as proposed in the Forest Service 4(e) conditions:

In consultation with the Forest Service, annually review the current lists of special-status plant and wildlife species (i.e., species that are federal endangered or threatened, Forest Service sensitive, National Forest Watch Lists) with the potential to occur on all lands in the Proposed Project area directly affected by Proposed Project operations, to determine if newly added species (or their habitat) is likely to occur. For those likely to occur, assess and report (to Forest Service and FERC) on potential Proposed Project effects and implement any required resource management measures (Forest Service 4(e) Condition No. 35).

Prior to any new Proposed Project feature construction, prepare a biological evaluation to protect Forest Service sensitive and/or management indicator species or their critical habitat on National Forest System lands and implement any Forest Service or FERC required mitigation measures. Where current information on species is lacking, perform necessary surveys prior to ground-disturbing activities, unless otherwise agreed to by the Forest Service (Forest Service 4(e) Condition No. 36).

Restrict discretionary, out-of-season flow events that are greater than twice the required minimum streamflow in the Poe bypass reach for the preservation and improvement of aquatic resources in the Proposed Project area (Forest Service 4(e) Condition No. 24).

Implement ramping rates during flow changes at Poe Dam for the preservation and improvement of aquatic resources in the Proposed Project area (Forest Service 4(e) Condition No. 24).

Establish a Poe Recreation River Flow Technical Review Group, including the Forest Service and other interested governmental agencies, for the purpose of consulting in the development and scheduling of recreation river flows in the Poe bypass reach for the preservation and improvement of aquatic resources in the Proposed Project area (draft WQC Condition 6 and Forest Service 4(e) Condition No. 27).

Monitor fish population, benthic macroinvertebrate, and amphibian over the life of the license to evaluate the effects of scheduled minimum instream flows on fish and wildlife resources (Forest Service 4(e) Condition No. 28).

- b. Less Than Significant Impact.** The Proposed Project would involve construction of new recreational facilities and thereby cause some ground disturbance near riparian habitat or other sensitive natural communities. Some riparian vegetation in the Proposed Project area would likely be inundated either temporarily or permanently with increased instream flows, pulse flows, or whitewater releases; however, while some of these actions may benefit riparian vegetation (e.g., pulse flows, increased minimum instream flows), actions also may result in a loss of riparian vegetation (e.g., long-term increases in flow, whitewater releases). The proposed riparian monitoring plan (measure in FERC staff alternative) would indicate whether sufficient re-establishment of riparian vegetation occurs to support aquatic and wildlife communities and would identify any need for protective measures. In addition, the mandatory Forest Service 4(e) Condition No. 28 includes monitoring impacts of the new streamflow on riparian vegetation (as part of the amphibian monitoring plan), which would determine if there are any impacts on riparian vegetation establishment, encroachment, or scouring.
- c. Less Than Significant Impact.** The Proposed Project would involve (1) construction of new recreational facilities that potentially would involve a small amount of ground disturbance in areas with potential wetland habitat (i.e., Bardees Bar) and (2) changes to flow. The proposed riparian monitoring plan would determine if changes to streamflow affect these communities, identify any need for protective measures, and help minimize potential negative impacts.
- d. No Impact.**

Fish: The *Habitat Expansion Agreement for Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead (HEA)* as agreed upon by National Marine Fisheries. The HEA was developed to provide an alternative to NMFS Section 18 authority under the FPA to require a trap-and-haul program for fish passage over Oroville Dam in the new FERC licenses for DWR's Oroville Facilities Project and PG&E's UNFFR and Poe Hydroelectric Projects. Prior to the HEA, NMFS may have otherwise required a trap-and-haul program on the Feather River, however in letters dated December 12, 2005 and November 15, 2006 NMFS reserved its authority to condition fish passage for the Proposed Project.

Additionally, Forest Service 4(e) Condition 6 requires the Licensee within 6 months of Licensee issuance develop in consultation with interest parties a tributary access observation program. This program for the three years following License issuance will observe and delineate any barriers to tributary access for resident cold freshwater fish. This program will ensure that any changes in minimum instream flows will not impair spawning ability and protect resident fisheries resources.

Despite ongoing impacts to the movement of fish through entrainment and other existing (baseline) barriers to fish movement (e.g., Poe and Big Bend Dams), these impacts are considered part of the baseline conditions. Measures included in the proposed action

would have no significant negative impact on the ability of fish species to move or migrate. Increased instream flow downstream of Poe Dam would likely enhance fish migration within the Proposed Project area.

Wildlife: Measures included in the Proposed Project would not interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- e. **No impact.** There would be no conflict with and no impact on any local policies or ordinances regarding biological resources.
- f. **No impact.** Measures included in the Proposed Project would not conflict with and would have no impact on the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

5.4.6 Cultural Resources

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	FERC (2007)			X	
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	FERC (2007)			X	
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	FERC (2007)				X
d. Disturb any human remains, including those interred outside of formal cemeteries?	FERC (2007)				X

a. **Less Than Significant Impact.** FERC determined that the Big Bend Dam was ineligible for listing in the National Register of Historic Places (National Register) in 2004. Other features of the Poe Hydroelectric Project were not evaluated during PG&E’s relicensing studies because they did not yet meet the National Register’s 50-year age requirement for potential eligibility. These facilities now meet this age requirement and are potentially eligible. Under CEQA, properties that are eligible for the National Register are also eligible for the California Register of Historical Resources (California Register) and would be considered significant under California law. Forest Service 4(e) Condition No. 34 requires the licensee to develop a Heritage Resources Management Plan within one year of license issuance that would serve to protect and interpret heritage resources over the license term. FERC issued a Programmatic Agreement (PA) in April 2007 that would require PG&E to file with FERC a Historic Properties Management Plan (HPMP) within six months of license issuance specifying how historic properties would be managed within the Area of Potential Effect (APE) during the term of the license. The PA requires PG&E to consult with the SHPO, Forest Service, and other involved parties regarding identification and evaluation of historic properties, determination of effects, and ways to avoid, minimize, or mitigate adverse effects. Inclusion of stipulations within the HPMP to evaluate the Poe Hydroelectric Project System features and determine appropriate treatment measures in consultation with the SHPO for any features determined to be eligible, would ensure that

potential effects over the license term are appropriately addressed and would result in a less than significant impact.

- b. Less than Significant Impact.** Relicensing studies identified seven archaeological sites within the Proposed Project APE. Of these, two were found to be eligible for listing in the National Register, and these two resources would also be eligible for the California Register. Forest Service 4(e) Condition No. 34 requires the licensee to develop a Heritage Resources Management Plan within 1 year of license issuance that would serve to protect and interpret heritage resources over the license term. The PA requires PG&E to consult with the SHPO, National Forest, and specified Native American Tribes during HPMP development to identify appropriate treatment measures for eligible sites that would be threatened by Proposed Project-induced shoreline erosion, Proposed Project-related ground-disturbing activities, and vandalism. PG&E would also adhere to the provisions in the HPMP for inadvertent discoveries and monitoring during ground-disturbing activities to address any potential impact to previously unidentified cultural materials. Implementation of these measures would ensure that potential effects over the license term are appropriately addressed and would result in a less than significant impact.
- c. No Impact.** No paleontological or unique geologic resources have been identified in the Proposed Project area. However, Forest Service 4(e) Condition No. 34 specifies that if prior to or during ground-disturbing activities, or as a result of Proposed Project operations, items of potential paleontological value are reported or discovered, or a known deposit of such items is disturbed on National Forest System lands and PG&E's adjoining fee title property, PG&E would immediately cease work in the affected area. PG&E would notify the Forest Service, and not resume ground-disturbing activities until appropriate evaluation of the find has been completed, and PG&E has received written approval from Forest Service. Adherence to these specifications would ensure no impact on unique paleontological resources.
- d. No Impact.** No human remains have been identified in the Proposed Project area. According to the PA, the HPMP would contain a plan for the treatment and disposition of any human remains that may be discovered during Proposed Project activities on federal land, taking into account applicable state laws, and the Native American Graves Protection and Repatriation Act (25 USC § 3001). Strict adherence to these provisions would be followed to address any potential for impact to previously unidentified human remains that may be present, resulting in no impact.

5.4.7 Geology and Soils

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	FERC (2007)				X
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	FERC (2007)				X
ii. Strong seismic ground shaking?	FERC (2007)				X
iii. Seismic-related ground failure, including liquefaction?	FERC (2007)				X
iv. Landslides?	FERC (2007), final 4(e) Condition Nos. 14 and 33; PG&E (2003)				X
b. Result in substantial soil erosion or the loss of topsoil?	FERC (2007), final 4(e) Condition No. 40		X		

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	FERC (2007), final 4(e) Condition Nos. 14, 33, and 40				X
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	FERC (2007)				X
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	FERC (2007)				X

a.i. No Impact. The Aliquist-Priola Earthquake Fault Zoning Act identifies special study zones for areas in which existing active known faults are located. The purpose of the Act is to identify areas that may be limited to development and restrict development on or in proximity to active faults. There are no Aliquist-Priola faults in the immediate Proposed Project area, as delineated on the most recent Aliquist-Priola Earthquake Fault Zoning Map in Geology Special Publication 42, Interim Revision 2007 (Bryant and Hart, 2007).

a.ii. No Impact. The region has a low to moderate risk of seismicity. The California Geological Survey has predicted ground motions (10 percent probability of being exceeded in 50 years) as a fraction of the acceleration due to gravity in the greater Proposed Project area. Based on those predictions, the peak ground acceleration in the Proposed Project area would be 10 to 20 percent of gravity during a seismic event with a recurrence probability of 10 percent in 50 years. Thus, risks associated with seismic shaking are considered minimal.

a.iii.No Impact. The potential for liquefaction depends on potential ground movement during seismic events, soil conditions, and depth of groundwater. The region has a low to moderate risk of seismicity, and the Proposed Project site does not contain soil conditions and groundwater depths conducive to liquefaction.

a.iv.No Impact. The Proposed Project is generally located in an incised canyon with steep slopes mantled by shallow soils overlying bedrock. Rockfall and shallow landsliding have occurred within the Proposed Project vicinity over the last several decades, often triggered

by intense, prolonged rainfall in areas with weathered bedrock and surficial deposits. Thus, due to the geologic terrain, an ongoing impact includes the potential for rockfall and landslides to naturally occur in or near the Proposed Project area over the duration of the license. Landslides within the area, either naturally occurring or related to Proposed Project operations, are primarily a risk to water conveyance facilities (e.g., tunnels and penstocks) and other Proposed Project infrastructure. Failure of water conveyance facilities does not pose a risk to people and other infrastructure. The Proposed Project includes measures that would reduce the ongoing risk of mass wasting associated with roads and spoil piles.

- b. Less Than Significant Impact with Mitigation Incorporated.** The Proposed Project has the potential to result in erosion from ongoing activities, such as use and maintenance of roads (e.g., erosion associated with road drainage, culvert outlets, side cast materials, and stream-crossing failures) as well as the construction of recreational facilities and improvements. Proposed recreational improvements include the potential for paving at Sandy Beach from Highway 70 to the parking lot.

Mitigation Measure GS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids)

Prior to construction, PG&E shall submit detailed plans outlining all construction activities to the State Water Board for review and written approval. Each plan will contain a detailed description of the proposed activities, activity boundaries, potential environmental impacts, pollutants of concern, and selection of appropriate best management practices (BMPs) that will be implemented. PG&E will be required to meet all applicable standards as outlined in the Basin Plan.

Implementation of Mitigation Measure GS-1 would reduce any potential impact to a less-than-significant level.

- c. No Impact.** The Proposed Project is located in steep, mountainous terrain, which is not an area that is prone to lateral spreading, subsidence, liquefaction, or collapse. However, the Proposed Project is located in area with potential for mass wasting, such as rockfall and shallow landsliding.

The highest potential for Proposed Project activities to exacerbate naturally occurring mass wasting processes in the Proposed Project area are due to road-crossing failures, improper drainage of road surfaces and penstock failures—all of which are ongoing Existing Project impacts. The Proposed Project includes a measure to develop a roads management plan, which should minimize the likelihood of erosion associated with Proposed Project roads. The Proposed Project also includes development of an erosion control and revegetation plan for the Bardees Bar spoil pile, which should minimize erosion and sediment delivery from the spoil pile. The risk of a non-Project-related landslide occurring directly upslope or downslope of water conveyance facilities and causing catastrophic failure is an unavoidable, ongoing consequence of the geologic terrain in which the Proposed Project is located.

- d. No Impact.** The Proposed Project is not located on expansive soil as defined in Table 18-1-B of the Uniform Building Code. Soil types in the Proposed Project area do not include high clay contents.
- e. No Impact.** The Proposed Project would have no effect on on-site wastewater disposal systems.

5.4.8 Greenhouse Gas Emissions

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Butte County (2015a); CAPCOA (2008); CARB (2008); Council on Environmental Quality (2014); FERC (2007); personal communication, T. Jereb and J. Schnabel, May 10, 2011.			X	
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Butte County (2014, 2015); CARB (2010); personal communication, T. Jereb and J. Holeman, December 3, 2010)			X	

a–b. Less Than Significant Impact. Executive Order 13514 (74 Federal Register 52117) requires agencies to “measure, report, and reduce their greenhouse gas (GHG) emissions from direct and indirect activities.” GHGs covered by Executive Order 13514 are carbon dioxide (CO₂), methane (CH₄), nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfurhexafluoride. These GHGs have varying heat-trapping abilities and atmospheric lifetimes. To facilitate comparison among GHGs, a global warming potential (GWP) value is assigned to each GHG. GWP represents the heat-trapping impact of a GHG relative to CO₂, which has a GWP of 1.0, and functions as a warming “index.” For instance, CH₄ has a GWP of 21, so each metric ton of CH₄ emissions has 21 times the impact on global warming (over a 100-year time horizon) as one metric ton of CO₂ emissions. To provide a single metric that embodies all GHGs, emissions are reported in metric tons of carbon dioxide equivalent (MTCO₂e). To calculate CO₂e, the mass of emissions of each GHG is multiplied by the appropriate GWP for that gas.

The California Global Warming Solutions Act (Assembly Bill 32, Statutes of 2006) requires California to reduce its GHG emissions to 1990 levels by 2020. California's Renewables Portfolio Standard (RPS), established in 2002, is a tool to help the state reduce its GHG emissions. The RPS requires retail sellers, including PG&E, to increase renewable energy as a percentage of retail sales to 33 percent by 2020 (PG&E, 2016). In 2015, PG&E served 29.5 percent of its retail electricity sales with renewable power and is anticipated to reach the RPS goal by 2020. Only small hydroelectric facilities, less than 30 MW, are eligible for the RPS (CEC, 2015).⁶ Small hydroelectric facilities provide about 1.5 percent of California's power generation and about 13.5 percent of total renewable generation. Annual variation in precipitation levels and the timing and rate of snowmelt affects the amount of electricity provided by small hydroelectric facilities and their contribution to the state's renewable goals. The state's hydroelectricity production relies on predictable water reserves. With changes in snow elevations, snowpack, and snowmelt, less water may be available for hydroelectric generation when it is needed most during the summer. During dry years and droughts, reduced snow melt and reservoir storage can reduce hydroelectric power generation.

Senate Bill (SB) 97 (Statutes of 2007) requires that the Governor's Office of Planning and Research (OPR) prepare guidelines to submit to the California Resources Agency regarding the analysis and mitigation of GHG emissions in CEQA documents and feasible mitigation of GHG emissions or the effects of GHG emissions as required by CEQA. Consistent with SB 97, OPR released a Technical Advisory on CEQA and Climate Change, which was developed in cooperation with the California Resources Agency, California EPA, and CARB. The Technical Advisory offered informal interim guidance regarding the steps lead agencies should take to address climate change in their CEQA documents until CEQA guidelines are developed pursuant to SB 97 on how state and local agencies should analyze and when necessary, mitigate GHG emissions. According to the Technical Advisory, lead agencies should determine whether GHGs may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by type and source.

Senate Bill No. 375 (Chapter 728, Statutes of 2008) directs the California Air Resources Board to set regional targets for reducing GHG emissions. CARB estimates per capita GHG contributions in Butte County to increase from the year 2006 baseline by 1 percent by year 2035. In 2006, GHG emissions in Butte County totaled 601,266 MTCO_{2e}, approximately 28.1 percent of which can be attributed to electricity and natural gas used to power or heat residences, homes, and industries. In 2014, Butte County Department of Development Services prepared a community-wide Climate Action Plan (CAP). The CAP supports state-wide GHG emissions reduction goals identified in Assembly Bill 32 and SB 375. The CAP establishes the county's targets for reducing GHG emissions with a goal of achieving a 15 percent reduction from 2006 emission levels by 2020 and a 42 percent reduction by 2030. The Butte County Cap Annual Report for 2015 estimates that GHG emissions for the county totaled 911,630 MTCO_{2e} for year 2013, of which the residential and non-residential energy sectors contributed 212,080 MTCO_{2e} or 23 percent of GHG emission in the county.

The Existing Project produced an average of 583 GWh annually up until 2007 while providing minimum flows of 50 cfs. The Proposed Project would operate under the condition of minimum flows ranging from 180 to 500 cfs. Since 2007 generation has not reached the average that was analyzed in the FERC's EA. The reported annual generation

⁶ With an installed capacity of 142.83 MW, the Poe project is not RPS-eligible.

for the Poe Hydroelectric Project has been 472.964 GWh in 2007, 388.718 GWh in 2008, 464.135 GWh in 2009, 479.536 GWh in 2010, 404.275 GWh in 2012, 542.789 in 2013, 294.722 GWh in 2014, 284.550 in 2015, and 331.112 GWh in 2016⁷(PG&E, 2007-2016). During the interim ten years, power generation has dropped to an average of 406.977 GWh, during which seven of the 10 years would have been categorized as dry or critically dry under the Proposed Project.

Water year type, grid demand, upstream and proposed project operations all contribute in determining changes in hydroelectric generation. Assuming a linear relationship between minimum instream flows and generation the anticipated average annual Proposed Project generation is 520 GWh. The implementation of similarly proposed higher flows analyzed in FERC's Environmental Assessment anticipated a decrease in annual hydropower generation of 532 GWh from the Existing Project generation of 583 GWh. Under the minimum instream flow requirements, the reduction in GWh could result in a comparable increase in fossil fuel-based energy generation (primarily from natural gas sources) of a quantity required to make up the estimated loss. This increase in utilization of fossil-fuel derived power would occur primarily at times of peak energy demand, when immediate back-up power is needed on the spot market in relatively short order. While there is a continuing trend toward larger stored capacity for renewably-sourced power, the fast-ramping capacity of fossil fuel-based sources, such as natural gas fired generators, which can be brought on-line relatively quickly and cheaply to meet this demand, makes it more likely that these sources will be used to provide on-demand make-up power for the foreseeable future. The existing project operates as both a peaking and baseload facility and is anticipated to continue to do so under the Proposed Project. While it's difficult to anticipate the split of peaking and baseload power generation in a given year or to project into the future, this analysis assumes 100% of lost generation would be in the form of peaking power. This increase in fossil fuel-based energy generation would be 63 GWh annually under the Proposed Project. These increases in fossil fuel-based energy generation would result in associated minor incremental increases in GHG emissions, and would be somewhat counter to the stated objectives of CARB's (2008) Climate Change Scoping Plan, as well as the Butte County General Plan 2030.

However, the Proposed Project would not contribute to significant increases in community-wide GHG emissions. Assuming that reduced generation at the Proposed Project would be replaced with existing non-renewable resources producing CO₂ emissions at the rate of 49 kilograms per megawatt hour (personal communication, T. Jereb and J. Holeman, December 3, 2010), it is estimated that annual GHG emissions from power generation facilities providing replacement power to offset a reduction in power generated by the Proposed Project would be 2,499 metric tons of CO₂ per year. This represents 0.5 percent of total equivalent GHG emissions in the county (601,266 MTCO₂e) and 1.8 percent of current emissions attributed to the residential and non-residential energy sectors (168,956 MTCO₂e) at the county level. However, this analysis serves as a worst case scenario of how decreased Project generation could be replaced. Under the Proposed Project the larger California energy market will continue to be incentivized to transition to renewable energy resources over conventional energy sources. For these reasons, minor increases in county-wide GHG emissions would not be significant.

⁷ 2011 power generation data was not readily available.

5.4.9 Hazards and Hazardous Materials

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	FERC (2007), final 4(e) Condition No. 6				X
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	FERC (2007), final 4(e) Condition No. 6		X		
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	FERC (2007)				X
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	FERC (2007)				X

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Proposed Project result in a safety hazard for people residing or working in the Proposed Project area?	FERC (2007)				X
f. For a project within the vicinity of a private airstrip, would the Proposed Project result in a safety hazard for people residing or working in the Proposed Project area?	FERC (2007)				X
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	FERC (2007)				X
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	FERC (2007)				X

- a. **No Impact.** The Proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- b. **Less Than Significant Impact with Mitigation Incorporated.** Discharges of fuel, oil, and grease from vehicles, power generation facilities, and construction could occur through reasonably foreseeable upset and accident conditions and involve the release of hazardous materials into the environment.

Mitigation Measure HHM-1: Hazardous Materials Management and Water Quality Monitoring and Protection Plan

Onsite containment for storage of chemicals classified as hazardous shall be away from watercourses and include secondary containment and appropriate management as specified in California Code of Regulations, title 27, section 20320. During construction within the 100-year flood plain, the use of containment facilities, booms, and an

environmental inspection program will prevent any significant release of hazardous materials from harming the aquatic environment. All equipment will be stored above the 100-year flood level. Equipment used in contact with a water course will be steam cleaned prior to use and soy-based hydraulic fluid will be used when possible. Any releases will be reported immediately to the Central Valley Regional Water Quality Control Board, USFS and CDFW. PG&E and/or its contractors will be required to comply with the Construction General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit; Water Quality Order 2009-0009-DWQ and National Pollutant Discharge Elimination (NPDES) System No. CAS000002, as amended by Order Nos. 2010-0014-DWQ and 2012-0006- DWQ). A Spill Containment and Counter Measures plan may be required, in addition to filing a hazardous material business plan with Butte County (if required). For all construction activities, including those activities not subject to the General Permit, a Water Quality Monitoring and Protection Plan will be required. The Water Quality Monitoring and Protection Plan shall include compliance with the Best Management Practices identified in water quality management for Forest System lands in California – Best Management Practices (USFS 2012). Implementation of this mitigation measure would reduce potential impacts to less than significant.

- c. **No Impact.** The Proposed Project is not located within one-quarter mile of an existing or proposed school, so there would be no impact.
- d. **No Impact.** The Proposed Project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5, so there would be no impact.
- e. **No Impact.** The Proposed Project is not located within an airport land use plan or within 2 miles of a public airport or public use airport, so there would be no impact.
- f. **No Impact.** The Proposed Project is not located within the vicinity of a private airstrip, so there would be no impact.
- g. **No Impact.** The Proposed Project is not located in the path of an adopted emergency response or evacuation plan, so there would be no impact.
- h. **No Impact.** The Proposed Project does not include wildlands adjacent to urbanized areas nor are there residences intermixed with wildlands within the Proposed Project boundaries, so there would be no impact.

5.4.10 Hydrology and Water Quality

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Violate any water quality standards or waste discharge requirements?	FERC (2007), final 4(e) Condition Nos. 6, 24, 28, and 33			X	
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	FERC (2007)				X
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	FERC (2007), final 4(e) Condition nos. 14 and 33			X	
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	FERC (2007)				X

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	FERC (2007)				X
f. Otherwise substantially degrade water quality?	FERC (2007)				X
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	FERC (2007)				X
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	FERC (2007)				X
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	FERC (2007)				X
j. Inundation by seiche, tsunami, or mudflow?	FERC (2007)				X

a. Less Than Significant Impact. Water quality standards applicable to surface waters in the Proposed Project area are defined in three primary documents: the Basin Plan (CVRWQCB, 2016); the California Toxics Rule (40 CFR Part 131); and drinking water standards set in California Code of Regulations, title 22 and 17, which are applicable to surface waters of the NFFR designated for municipal water supply. Potential water quality impacts are discussed below, organized by Basin Plan water quality objective (CVRWQCB, 2016), with mercury called out separately due to inclusion of the NFFR on the CWA Section 303(d) list of water-quality-limited water bodies for impairment from mercury (SWRCB, 2012).

Water Temperature. The NFFR downstream of Lake Almanor to Lake Oroville is included on the CWA Section 303(d) list of water-quality-limited water bodies as being impaired for

water temperature (potential sources: hydromodification, flow regulation/modification) (SWRCB, 2012). The State Water Board is in the early stages of developing the methodology for determining North Fork Feather River TMDLs, with the final product expected in the coming years.

Water supply to Poe Reservoir is substantially influenced by regulated flows from upstream hydroelectric projects and from the unregulated portions of the watershed during runoff from winter rain events and spring and early summer snowmelt (FERC, 2007). Although summer water temperature data collected during monitoring conducted by PG&E for the relicensing efforts (1999–2000, 2003) indicate that the Existing Project reach often exceeds the 20°C maximum target, the background NFFR water temperatures have already warmed substantially before reaching the Poe bypass reach (FERC, 2007). Mandatory increases in the minimum flow in the bypass reach of the NFFR below Poe dam in the Forest Service's final 4(e) and draft WQC outline a flow regime that varies by season (month) and water year type (wet, normal, dry, critically dry), measured as mean daily flow (24-hour average flow) and instantaneous flow at PG&E stream gage NF23 at Pulga (USGS gage no. 11404500), approximately 1.6 miles downstream of Poe Dam. Stream Network Temperature Model (SNTMP) modeling conducted by PG&E indicates that the mandatory increases in minimum flows would reduce water temperatures by 0.6 to 1.9°C in normal years, and by 0.6 to 1.7°C in extreme conditions, compared to a 50-cfs release (FERC, 2007). However, due to inflow temperatures, no amount of flow modeled would always be successful in reducing water temperatures to below the 20°C target under all conditions (FERC, 2007).

The FERC staff recommends in the Proposed Project the preparation and implementation of a water temperature monitoring plan to evaluate changes in temperature resulting from new minimum instream flows and to monitor water temperatures of the inflow to the Proposed Project. The plan would be prepared in consultation with the resources agencies, filed with FERC for approval, and consist of continuous temperature monitoring from June 1 through September 30 for the life of the license following issuance of a new license. Monitoring results would be provided to the resource agencies and FERC on a timely basis, and an annual report would be submitted by October 31. The plan would include provisions for possible modification of the monitoring program after the completion of the first 3 years of monitoring and, depending on the monitoring results, changes in the instream flow releases in the reach, if such changes would result in beneficial reductions in water temperatures (FERC, 2007). Similarly draft WQC condition 10 includes the development and implementation of a water temperature monitoring plan. The condition includes a stipulation for reevaluation of the minimum instream flow requirements outlined in Condition 1 of the draft WQC after new releases from Canyon Dam (FERC Project No. 2105).

Climate Change.

State Water Resources Control Board Resolution No. 2017-0012 encourages an integrated approach to managing and adapting to changes in underlying assumptions or considerations as a result of climate change made when issuing permits or regulations. Additionally, the Upper Feather River Watershed Integrated Regional Water Management Plan outlines climate change adaptability; engagement in FERC licensed Projects and protection of water quality and water supply as priorities for in-basin water managers (UFRIRWMP, 2016).

As discussed in section 5.4.8, the Proposed Project does not significantly increase GHG emissions. Considering the Proposed Project does not significantly increase GHG emissions and the Licensee does not control global atmospheric conditions, a combination

of biological and water chemistry monitoring will assure systemic changes in underlying assumptions as a result of climate change will be measured and evaluated.

Condition 10 of the draft WQC requires that the Licensee develop a plan and monitor temperatures over the life of the License. Additionally Condition 10 creates a process following changes in Canyon Dam (FERC Project No. 2105) releases for reevaluating flows in the Poe bypass reach. The Temperature Monitoring Plan will include a stakeholder-driven approach to working through any potential operational changes of the Proposed Project driven by a combination of biological monitoring, location-specific biological management priorities, water chemistry and reasonable measures, as determined by the State Water Board.

Furthermore, Condition 36 of the draft WQC stipulates that the State Water Board shall provide notice and an opportunity to be heard prior to exercising its authority to add or modify water quality certification conditions. This process provides both informal and formal venues for stakeholder input should water temperatures be determined a potential limiting factor for biological success in the Proposed Project.

The combination of mandatory increased minimum flows and monitoring implementation to evaluate Proposed Project effects on water temperature would be a beneficial impact.

pH. No known discharges that would affect pH are expected to occur as a result of Proposed Project activities; therefore, there would be no impact to pH.

Dissolved Oxygen. Water quality monitoring conducted by PG&E for the relicensing efforts (1999–2000, 2003) did not indicate dissolved oxygen (DO) levels below minimum water quality objectives (FERC, 2007). Observed DO concentrations in the Poe bypass reach of the NFFR were generally near or above saturation, with relatively small diel fluctuations (1.0 milligrams per liter [mg/L]) (FERC, 2007). There is a low density of aquatic plants and a relatively steep stream gradient that facilitates high re-aeration rates and low DO demand (FERC, 2007). While measured nitrate concentrations appear to be within the range for supporting algal and macrophyte growth, ranging 0.01–0.7 mg/L, phosphorus concentrations were not reported. There are no known discharges that would further increase nutrient levels, subsequently promoting eutrophication and increased DO demand in the Proposed Project reach. Thus, the Proposed Project would have no impact on DO.

Specific conductance. Water quality monitoring conducted by PG&E for the relicensing efforts (1999–2000, 2003) indicated only a single exceedance of the 150 umhos/cm specific conductance criterion in Flea Valley Creek, a tributary to the Proposed Project reach (156 umhos/cm, October 2003 [FERC, 2007]). However, because there are no known discharges that would affect conductivity as a result of Proposed Project activities, the Proposed Project would have no impact on conductivity.

Fecal Coliform. PG&E conducted total and fecal coliform bacteria testing at multiple locations on the NFFR, indicating no exceedances of bacterial criteria for contact recreation (FERC, 2007). The Proposed Project includes the installation of vault toilets as recreational improvements at Bardees Bar and Poe Powerhouse (FERC, 2007). The installation of vault toilets, which use water-tight tanks for storing human waste material, is not expected to increase bacterial levels in the NFFR. Therefore, the Proposed Project would have no impact to levels of fecal coliform.

Oil and grease. Discharges of fuel, oil, and grease from vehicles used during routine Proposed Project operation and maintenance or construction could impact water quality in the NFFR. Implementation of a hazardous substances plan, as mandated by the Forest

Service's final 4(e) conditions, would provide protective measures intended to eliminate potential leakage and would reduce this potential impact to less than significant.

Turbidity. Water quality monitoring conducted by PG&E for the relicensing efforts (1999–2000, 2003) included five exceedances for turbidity, with up to three of the exceedances occurring in waters entering the Proposed Project reach. Measured turbidity ranged 5.6–7.2 nephelometric turbidity units (NTUs), or just slightly above the criterion (5 NTUs) (FERC, 2007). Erosion from spoil piles located within the Proposed Project boundaries may increase turbidity; these control and management measures are discussed under item c (Pg. 69 below). In addition, as addressed in Section 4.4.7, *Geology and Soils*, item b. (i.e., Proposed Project activities that will result in substantial soil erosion or the loss of topsoil), the development and implementation of a roads management plan would significantly reduce active erosion in the Proposed Project area and minimize the potential for future erosion. The potential risk of erosion and sediment delivery to stream channels due to uncontrolled releases of water from tunnel or penstock failures to unchannelized hillslope areas is, to a certain degree, an unavoidable consequence of the geologic terrain and remote geography of the Proposed Project area. However, the combined impact to turbidity as a result of these Proposed Project activities would be less than significant.

Tastes and Odors. While the NFFR is not used for water supply in the Proposed Project area, and there are no known issues related to water supply (FERC, 2007), existing beneficial uses designated for the NFFR include municipal and domestic water supply. Water quality monitoring conducted by PG&E for the relicensing efforts (1999–2000, 2003) indicated three slight exceedances of the EPA Secondary maximum contaminant level (MCL) for iron (0.3 mg/L) in the NFFR ranging 0.31–0.34 mg/L in March and September 1999, and sampling of spoil pile runoff in 2001 indicated one exceedance for iron at 0.43 mg/L and two for manganese at 0.055 mg/L (EPA Secondary MCL for manganese = 0.05 mg/L) but no corresponding exceedances in the NFFR during the sampling period (FERC 2007). Implementation of erosion control measures at the Proposed Project spoil piles would reduce the potential for future erosion that could affect taste and odor by releasing contaminants such as iron and manganese into the NFFR. Therefore, potential impacts to taste and odor would be less than significant.

MTBE. No known discharges that would affect methyl tert-butyl ether (MTBE) concentrations in the NFFR are expected to occur as a result of Proposed Project activities; therefore, there would be no impact to MTBE.

Trace metals. Currently, runoff from two spoil piles associated with Poe Powerhouse diversion tunnel construction discharge into the NFFR. The piles are located near Bardees Bar (adit no. 1) and 1 mile upstream of Poe Powerhouse adjacent to the railroad grade (adit no. 2) (FERC, 2007). A drainage bypass culvert from the diversion tunnel passes under the spoil pile at adit no. 2 and discharges into the NFFR. The drainage culvert and stations downstream were sampled in 2000–2002 during precipitation events to determine the potential toxicity of runoff from the spoil areas. The highest concentrations of iron, manganese, and nickel were measured at the bypass culvert at adit no. 2, with exceedances to water quality standards observed for iron, copper, cadmium, and manganese in the spoil pile runoff (FERC, 2007). While water quality standards were not exceeded in the NFFR during the same sampling period, the potential exists for future discharges of these metals to the NFFR from the spoil piles. Continued erosion of the spoil piles may also cause metals to be transferred to the NFFR in association with eroded sediments. Proposed PM&E measures for the Proposed Project include implementation of erosion control at the toe of the spoil pile near the NFFR (FERC, 2007), which should decrease the likelihood of future impacts from continued erosion at this location.

Additionally, initiation of revegetation of the Bardees Bar spoil pile is expected to decrease erosion at adit no. 1. Overall, the implementation of the Proposed PM&E measures regarding erosion and possible discharge of heavy metals from the spoil piles would reduce the potential impact of the Proposed Project to less than significant.

Mercury. The NFFR downstream of Lake Almanor to Lake Oroville is included on the CWA Section 303(d) list of water-quality-limited water bodies as being impaired for mercury (potential source unknown). The maximum concentration of total mercury measured during 1999, 2000, and 2003 sampling by PG&E was 2.83 nanograms per liter at Poe-1A (upstream of Poe reservoir), or below applicable regulatory criteria (FERC, 2007). Additionally, DO concentrations measured by PG&E during 1999–2000 and 2003 in the Poe bypass reach of the NFFR were generally near or above saturation. The stable water temperature regime, high aeration potential for the NFFR (high-gradient stream with riffles and rapids), and low density of aquatic plants are cited as reasons for the consistently high DO measurements, including relatively small diel fluctuations (1.0 mg/L [FERC, 2007]). No mercury was found in fish tissue samples collected for the PG&E relicensing studies and recently collected regionally available data are limited to fish tissue samples from locations outside of the Proposed Project area (Melwani et al., 2007). In the upstream Lake Almanor, mercury in fish tissue is generally low (<0.1 part per million (ppm) wet weight) for multiple fish species, with the exception of Sacramento sucker, which exhibited mean mercury levels of approximately 0.85 ppm wet weight in 2006 surveys (exceeding the applicable fish tissue criterion of 0.3 ppm), albeit with wide confidence intervals (Melwani et al., 2007). The combination of low measured total mercury in water, relatively low nutrients, and high DO do not appear to support mercury methylation and subsequent bioaccumulation in the Proposed Project reach under current conditions or the Proposed Project conditions; therefore, no impacts to mercury concentrations would occur as a result of Proposed Project activities.

For the multiple water quality parameters discussed above, the combined impact to water quality standards or waste discharge requirements as a result of Proposed Project activities would be less than significant.

- b. No Impact.** There would be no impact to groundwater.
- c. Less Than Significant Impact.** There would be no alteration of the existing drainage pattern of the site or area in a manner that would result in substantial erosion or siltation on- or off-site under the Proposed Project. However, as described under item a. (above), drainage from two existing spoil piles at the Proposed Project location currently results in erosion and runoff to the NFFR that is potentially contaminated with heavy metals (i.e., iron, copper, cadmium, and manganese) (FERC, 2007). Implementation of proposed PM&E measures for the Proposed Project, including implementation of erosion control measures at the spoil pile near the NFFR and revegetation at spoil pile near Bardees Bar (FERC 2007), as well as the Forest Service's requirement for PG&E to prepare and file an erosion control measures plan for any new construction or non-routine maintenance projects with the potential for causing erosion and/or sedimentation would reduce potential impacts to less than significant levels.
- d. No Impact.** There would be no impact on existing drainage patterns that would significantly change the watercourse or increase runoff from surfaces.
- e. No Impact.** There would be no impact on the capacity of existing or planned stormwater drainage systems or substantial additional sources of polluted runoff.
- f. No Impact.** There would be no impact causing substantial degradation of water quality.

- g. No Impact.** There would be no impact because no housing construction is planned as part of this Proposed Project.
- h. No Impact.** There would be no impact because no new structures are planned as part of this Proposed Project.
- i. No Impact.** There would be no impact because no new structures would be constructed that could potentially fail and cause damage or risk loss of life due to failure.
- j. No Impact.** There would be no impact because the Proposed Project would not cause a seiche, tsunami, or mudflow.

5.4.11 Land Use and Planning

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Physically divide an established community?	FERC (2007), PG&E (2003)				X
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Proposed Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	FERC (2007), PG&E (2003)				X
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	FERC (2007)				X

- a. **No Impact.** There are no established communities located within or near the Proposed Project Boundary.
- b. **No Impact.** The Proposed Project would not conflict with any applicable land use plans and policies.
- c. **No Impact.** There are no habitat conservation plans or natural community conservation plans applicable to the Proposed Project.

5.4.12 Mineral Resources

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	FERC (2007)				X
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	FERC (2007)				X

- a. **No Impact.** The proposed actions would not affect mineral deposits in the region or the mining of placer gold deposits in the area.
- b. **No Impact.** See item a. above.

5.4.13 Noise

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	FERC (2007), PG&E (2003)				X
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	FERC (2007), PG&E (2003)				X
c. A substantial permanent increase in ambient noise levels in the Proposed Project Vicinity above levels existing without the Proposed Project?	FERC (2007), PG&E (2003)				X
d. A substantial temporary or periodic increase in ambient noise levels in the Proposed Project Vicinity above levels existing without the Proposed Project?	FERC (2007), PG&E (2003)				X
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Proposed Project expose people residing or working in the Proposed Project area to excessive noise levels?	NA				X

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
f. For a project within the vicinity of a private airstrip, would the Proposed Project expose people residing or working in the Proposed Project area to excessive noise levels?	NA				X

- a. **No Impact.** Minor and temporary increases in noise could result from construction activities (e.g., chain saw) at recreation sites.
- b. **No Impact.** There would be no exposure to groundborne vibrations or noise levels.
- c. **No Impact.** There would be no permanent increase in the ambient noise level.
- d. **No Impact.** Minor and temporary increases in noise could result from construction activities (e.g., chain saw, construction equipment, traffic) at recreation sites and would be similar to noise associated with routine road maintenance that occurs at and near the Proposed Project.
- e. **No Impact.** No public airports are located within 2 miles of the Proposed Project.
- f. **No Impact.** No private airstrips are located within 2 miles of the Proposed Project.

5.4.14 Population and Housing

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	FERC (2007), PG&E (2003)				X
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	FERC (2007), PG&E (2003)				X
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	FERC (2007), PG&E (2003)				X

- a. **No Impact.** The Proposed Project does not include any actions that would create a need for additional housing or circumstances that would enable population growth.
- b. **No Impact.** The Proposed Project does not include any area used for residential purposes. No homes would be displaced.
- c. **No Impact.** The Proposed Project does not include any area used for residential purposes. No people would be displaced.

5.4.15 Public Services

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
1. Fire protection?	FERC (2007)			X	
2. Police protection?	FERC (2007)			X	
3. Schools?	FERC (2007)				X
4. Parks?	FERC (2007)				X
5. Other public facilities?	FERC (2007)				X

a1. Less Than Significant Impact. There could be a temporary and minimal increase in fire risk associated with constructing the recreation improvements (e.g., trail construction, vegetation clearing and disposal) and removing the bridge at Bardees Bar. There may also be a minimal increase in fire risk associated with recreational use of the Proposed Project area that is expected to increase at least 75 percent as a result of population growth and increased participation in recreational activities. The fire prevention and response plan and fuel treatment plan, which would be developed in consultation with the appropriate state and local fire agencies, would include on-going coordination of wildfire protection and prevention measures that would reduce impacts to less than significant.

- a2. Less Than Significant Impact.** There is no information in the record indicating that there is currently inadequate law enforcement or that additional assistance is needed. Although there may be some increased recreational use, the Proposed Project area would continue to be rural with few structures so any impacts would be less than significant.
- a3. No Impact.** Proposed Project construction and operation would not establish a permanent residential population that would require additional schools.
- a4. No Impact.** Proposed Project construction and operation would not establish a permanent residential population that would require additional parks.
- a5. No Impact.** Proposed Project construction and operation would not establish a permanent residential population that would require other new public facilities.

5.4.16 Recreation

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	FERC (2007), PG&E (2003)				X
b. Does the Proposed Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	FERC (2007), PG&E (2003)		X		

- a. **No Impact.** There are no recreational facilities associated with the Existing Project so there will be no impacts resulting in physical deterioration.
- b. **Less Than Significant Impact with Mitigation Incorporated.** Constructing the Proposed Project recreational developments would have the potential to disturb environmental resources during construction, but the implementation of erosion control and other measures discussed below during construction will reduce potential impacts to less than significant.

Mitigation Measure GS-1 Approval of Construction Activities by the State Water Board

As mentioned above in section 5.4.7(B), Mitigation Measure GS-1 requires State Water Board consultation and approval of construction activities related to required recreational improvements. Each plan will contain a detailed description of the proposed activities, activity boundaries, potential environmental impacts, pollutants of concern, and selection of appropriate best management practices (BMPs) that will be implemented.

Mitigation Measure HHM-1: Hazardous Materials Management and Water Quality Monitoring and Protection Plan

The Hazardous Material Management and Water Quality Monitoring and Protection Plan outlined in section 5.4.9, Mitigation Measure HHM-1, protects against Proposed Project hazardous material spills. The plan will require that during construction within the 100-year flood plain, the use of containment facilities, booms, and an environmental

inspection program will prevent any significant release of hazardous materials from harming the aquatic environment.

With the Forest Service 4(e) conditions, FERC requirements, and the three mitigation measures, the impacts are less than significant.

5.4.17 Transportation/Traffic

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	FERC (2007), PG&E (2003)			X	
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	FERC (2007), PG&E (2003)				X
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	NA				X
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	FERC (2007), PG&E (2003)				X

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e. Result in inadequate emergency access?	FERC (2007), PG&E (2003)				X
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	NA				X

- a. **Less Than Significant Impact.** Additional vehicles may use the Proposed Project area roads to construct the planned recreation improvements; oversized equipment may be needed for installation of pit toilets and the removal of the Bardees Bar Bridge. Consequently, existing traffic levels may increase in the short term. However, FS (4e) condition 40 includes the development and implementation of a Roads Management Plan that outlines maintenance responsibilities, and application of FS approved standards for traffic safety. For these reasons, impacts would be less-than-significant.
- b. **No Impact.** Constructing improvements and installing signs would require CalTrans approval, and traffic control measures consistent with relevant standards would be identified.
- c. **No Impact.** The Proposed Project would not change air traffic patterns.
- d. **No Impact.** Planned recreation improvements will not include traffic hazards as a result of design features and thus will produce no impact.
- e. **No Impact.** No deficiencies in emergency access were identified and the Proposed Project would not change any existing access.
- f. **No Impact.** The Proposed Project would not include any actions relating to public transit, bicycle, or pedestrian facilities.

5.4.18 Utilities and Service Systems

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	NA				X
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	NA				X
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	NA				X
d. Have sufficient water supplies available from existing entitlements and resources, or are new or expanded entitlements needed?	NA				X
e. Result in a determination by the wastewater treatment provider which serves or may serve the Proposed Project that it has adequate capacity to serve the Proposed Project's projected demand in addition to the provider's existing commitments?	NA				X

Poe Hydroelectric Project (FERC No. 2107)

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
f. Be served by a landfill with sufficient permitted capacity to accommodate the Proposed Project's solid waste disposal needs?	NA				X
g. Comply with federal, state, and local statutes and regulations related to solid waste?	NA				X

- a. **No Impact.** There would be no new development that would result in additional waste water discharge requiring treatment.
- b. **No Impact.** See comment a. above.
- c. **No Impact.** There will be no new development that would result in a need for storm water treatment.
- d. **No Impact.** The Proposed Project would use existing water supplies. PG&E holds all necessary water rights to operate the Proposed Project.
- e. **No Impact.** See comment a. above.
- f. **No Impact.** Solid waste would be disposed of only in landfills capable of accommodating all Proposed Project-generated solid wastes.
- g. **No Impact.** The Proposed Project would comply with all regulations relating to disposal of solid waste.

5.4.19 Mandatory Findings of Significance

Issues	Source	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
<i>Would the Proposed Project:</i>					
a. Does the Proposed Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	FERC 2007		X		
b. Does the Proposed Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?					X
c. Does the Proposed Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X	

- a. Less Than Significant Impact with Mitigation Incorporation.** Baseline conditions are the current conditions at the Proposed Project. With the requirements to develop and implement various resource management plans designed to protect and enhance resources in the Proposed Project area, including mitigation measures described in prior sections, there would be less than significant impacts.
- b. No Impact.** Baseline conditions are the current conditions at the Proposed Project. With the requirements to develop and implement various resource management plans designed to protect and enhance resources in the Proposed Project area, there would be no effect.
- c. Less Than Significant Impact.** Baseline conditions are the existing conditions. With measures proposed by the licensee, mandatory conditions by the Forest Service, and mitigation measures, described in prior sections, the Proposed Project would have less than significant direct or indirect adverse effects on human beings.

Section 6.0 Environmental Protection Measures

The potential effects on resources in the Proposed Project area were discussed in FERC’s final EA (FERC, 2007) and PG&E’s final license application (PG&E, 2003) and are summarized below in Table 6. The *Proposed Measure* column describes applicant-proposed measures, agency 4(e) measures, and State Water Board staff measures and indicates their sources and where the measure was analyzed in FERC’s final EA and/or PG&E’s final license application. The *Potential Effect* column describes the expected effect of the measure as assessed by staff.

Table 6. Potential effects on resources in the Proposed Project area

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Erosion Control Measures			
Within 1 year of license issuance, prepare a road management plan and file with FERC for approval.	16; Final 4(e) p. 28–29 (Condition No. 40)		Reduce potential for erosion and stream siltation.
To enhance visual resources, conduct minor painting at Poe Dam, remove the steel bridge at Bardees Bar, initiate revegetation of the Bardees Bar spoil pile, and implement erosion control measures at the toe of the spoil pile near the NFFR.	231; Final 4(e) p. 25 (Condition No. 33)	E6-59, PRS-22	Reduce potential for erosion and stream siltation. Enhance visual resources.
Air Quality Measures			
Implementation of a Fugitive Dust and Emission Control Plan.	Email, Mitigation Measure AQ-1	N/A	Reduce short-term emissions of air pollutants.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Flow-Related Measures			
Pulse flow monitoring plan	11, 232; Final 4(e) p. 16 (Condition No. 24 [Part 2]) WQC rationale 3.4		Evaluate the movement of organic and fine-grained materials in the Poe bypass reach during pulse flows to identify the appropriate magnitude and duration of pulse flows needed to effectively remove fine-grained sediments and organic materials from spawning gravels. Will provide for possible modifications to the pulse flow schedule depending on the study results.
Implement amphibian monitoring plan that includes monitoring impacts of new streamflow on riparian vegetation	125–127, 129, 235, 237, 245–246; Final 4(e) p. 21–22 (Condition No. 28), Final 4(e) rationale for Condition No. 28, p. 3–4 WQC rationale 3.9 and 3.11		Determine if new streamflow conditions are resulting in riparian vegetation establishment, encroachment, or scouring.
Higher minimum stream flows (i.e., increased base flows)	68, 77–78, 81, 114–116; Final 4(e) p. 14–20 (Condition No. 24) WQC rationale 3.1		Protect FYLFs through increased baseflows during FYLF breeding season, reducing risk of affecting egg masses from flow variations.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Implementation of downramping rates	116–117; Final 4(e) p. 19-20 (Condition No. 24 [Part 5])		Prevent stranding of FYLFs tadpoles during summer/fall rearing season.
Monitoring of FYLF populations	116 WQC rationale 3.9		Improve monitoring of FYLF populations to detect if lower mainstem temperatures slow development, increase predation, or increase displacement.
Timing of pulse flows to avoid FYLF breeding and rearing season	121; Final 4(e) p. 17–18 (Condition No. 24 [Part 3]) WQC rationale 3.4		Improve protection of FYLFs.
Minimize the magnitude, duration, and potential adverse ecological impacts of out-of-season discretionary flow events, as well as develop and implement reasonable actions to mitigate for any impacts	Final 4(e) p. 16 (Condition No. 24 [Part 2])		Minimize scour of FYLF egg masses, tadpoles, or metamorphs.
Provide recreation flows only at times in which there are no adverse impacts to biota in the Poe bypass reach, including the establishment of a Poe Recreation Technical Review Group	123-124; Final 4(e) p. 20-21 (Condition No. 27) WQC rationale 3.6		Minimize impacts to biota in the Poe bypass reach.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
During onset of FYLF breeding through metamorph emigration from the Poe main channel, limit recreation flows to periods determined by the RTRG to be protective of FYLF breeding	123–124; Final 4(e) p. 20-21 (Condition No. 27) WQC rationale 3.6 and Condition No. 6		Minimize impacts to FYLFs and hardhead.
Restriction of discretionary, out-of-season flow events that are greater than twice the required minimum streamflow in the Poe bypass reach	Final 4(e) p. 16–20 (Condition No. 24)		Preservation and improvement of aquatic resources in the Proposed Project area.
Implementation of ramping rates during flow changes at Poe Dam	100, 116–120, 122, 138, 177–179, 212, 231–232, 242, 263–265; Final 4(e) p. 16-20 (Condition No. 24)		Preservation and improvement of aquatic resources in the Proposed Project area.
Implementation of recession rates of flows from controllable discretionary or non-discretionary spill events in the Poe bypass reach	Final 4(e) pg. 19-20 (Condition No. 24)	N/A	Protect FYLF egg masses from stranding and associated desiccation.
Water Quality Measures			

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Increase minimum instream flows, as measured at PG&E stream gage NF23 at Pulga (USGS gage no. 11404500) approximately 1.6 miles downstream of Poe dam	1012, 44–53, 58–61; Final 4(e) p. 14-20 (Condition No. 24) WQC rationale 3.1 and Condition No. 1		Decrease water temperatures in the Proposed Project reach.
Prepare and implement a Poe bypass reach water temperature monitoring plan to evaluate changes in temperature resulting from new minimum instream flows and to monitor water temperatures of the inflow to the Proposed Project	12 WQC rationale 3,10 and Condition No.10		Track improvement in water temperatures due to increased minimum flows.
Initiate revegetation of the Bardees Bar spoil pile and implement erosion control measures at the toe of the spoil pile near the NFFR.	10, 16, 55–56; Final 4(e) p. 25 (Condition No. 33) WQC rationale 3.8.2 and Condition No. 8		Reduce the potential for future severe erosion or mass movement that could affect water quality by releasing fine grain sediment or previously undetected contaminant (i.e., iron, copper, cadmium, manganese) “hot spots” into the NFFR.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Develop and implement a hazardous substances plan	Final 4(e) p. 8 (Condition No. 6)		Prevent potential spills of hazardous materials and improve storage and/or spill cleanup.
Approval of construction activities by the State Water Board	N/A, Mitigation Measure GS-1		Reduce impacts to soil erosion or loss of topsoil
Hazardous materials management and water quality monitoring and protection plan	N/A, Mitigation Measure HHM-1		Reduce release of hazardous materials
Monitor fish populations, benthic macroinvertebrates, and amphibians over the life of the license	81; Final 4(e) p. 21–22 (Condition No. 28) WQC rationale 3.9 and Condition No. 9		Minimize and mitigate the effects of scheduled minimum instream flows on fish and wildlife resources
Terrestrial Measures			

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Annually review the current lists of special-status plant and wildlife species with the potential to occur on all lands; for those likely to occur, assess and report on potential Proposed Project effects and implement any required resource management measures	15, 24, 27, 126-130, 235, 247-248; Final 4(e) p. 26 (Condition No. 35)		Improve protection of special-status plant and wildlife species.
Prepare a biological evaluation before any new Proposed Project feature construction on National Forest System lands, including pre-construction surveys if species information is lacking.	24, 127, 129-130, 142-145, 147, 166; Final 4(e) p. 26 (Condition No. 36)		Improve protection of Forest Service sensitive and/or management indicator species or their critical habitat.
Develop and implement an invasive weed management plan to cover all Proposed Project lands	9, 15, 24, 27, 127, 130–131, 235, 247; Final 4(e) p. 27 (Condition No. 37)		Improve protection of native plant species and wildlife habitat.
Develop and implement a riparian monitoring plan	15, 125–127, 129, 235, 237, 244–246; Final 4(e) p. 22 (Condition No. 28) and p. 4 of Supplemental Rationale WQC rationale 3.11 and Condition 11		Improve monitoring and protection of riparian vegetation.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Bald Eagle Management Plan	138, 140; Final 4(e) p. 28 (Condition No. 38)		Improve monitoring and protection of bald eagles.
Amphibian Monitoring Plan	Final 4(e) p. 21–22 (Condition No. 28) WQC rationale 3.9 and Condition 9		Improve adaptive management and conditions for FYLFs in the Poe bypass reach in response to new streamflow conditions.
Recreation Measures			
Establishment of a Poe Recreation Technical Review Group, comprising the Forest Service and other interested governmental agencies, for the purpose of consulting in the development and scheduling of recreation river flows in the Poe bypass reach	Final 4(e) p. 21 (Condition No. 27 Part 3) WQC rationale 3.6	--	Availability of viable recreational boating opportunities—possible increase, decrease, or no change.
Provide portable restrooms, trash receptacle, signage, regavelled road and parking area and trimmed vegetation at Sandy Beach	157–158; Final 4(e) p. 23 (Condition No. 29) WQC rationale 3.8 and Condition No. 8	E5-216; E5-227–233	Improve visitor comfort, safety sanitation and shoreline access.
Provide table, vault restroom, trash receptacle and signage at Bardees Bar	161–163 WQC rationale 3.8 and Condition No. 8	E5-216; E5-233–238	Improve visitor comfort, safety, and shoreline access; minimize pollution, erosion, and damage to natural and cultural resources.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Improve beach trail access and provide signage at Poe Beach	166; Final 4(e) p. 23 (Condition No. 29) WQC rationale 3.8 and Condition No. 8	E5-216; E5-238-240	Improve visitor comfort, safety, and shoreline access; minimize pollution, erosion, and damage to natural and cultural resources.
Provide vault restroom, trash receptacles, additional parking and signage at Poe Powerhouse	168–169; Final 4(e) p. 23 (Condition No. 29) WQC rationale 3.8 and Condition No. 8	E5-216; E5-240–247	Improve visitor comfort, safety, and shoreline access; minimize pollution, erosion, and damage to natural and cultural resources.
Provide flows for recreational boating in the Poe bypass reach	179–182 WQC rationale 3.6 and Condition No. 6	E5-225-226; E5-320–322	Increase recreational boating opportunities in Poe bypass reach.
Prepare a recreation improvement and monitoring plan	151–152; Final 4(e) p. 22-23 (Condition No. 29) WQC rationale 3.8 and Condition No. 8	E5-339	Accommodate Proposed Project recreation use while protecting natural and cultural resources.
Provide \$12,000/year to support a river ranger	174–175; Final 4(e) p. 24 (Condition No. 30)	--	Increase visitor awareness of applicable laws and regulations leading to improved resource protection and improved visitor satisfaction.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Provide flow information via toll free phone or internet	176; Final 4(e) p.24 (Condition No. 31) WQC rationale 3.7 and Condition No. 7	--	Improve visitor information about flow conditions.
Prepare a fire prevention and response plan and a fuel treatment plan	194–195; Final 4(e) p. 25 (Condition No. 32)	--	Improve protection for Proposed Project infrastructure, public use, and environmental resources.
Prepare a visual management plan	196–197; Final 4(e) p.28 (Condition No. 39)	--	Improve aesthetic appearance of Proposed Project infrastructure that blends, to the degree possible, with the surrounding natural-appearing setting.
Revegetate Bardees Bar spoil pile	196–197; Final 4(e) p. 25 (Condition No. 33) WQC rationale 3.8.2 and Condition No. 8	PRS-22, E6-59	Improve aesthetic appearance of Proposed Project infrastructure that blends, to the degree possible, with the surrounding natural-appearing setting.
Prepare a road management plan	192; Final 4(e) p.28 (Condition No. 40)	--	Identify, use and maintain roads to designated standards commensurate with Proposed Project use. Obtain proper authorizations for public road use as necessary.

Proposed Measure			Potential Effect
Description	Analysis Source		Description
	FERC EA Pages FS 4(e) WQC	PG&E LA Pages	
Conduct a feasibility study to improve an existing abandoned trail between Bardees Bar and the road to Poe Powerhouse; develop trail based on results	164–165 WQC 3.8.2 rationale and Condition No. 8	--	If study supports trail development, increase opportunities for hiking.
Cultural Resources Measures			
Monitor two archaeological sites (CA-BUT-42H and CA-BUT-1665) after the recreation season each fall for 5 years	201, 203	E4-28 to E4-29	Reduce potential adverse impacts to historic properties.
Within 6 months of license issuance, prepare a final HPMP in consultation with appropriate federal, state, and local agencies and file with FERC for approval in accordance with the PA.	203	--	Reduce potential adverse effects to historic properties.

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