

STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD

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In the Matter of Water Quality Certification for the

**PIT 3, 4 AND 5 HYDROELECTRIC PROJECT**

**FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 233**

SOURCE: Pit River

COUNTY: Shasta County

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**Introduction**

Pacific Gas and Electric Company (PG&E) has applied to the Federal Energy Regulatory Commission (FERC) for a new license for its Pit 3, 4, and 5 Hydroelectric Project (Project). The Project spans approximately 38 miles of the Pit River in Shasta County near the towns of Burney and Big Bend. The Project includes four dams, four reservoirs and three powerhouses with a combined generation capacity of 325 megawatts, and is described in detail in PG&E's final license application submitted in October 2001. PG&E proposes to operate the Project in accordance with the Protection, Mitigation and Enhancement (PM&E) measures of the Pit River Collaborative Team Agreement, which are designed to protect and enhance environmental resources, including various measures to protect and monitor water quality, measures to control flows to the bypassed reaches and manage Lake Britton water levels to enhance habitat for aquatic biota.

Before FERC can issue a new license for the Project, PG&E must obtain water quality certification under section 401 of the Clean Water Act from the State Water Resources Control Board (State Water Board) (33 U.S.C. § 1341). The State Water Board must certify that the Project will comply with the applicable provisions of the Clean Water Act, including water quality standards set forth in the Water Quality Control Plan for the California Regional Water Quality Control Board, Central Valley Region (Basin Plan). The State Water Board analyzes the Project's overall effect on water quality and includes conditions in the certification, if necessary, to adequately protect the designated beneficial uses identified in the Basin Plan.

When determining what conditions may be necessary to adequately protect beneficial uses of water on the Pit River, the State Water Board considers the system potential, or natural background conditions in the watershed. The hydrology of the Pit River is unique when compared to other California Rivers because of the high year-round base flow. During the dry periods of summer and fall, inflow to Lake Britton is a combination

of spring flows from Big Lake, Hat Creek and Burney Creek. Higher flows during the winter and spring result from local precipitation and snow melt runoff from the Warner Mountains in northeastern California. The greatest flow variation occurs during the spring run-off period and is affected by snow pack in the Warner Mountains and precipitation.

Based on hydrologic records, average estimated monthly-unimpaired flows in the Pit River ranged from 2,007 cubic feet per second (cfs) (August) to 4,629 cfs (March) in the Pit 3 Reach; 2,062 cfs (August) to 4,870 cfs (March) in the Pit 4 Reach; and 2,171 cfs (August) to 5,254 cfs (March) in the Pit 5 Reach. The minimum instream flow requirements in PG&E's current FERC license are 150 cfs in the Pit 3 Reach, 150 cfs in the Pit 4 Reach, and 100 cfs in the Pit 5 Reach. Since 1987, PG&E has maintained these required flow conditions except during high-flow spill events that exceed Project capacity, typically occurring in the late winter through spring. Prior to 1987 no water was released to the Pit 3 Reach. Power operation has reduced the frequency and magnitude of small and some midsized spring high-flow events, which has adversely affected important stream processes. In addition, when powerhouses are off line for maintenance or due to mechanical failure, water is routed down the river resulting in short spikes in flow during the time of year when flows are normally low and steady. Spikes can cause undesirable environmental impacts. Operation of the Project, and its associated reduced flows and altered hydrology, has increased water temperature in the Pit 4 and 5 Reaches resulting in impairments to flow dependant beneficial uses, reduced aquatic habitat, increased riparian encroachment, out-of-season spill events, reduced sediment transport, and a loss of whitewater boating opportunities.

### **Pit River Collaborative Team**

The Pit River Collaborative Team (PRCT) was formed in November 1998 to serve as a forum for negotiation, compromise, and agreement among the agencies, tribes, non-governmental organizations (NGO's), and individuals with authority or interests in the Pit River. The PRCT met regularly over five years, culminating in the submittal of the PRCT Agreement to FERC on October 29, 2003. The scope of the final PRCT Agreement was limited to flow-related PM&E measures that better emulate the natural, unimpaired hydrology of the Pit River, to the extent possible, while balancing the needs of flow dependent resources, including fisheries, foothill yellow-legged frogs (FYLF), western pond turtles, riparian plants, macroinvertebrates (such as insects and mollusks), bald eagles, various recreational uses (whitewater boating, wading-based fishing, and swimming), water quality (including water temperature), and power production. PRCT measures were also developed to protect or enhance resources in Lake Britton, including water quality, fish habitat, and recreational uses. This was achieved through the careful balancing of resources by thoroughly evaluating the needs of each resource. The evaluation started with a review of the status of each resource under the current Project operations. Once the current status was established, the PRCT determined if the Project met the desired conditions of the agencies, or other PRCT members.

State Water Board staff provided input on Basin Plan water quality standards compliance to the PRCT as it developed recommended resource protection measures, and assisted the PRCT in crafting proposed measures with full consideration of the water quality standards. In general, the PRCT Agreement measures, as selected by FERC staff as its preferred alternative in the Final Environmental Impact Statement, adequately protect designated beneficial uses and properly balance the needs of various flow-dependent resources. Water quality certification conditions implement the substantive requirements of the flow-related PM&E measures in the PRCT Agreement, with some language amendments designed to make the measures enforceable conditions.

### **California Environmental Quality Act Findings and Mitigation Monitoring and Reporting Plan**

The State Water Board is the lead agency under the California Environmental Quality Act (CEQA), in connection with the proceeding to consider issuing water quality certifications for the Project. (Pub. Resources Code, §§ 21000-21177.) When a project requires compliance with both CEQA and the National Environmental Policy Act (NEPA), and the federal Environmental Impact Statement (EIS) is prepared first and meets the requirements of CEQA, the state agency should use the EIS rather than prepare its own Environmental Impact Report (EIR). (Cal. Code of Regs., tit. 14, §15221.) Consistent with this policy, the State Water Board used the FERC EIS rather than prepare an EIR for the purposes of CEQA. The State Water Board circulated a document that added any points of analysis not covered in the EIS but required under CEQA and circulated that in accordance with the standards set forth in section 15087, subdivision (a) of the California Code of Regulations, title 14. (Cal. Code Regs., tit. 14, §15225.) Parties had 45 days to submit CEQA comments and the State Water Board responded to comments in writing on March 7, 2006. The State Water Board has reviewed and considered this information. Combined with the final EIS, these documents comply with CEQA, and reflect the independent judgment of the State Water Board.

CEQA requires that the lead agency make one or more of a set of three findings whenever an EIR identifies a significant effect on the environment. These findings are set forth in section 21081 of the Public Resources Code:

- (1) Changes or alterations have been required in, or incorporated into, the 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.)

When significant effects are subject to a finding under paragraph (3) of subdivision (a), the public agency finds that specific overriding economic, legal, social, technological, or other benefits of the project outweigh the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (b).)

Under NEPA and CEQA, a project may be analyzed for its incremental effects over existing baseline conditions. In an analysis of an already existing hydroelectric project, reauthorizing the project will not yield many environmental impacts because most of the impacts have already occurred and, when compared to the existing condition, do not register as significant. Thus, most of the potentially significant impacts identified in the EIS are associated with the proposed PM&E measures, and are reduced to a level of less than significant with the implementation of mitigation measure(s) under various resource plans described in the PRCT PM&Es and additional FERC requirements. These findings are made under Public Resources Code section 21081, subdivision (a)(1). Each mitigation measure shall be made enforceable by incorporation into State Water Board water quality certification issued to PG&E. (Pub. Resources Code, § 21081.6, subd. (b).) Some potentially significant impacts can be mitigated; however, the mitigation can and should be adopted by the FERC and placed as conditions in the License. Mitigation measure numbers 11, and 13 through 21, in Attachment A are within the responsibility and jurisdiction of the FERC and can and should be adopted and included in the FERC license. These findings are made under Public Resources Code section 21081, subdivision (a)(2). It is legally infeasible for the State Water Board to ensure the implementation of mitigation measures that are outside the scope of the State Water Board's jurisdiction under section 401 of the Clean Water Act. To the extent that impacts may be unavoidable because these mitigation measures are not incorporated into the federal license, the State Water Board finds that any adverse environmental effects are outweighed by the benefits of the proposed Project.

The State Water Board finds that most, if not all, of the FERC staff recommendations in the FEIS clarify, coordinate, or make more specific, mitigation measures already proposed by PG&E or the PRCT, and do not add elements to the Project that could have an adverse impact to the environment. The FERC staff recommendations are incorporated into the findings.

Public Resources Code section 21081.6(a) requires that if a public agency makes changes or alterations in a project to mitigate or avoid the significant adverse environmental effects of the project, it must adopt a monitoring or reporting program to ensure compliance with the changes or alterations. The mitigation, monitoring and reporting plan is contained within the findings. Most mitigation measures are bundled into various plans that include monitoring and reporting elements. For clarity and administrative ease, potential impacts are listed, followed by the applicable mitigation measure(s). Each plan is fully described under the primary impact that it mitigates, and assigned a mitigation measure number. Full plan descriptions will not be repeated.

Accordingly, the State Water Board adopts the findings for the Pit 3, 4, 5 Hydroelectric Project as detailed in Attachment A of this document.

## **Water Quality Certification Conditions**

### **Minimum Stream Flows**

The goal of the Minimum Stream Flows condition is to achieve the greatest increase in aquatic habitat for fish, while balancing the needs of anglers, other aquatic species, foraging bald eagles, and power generation, with a hydrograph shape that more closely resembles the unimpaired condition. Minimum stream flows are adjusted seasonally so that higher minimum stream flows are provided during the wetter winter seasons and reduced stream flows are provided during the summer dry period, while allowing for greater power generation during the period of highest power demand (i.e. summer period). The minimum stream flows increase in magnitude in each consecutive downstream reach to mimic the increase in stream flows that would occur in the unimpaired condition. Additional stream flow will occur naturally within each reach based on inflow from tributaries and springs supplying ground water to the river.

The minimum stream flows provide a balance of protection for the cold freshwater habitat, warm and cold spawning, and wildlife beneficial uses in the Pit River. Temperatures in the Pit 3 Reach will be closer to optimal conditions for hardhead while still providing temperatures that protect trout. Temperatures in the Pit 4 and 5 Reaches will decrease, enhancing trout habitat while remaining in a range suitable for hardhead. The flows will also increase fish habitat, while continuing to provide wading-based angling opportunities. The improved habitat conditions should result in increased trout populations and improved fishing. Wading may become more difficult in certain locations; however, angling opportunities will generally improve with higher trout populations, and there are options to use new fishing methods such as float tubes or kayaks. Finally, minimum stream flows in the Pit 4 Reach are designed to protect populations of FYLF.

### **Fish**

To develop a minimum stream flow regime, the PRCT considered the relationship of flow and habitat for several species and life stages of fish. PG&E conducted extensive instream flow modeling including both 1-dimensional and 2-dimensional Physical Habitat Simulation Models, and habitat mapping for multiple fish species and FYLF. These habitat models are described in detail in the FERC Final Environmental Impact Statement (FEIS) and the results are summarized in Tables 28-30 (FERC FEIS pages 126-128). In general, the models show that as flow increases fish habitat increases, and that juvenile life stages need less water than adult life stages. Because the adult life stage is the most limiting, more consideration was given to the flows needed for the adult life stage. Emphasis was placed on flows that will enhance trout and sensitive native fish species. The models show that the increased minimum flows will result in a significant increase in fish habitat.

### Water Temperature

Water temperature modeling shows that the Minimum Stream Flows condition will increase daily minimum and average temperatures in the Pit 3 Reach and decrease the maximum and average daily temperatures in the Pit 4 and 5 Reaches. All three reaches will have temperatures that fall within or on the borderline of optimal conditions for rainbow trout and for hardhead. Optimal water temperatures for growth and survival of rainbow trout are 59–64°F (15–18°C) and mortality occurs at 73–81°F (23–27°C). Hardhead prefer temperatures exceeding 68°F (20°C) during warm summer months, with optimal temperatures ranging from 75–82°F (24–28°C). Though hardhead are known to prefer warmer waters, 2002 snorkel surveys of the Pit 3 and Pit 4 Reaches found hardhead in abundance where temperatures were between 15 and 17°C (59 and 63°F). Slight increases in temperature in the Pit 3 Reach improve conditions for hardhead while maintaining temperatures suitable for rainbow trout. Decreased water temperature in the Pit 5 Reach should improve conditions for rainbow trout while remaining in a range suitable for hardhead.

### Bald Eagles

In the FEIS, FERC staff analyzed the impact of increased instream flows and whitewater boating flows on bald eagles. Three nesting pairs of bald eagles utilize the river reaches. Bald eagles prefer shallow and slow moving water when foraging, and are often found on the reservoirs. During the test flows in 2002, foraging increased in the river reaches and the pair in the Pit 5 Reach was observed feeding at a nearby trout pond. The habitat mapping study showed that the amount of shallow/slow habitat will increase up to about 1,800 cfs. The 2-dimensional modeling showed the habitat for bald eagles is similar to that for fry and juveniles life stages of most fish. Because the Minimum Stream Flows will increase the amount of adult fish habitat, and increase the amount of pool habitat, bald eagle foraging opportunities should increase.

### Angling

The Pit River is recognized as one of California's best fly fishing rivers, and the Pit 3 Reach is designated as a wild trout fishery by the California Department of Fish and Game (DFG). Wadeability is an important consideration in assessing the acceptability of flow conditions for recreational fishing in the Project area. PG&E conducted a study during the test flows in 2002 to analyze the relationship between flow level and experience quality for both spin and fly anglers. The study found that the flows in the Minimum Stream Flows condition are sometimes over the maximum "acceptable range" for fly fishing in all the reaches, specifically in the Pit 3 Reach, where the proposed flow of 280 cfs is higher than the maximum acceptable flow of 250 cfs, and the Pit 4 Reach, where the proposed base flow of 350 cfs is higher than the upper acceptable flow of 300 cfs. A change in river stage from 250 cfs to 280 cfs, and 300 cfs to 350 cfs will not impact wading significantly. Flows in the 250 to 300 cfs range were determined by anglers to be acceptable even though the study used a limited number of anglers, and was conducted at flows of 165, 395, 610, and 800 cfs. Moreover, the study did not consider changes in the fish populations and the ease of catching fish under the proposed flows, reduced riparian plants on stream margins that will make fishing easier, and other methods of fishing, such as float tubes or kayaks, that could be used.

At the current instream flows, optimum trout habitat tends to be located in the thalweg (area of highest flow in the channel) near the center of the river. The 2-dimensional modeling shows that as flow increases, optimum trout habitat moves from the thalweg toward the edges of the river where the habitat is better and more accessible to anglers. While wading may be more challenging in higher flows, the access to fish habitat and improved fish populations should improve overall fishing conditions. In addition, different types of fishing opportunities may occur using float tubes or kayaks.

#### Foothill Yellow Legged Frog and Winter/Spring Spill Flow

The Minimum Stream Flows in the Pit 4 Reach during the spring season are relatively higher and extend for a longer period of time to protect identified populations of FYLF. These frogs generally deposit their eggs on the river substrate during the spring season as the flow in the river recedes (although the cues for initiation of breeding and egg deposition may include water temperature, air temperature, daylight length, and/or hydrology). Following deposition, the eggs are vulnerable to increases and directional changes in stream flow that can cause the egg masses to shear from the substrate. The higher spring season flows for longer periods will minimize the effects of uncontrollable stream flow increases by reducing changes in velocity and direction.

Although the Project does not have sufficient storage to substantially control flow in excess of the Project's diversion capacities, it is capable of controlling the bottom end of the receding hydrograph and small runoff events. The bottom end of the receding hydrograph is important for the maintenance of the stream channel for fish and aquatic organisms and the riparian community for wildlife and terrestrial resources. Therefore, Minimum Stream Flows during the winter spill cessation are adjusted to provide a more gradual down ramping of the receding hydrograph to avoid abrupt termination of spill flows. In the Pit 3 and Pit 5 Reaches, this is accomplished by providing higher required minimum stream flows for a specified number of days as the winter spill recedes. If spill is reinitiated, these ramp-down requirements will be applied again. In the Pit 4 Reach, the ramp-down is achieved by providing higher required minimum stream flows between specific calendar dates. The difference in approaches is based on the presence of the breeding population of FYLF in the Pit 4 Reach, and the need to avoid changes in stream flow direction that could be caused by the reinitiating of spills. This condition also recognizes that even under unimpaired conditions, there are certain years in which Lake Britton will not spill, and the stream flow in the Pit River will remain relatively constant. Therefore, in non-spill years, the Minimum Stream Flows remain relatively constant throughout the year.

#### **Freshet Flows**

The intent of the Freshet Flow condition is to insure that flows of sufficient magnitude to cleanse the stream channel and recharge the riparian ground water will occur at least every other year. These flows are termed "freshet flows" since they are significantly less than flood flows and are of a relatively short duration. Successive low flow years in which no spill occurs may result in accumulation of fine sediments and organic materials

in the river substrate, increased encroachment of vegetation into the river channel, and reduced germination and recruitment of riparian vegetation. Freshet flows are intended to perform this function by providing a stream flow equivalent to a modest spill at a time of year when spills typically occur.

The total duration of a freshet flow, including ramp-up, peak, and ramp-down, is intended to simulate a natural spill event and receding hydrograph. This amount of stream flow will move the substrate sufficiently to cleanse it of accumulated fine sediments and organic debris, and move, sort, and redistribute spawning gravels for fish and aquatic organisms. The freshet flows also ensure that the riparian ground water will be recharged, minimizing stress on the riparian plant community caused by successive dry years. Freshet flows will reduce vegetation encroachment into the stream channel, provide access to diverse habitat on the channel floor for aquatic species, prevent, reduce, or remove bullfrog populations, and provide recreational boating opportunities. The timing of these freshet flows is such that they will avoid interrupting FYLF breeding and egg deposition, and recharge the riparian water table prior to seed germination and the plant-growing season.

The condition allows the Licensee to take advantage of naturally occurring spill events that may not be of sufficient magnitude or duration to qualify as a freshet flow. The requirement for a freshet flow may be met by supplementing these natural events with additional stream flow by reducing electric power generation. The condition also allows spills resulting from maintenance outages to qualify as freshet flows if they are of sufficient magnitude and duration.

The Freshet Flow condition measure includes a provision that freshet flows shall not be initiated if mean daily water temperature at gage PH30 exceeds 11° C for two consecutive days in the two-week period prior to the scheduled initiation. This condition should protect FYLF eggs from unseasonably warm flows.

### **Reduction of Out-of-Season Spill Events**

The intent of the Out-of-Season Spill Flows condition is to avoid and minimize the effects of discretionary spill flows during the time of year when stream flow is otherwise at a low, constant level. Changes in electric power demand over the past few years have led to increased occurrence of discretionary out-of-season spills into Project-affected reaches of the Pit River. Under certain power demand conditions, water is spilled to bypass an off-line generating unit in order to transport water to downstream generation facilities. The result has been occasional large, short duration increases in stream flow followed by rapid declines during the summer season when the stream flow would normally be at low, constant levels.

Spikes in stream flow can interrupt reproductive cycles of aquatic organisms or cause displacement of young-of-the-year fish, resulting in long-term population affects. Additionally, aquatic vegetation can be dislodged and scoured from the streambed and macroinvertebrates can be dislodged, reducing this source of food for fish. Other



detrimental effects on the aquatic ecosystem are not so easily detected, but can be significant in terms of species survival. The ecosystem would likely recover quickly from occasional, infrequent occurrence of out-of-season spills, but repeated occurrences could impair long-term water quality.

This condition seeks to avoid utilizing the river channel as a means of bypassing an out-of-service generation unit in order to keep downstream units on-line. Additionally, the condition requires the utilization of all available upstream Project water storage capacity in the event of a powerhouse outage. Once all storage is utilized, spills cannot be avoided if the off-line generating unit remains off-line.

### **Ramping Rates**

Sudden increases or decreases in stream flows can be disruptive to an aquatic ecosystem. Disruptions vary with the season of occurrence and can, for example, result in flushing or relocating individual organisms to less desirable habitat or locations, scouring of eggs or nests, and stranding, trapping, loss to predation, and desiccation of eggs as water levels recede. Under some circumstances the Project has the ability to control the rate of change in stream flow and avoid these disruptions. The goal of the Ramping Rates condition is to minimize disruptions to aquatic ecosystems caused by rapid changes in regulated stream flow magnitude.

In general, ramping rates are applied in times when there are regulated changes in stream flow. The condition specifies a ramping rate of 0.5 foot/hour, similar to the natural rate of stream flow recession. One exception is the specified ramping rate for returning an off-line generating unit to service when spill is occurring. When returning a unit to service during a spill, the Project has the ability to abruptly change the rate of stream flow resulting from the spill. The condition provides for a generating unit to return to service over time, without creating a sudden change in stream flow rate. The specified ramping rate for this circumstance is 50 percent of the stream flow in excess of the required minimum stream flow, during a 24-hour period. This special ramping rate is less than a rate of 0.5 foot/hour.

### **Recreation Stream Flow Releases**

Historically the unimpaired flow of the Pit River would have provided year round boating opportunities. However, Project operations eliminate stream flows in the boatable range during the warm summer months. The Recreation Stream Flow Releases condition is intended to provide whitewater boating opportunities in the Pit 5 Reach during warm months preferred by boaters. Recreation Stream Flow Releases are limited to the Pit 5 Reach in order to protect the trout fishing in the Pit 3 Reach during the summer, and to avoid flow fluctuations, which might adversely impact the population of FYLF located in the Pit 4 Reach.

Due to uncertainty regarding the effects of recreation stream flow releases in the Pit 5 Reach ecosystem, the condition provides for a maximum of five years of baseline

studies prior to the first flow release. This condition calls for the Licensee to develop a recreation stream flow release plan consisting of four elements.

First, baseline data is to be collected to identify conditions in the Pit 5 reach following the implementation of new Minimum Stream Flows. The establishment of a baseline is necessary in order to ascertain if recreation stream flow releases during the late summer and early fall seasons have an effect on the aquatic biota. Because of the amount of baseline information already collected, the State Water Board will limit the collection of baseline data to two years before initiating boating events, unless the Deputy Director of the Division of Water Rights (Deputy Director) finds that new information provides a compelling reason to initiate another year of baseline data collection.

Second, the recreation stream flow release plan establishes a schedule for recreation stream flow events to provide boating opportunities during the warmer months with consideration of sensitive life stages and the timing of reproductive cycles of aquatic organisms. The late summer/early fall period would be the least damaging to aquatic organisms. The initial number of recreation stream flow release days is based on providing a reasonable level of boating opportunity while limiting the impact of providing such flows on power generation. The initial three-year period for monitoring boater participation during the recreation stream flow releases was selected to allow assessment of the level of boater use while allowing sufficient time to conduct environmental studies.

Third, the plan includes both ecological and boater-use monitoring. In this way the effects of the recreation stream flows on each of these beneficial uses can be determined. The condition establishes limits on the scope of the monitoring to assure the monitoring is adequate, but limited to essential information. Fourth, the plan includes an adaptive management element to allow for adjusting scheduling, magnitude and frequency of recreation stream flow releases based on the information gathered through the baseline and monitoring studies.

### **Stream Flow Information**

The intent of the Stream Flow Information condition is to provide the public with information on stream flow conditions in Project-affected reaches of the Pit River. Many of the public recreation and river use activities in the Project area are affected by the magnitude of stream flow in the Pit River. Project operations affect stream flows in the Pit River. Presently, the public has limited ability to obtain stream flow information in advance of arriving at the river.

Whitewater boaters need information on stream flows in order to know where and when adequate stream flow is available for their particular craft and skill level. While recreation stream flow releases are planned for the Pit 5 Reach during August and September of each year, boaters can also find opportunities for boating at other times of the year and in other reaches if they have access to flow information. Anglers need

stream flow information to determine if they will likely be able to safely fish a particular reach or have stream flow levels that they find suitable for enjoyable fishing. By providing current day and the previous seven days of flow information, users can assess if flows are trending up or down as they plan their trips to the Pit River.

Boater and angler groups currently have electronic bulletin boards capable of posting stream flow information. By utilizing these third party organizations, the public will be able to access the information through familiar channels and it will be up to the individual to assess the suitability of a particular stream flow for their desired activity. The stream flow information system will also make information available regarding planned changes in stream flows such as maintenance outages or freshet flow releases.

In addition to making stream flow information available through phone and internet, the condition provides for direct notice to the communities of Big Bend and the Big Bend Rancheria of planned freshet flow releases and recreation stream flow releases. These communities are located near the river, and residents routinely use the river. Additionally, members of the Pit River Tribe gather food such as fish and mussels from the river. Providing direct notification of planned significant stream flow releases to these communities will provide information that may be essential to their river-oriented activities.

## **WATER QUALITY CERTIFICATION FOR FEDERAL PERMIT OR LICENSE**

### **BY THE EXECUTIVE DIRECTOR:**

1. The federal Clean Water Act (33 U.S.C. §§ 1251-1387) was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a).) Section 401 of the Clean Water Act (33 U.S.C. §1341) requires every applicant for a federal license or permit which may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the project will be in compliance with specified provisions of the Clean Water Act, including water quality standards and implementation plans promulgated pursuant to section 303 of the Clean Water Act (33 U.S.C. § 1313). Clean Water Act section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirement of state law. Section 401 further provides that state certification conditions shall become conditions of any federal license or permit for the project.
2. The California Regional Water Quality Control Boards have adopted, and the State Water Board has approved, water quality control plans (basin plans) for each watershed basin in the State. The basin plans designate the beneficial uses of waters within each watershed basin and water quality objectives designed to protect those uses. Section 303 of the Clean Water Act requires the states to develop and adopt water quality standards. (33 U.S.C. § 1313.) The beneficial uses together

with the water quality objectives that are contained in the basin plans constitute state water quality standards under section 303.

3. The basin plan for the Central Valley-Sacramento/San Joaquin River Basins identifies municipal and domestic supply, irrigation, stock watering, power, contact recreation, canoeing and rafting, non-contact recreation, cold freshwater habitat, warm and cold spawning, and wildlife habitat as existing beneficial uses, and warm freshwater habitat as a potential beneficial use, of the Pit River (mouth of Hat Creek to Shasta Lake). Protection of the instream beneficial uses identified in the basin plan requires maintenance of adequate instream flows as well as effluent limitations and other limitations on discharges of pollutants from point and non-point sources to the Pit River and its tributaries.
4. The authority to issue or deny water quality certification is delegated to the Executive Director of the State Water Board. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)
5. On June 9, 2004, FERC issued the final environmental impact statement (FEIS) for the Project, pursuant to the requirements of the National Environmental Policy Act (NEPA). That document presents an evaluation of the Project, including PG&E's proposal to operate the Project in accordance with the PM&E measures for reservoir operations, minimum streamflows, freshet flow releases, out-of-season spill flows, recreation streamflow releases, ramping rates, and streamflow information developed by the Pit River Collaborative Team (PRCT) Agreement. In addition, the FEIS analyzes effects of the U.S. Forest Service (FS) conditions issued under section 4(e) of the Federal Power Act and other agency recommendations, and adds FERC staff measures that clarify, coordinate and make more specific, measures already proposed.
6. When a project requires compliance with both CEQA and NEPA, and the federal environmental impact statement (EIS) is prepared first and meets the requirements of CEQA, the state agency should use the EIS rather than prepare its own Environmental Impact Report (EIR). (Cal. Code of Regs., tit. 14, §15221.) Consistent with this policy, the State Water Board, as lead agency under the California Environmental Quality Act (CEQA), used the FERC FEIS (FERC/FEIS 0158F, June 2004) rather than prepare an EIR. On December 21, 2005, the State Water Board circulated a supplemental letter and draft certification that added any points of analysis not covered in the FEIS but required under CEQA. The State Water Board provided public notice of the availability of the FEIS and its intent to rely on the federal document, and circulated the notice in accordance with the standards set forth in section 15087, subdivision (a) of the California Code of Regulations, title 14. (14 Cal. Code Regs., tit. 14, §15225.) Parties had 45 days to submit written comments on the CEQA component of the Project. Four comments were received. The State Water Board evaluated the comments received and issued a written response and the equivalent to a final EIR on March 7, 2006. After reviewing and considering comments and all available information, the Executive Director certified

the FEIS and supplemental notice on August 8, 2006. The State Water Board will file a Notice of Determination within five days from the issuance of this order.

7. On December 21, 2005, State Water Board staff issued a draft water quality certification for public review. On March 7, 2006, the State Water Board issued notice pursuant to section 3858 of the California Code of Regulations that it intended to issue water quality certification after a 21-day notice period.

ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE STATE WATER BOARD CERTIFIES THAT THE OPERATION OF THE PIT 3, 4, AND 5 HYDROELECTRIC PROJECT BY PACIFIC GAS AND ELECTRIC COMPANY UNDER A NEW LICENSE ISSUED BY FERC will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that Pacific Gas and Electric Company complies with the following terms and conditions:

1. Pit 3 Reach Required Minimum Stream Flows

For the purposes of this measure, a spill event is defined as a flow period that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre-feet) above the required minimum streamflow.

- A. Summer/Fall Required Minimum Stream Flow:

1. Summer is defined as the period extending from April 21 through August 31.
2. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
3. The required minimum stream flow during summer shall be 300 cfs.
4. The required minimum stream flow during fall shall be 280 cfs.
5. Following any spill, as defined above, between March 16 and June 15, the required minimum stream flow shall follow the flow regimen described in section B.4. below. Spills ending on or after June 16, shall be returned to the required summer minimum streamflow following the Reservoir Level and Operation Protocol section of this certification.

- B. Winter Required Minimum Stream Flow:

1. The winter period begins with the first spill after November 1 and extends through April 20.
2. If no spill occurs between November 1 and April 20, the required minimum stream flow shall be at the summer value throughout the winter.

3. If a spill, as defined above, occurs after November 1, the required minimum stream flow following the cessation of the spill shall be 350 cfs. The required minimum stream flow shall remain at this rate through April 20 unless a spill occurs after March 15.
  
4. If a spill, as defined above, occurs between March 16 and June 15, the required minimum stream flow following the cessation of the spill shall be 450 cfs for at least 14 days. The required minimum stream flow shall then be 400 cfs for at least the next 10 days and 350 cfs for at least 10 more days. Thereafter, the required minimum stream flow shall be the required summer minimum stream flow.

Pit 3 Reach - Summary of Required Minimum Stream Flows described in detail above:

Season	Start Date	End Date	Required Minimum Stream Flow
Summer	April 21	August 31	300 cfs
Fall	September 1	Between November 1 and November 30	280 cfs
Winter (after spill occurs)	Between November 1 and April 20	April 20	350 cfs
Winter (prior to spill)	December 1	April 20	300 cfs
Winter Spill Cessation	Between March 16 and June 15	June 15	Following cessation of spill: 450 cfs for 14 days then 400 cfs for 10 days then 350 cfs for 10 days then 300 cfs

For the Pit 3 Reach, the spill event that triggers a change to the higher winter minimum stream flow is defined as a stream flow period in the reach that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum stream flow for the Pit 3 Reach. Stream flow in the Pit 3 Reach shall be measured as the sum of spillway flow calculated from hourly reservoir elevation to account for spill volume and the hourly mean release from a calibrated release valve at the dam or by other means acceptable to the USGS. The Pit 3 Dam spill release gates and valves shall be operated as described in the Reservoir Operations condition.

2. Pit 4 Reach Required Minimum Stream Flows:

For the purposes of this measure, a spill event is defined as a flow period that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre-feet) above the required minimum streamflow.

A. Summer/Fall Required Minimum Stream Flow:

1. Summer is defined as the period extending from June 16 through August 31.
2. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
3. The required minimum stream flow during summer shall be 375 cfs.
4. The required minimum stream flow during fall shall be 350 cfs.
5. Following any spill, as defined above, between March 16 and June 15 the required minimum stream flow shall follow the flow regimen described in section B.4. below. Spills ending on or after June 16, shall be returned to the required summer minimum streamflow following the Reservoir Level and Operation Protocol section of this certification.

B. Winter Required Minimum Stream Flow:

1. The winter period begins with the first spill after November 1 and extends through June 15.
2. If no spill occurs between November 1 and June 15, the required minimum stream flow shall be at the summer value throughout the winter.
3. If a spill, as defined above, occurs after November 1, the required minimum stream flow following the cessation of the spill shall be 450 cfs. The required minimum stream flow shall remain at this value through June 15 unless a spill occurs after March 15.
4. If a spill, as defined above, occurs after March 15, the required minimum stream flow after cessation of the spill shall decline in three steps, as specified below, once the mean daily stream flow at USGS gage 11362500 (Licensee gage PH30) reaches approximately 700 cfs. After completion of the specified flow schedule, the required minimum stream flow shall be the summer required minimum stream flow.
  - a) From March 16 through April 30, the required minimum stream flow is 600 cfs;

- b) From May 1 through May 31, the required minimum stream flow is 550 cfs; and
- c) From June 1 through June 15, the required minimum stream flow is 500 cfs.

Pit 4 Reach - Summary of Required Minimum Stream Flows described in detail above:

Season	Start Date	End Date	Required Minimum Stream Flow
Summer	June 16	August 31	375 cfs
Fall	September 1	Between November 1 and November 30	350 cfs
Winter (after spill occurs)	Between November 1 and June 15	June 15	450 cfs
Winter (prior to spill)	December 1	June 15	375 cfs
Winter Spill Cessation	March 16 May 1 June 1	April 30 May 31 June 15	600 cfs 550 cfs 500 cfs

For the Pit 4 Reach, the spill event that triggers a change to the higher winter minimum stream flow is defined as a stream flow period in the reach that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum stream flow for the Pit 4 Reach. Stream flow in the Pit 4 Reach shall be measured at USGS gage 11362500 (Licensee gage PH30). The Pit 4 Dam spillway drum gates and low-level outlets shall be operated as described in the Reservoir Operations condition.

3. Pit 5 Reach Required Minimum Stream Flows:

For the purposes of this measure, a spill event is defined as a flow period that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre-feet) above the required minimum streamflow.

A. Summer/Fall Required Minimum Stream Flow:

1. Summer is defined as the period extending from April 21 through August 31.
2. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
3. The required minimum stream flow during summer shall be 400 cfs.
4. The required minimum stream flow during fall shall be 350 cfs.



5. Following any spill, as defined above, between March 16 and June 15, the required minimum stream flow shall follow the flow regimen described in section B.4. below. Spills ending on or after June 16, shall be returned to the required summer minimum streamflow following the Reservoir Level and Operation Protocol section of this certification.

**B. Winter Required Minimum Stream Flow:**

1. The winter period begins with the first spill after November 1 and extends through April 20.
2. If no spill occurs between November 1 and April 20, the required minimum stream flow shall be at the summer value throughout the winter.
3. If a spill, as defined above, occurs after November 1, the required minimum stream flow following the cessation of the spill shall be 450 cfs. The required minimum stream flow shall remain at this level until April 20 unless a spill occurs after March 15.
4. If a spill, as defined above, occurs between March 16 and June 15, the required minimum stream flow following the cessation of the spill shall be 550 cfs for at least 14 days. The required minimum stream flow shall be 500 cfs for at least the next 10 days and 450 cfs for at least 10 more days. The required minimum stream flow shall then be the required summer minimum stream flow.

Pit 5 Reach – Summary of Required Minimum Stream Flows described in detail above:

Season	Start Date	End Date	Required Minimum Stream Flow
Summer	April 21	August 31	400 cfs
Fall	September 1	Between November 1 and November 30	350 cfs
Winter (after spill occurs)	Between November 1 and April 20	April 20	450 cfs
Winter (prior to spill)	December 1	April 20	400 cfs
Winter Spill Cessation	Between March 16 and June 15	June 15	Following cessation of spill: 550 cfs for 14 days then 500 cfs for 10 days then 450 cfs for 10 days then 400 cfs

For the Pit 5 Reach, the spill event that triggers a change to the higher winter minimum stream flow is defined as a stream flow period in the reach that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum stream flow for the Pit 5 Reach. Stream flow in the Pit 5 Reach shall be measured at USGS gage 11363000 (Licensee gage PH27). The Pit 5 Dam spillway gates shall be operated as described in the Reservoir Operations condition.

#### 4. Reservoir Level and Operation Protocols:

The Licensee shall, beginning as early as reasonably practicable and within six months after license issuance, operate Project dams, reservoirs, and powerhouses according to the operation protocols specified below.

For the purposes of this condition, a spill event is defined as a flow period that lasts at least three consecutive days and has a three-day mean of more than 300 cfs (and a volume of at least 1,800 acre-feet) above the required minimum stream flow.

##### A. Operation Protocols for Pit 3 Dam, Lake Britton, and Pit 3 Powerhouse

1. The year-round minimum water surface elevation of Lake Britton shall be 2,731.5 feet (NGVD) (2,751 feet, PG&E datum).
2. Each year, within 24 hours following the cessation of the first spill event after November 1, but no later than December 1, at least one of the Pit 3 Dam spillway bladder gates shall be kept in the fully deflated position.
3. The Licensee shall take reasonable care to prevent a sudden release of flow when deflating the bladder gates if the bladder gates must be deflated as per item 2 above and Lake Britton surface elevation is at 2,732.5 feet (NGVD) (2,752 feet, PG&E datum) or higher with the bladder gates inflated.
4. During the period from December 1 through at least April 20 of each year, the minimum water surface elevation of Lake Britton shall be 2,731.5 feet(NGVD) (2,751 feet PG&E datum) and to the greatest extent possible, within the limitation of the Pit 3 Powerhouse capabilities and Pit 3 Dam Spillway capacity, the maximum water surface elevation shall be 2,733.5 feet (NGVD)(2,753 feet PG&E datum) .
5. At least one of the Pit 3 Dam Spillway bladder gates shall remain deflated until April 20 or until there is no flow passing the Pit 3 Dam in excess of the required minimum stream flow for the Pit 3 Reach, whichever is later.
6. The maximum allowable Lake Britton water surface elevation shall be 2,735.5 feet (NGVD) (2,755 feet, PG&E datum) between April 21 and the Saturday preceding Memorial Day weekend.

7. The maximum normal water surface elevation of Lake Britton shall increase to 2,737.5 feet (NGVD) (2,757 feet, PG&E datum) on the Saturday preceding Memorial Day weekend or once there is no stream flow passing the Pit 3 Dam in excess of the required minimum stream flow for the Pit 3 Reach, whichever is later.
8. If after April 20, and after the stream flow in the Pit 3 Reach has receded to the minimum required stream flow, the inflow to Lake Britton increases to a magnitude that requires deflation of a bladder gate to keep the elevation of Lake Britton within the levels specified above, the bladder gate shall remain deflated until stream flow in the Pit 3 Reach recedes to the required minimum stream flow.
9. If the Pit 3 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
  - a) Powerhouse flow shall be increased in steps;
  - b) Each step shall not exceed 50 percent of the stream flow passing Pit 3 Dam in excess of the required minimum stream flow for the Pit 3 Reach, based on the midnight stream flow measurements; and
  - c) There shall be at least a 24-hour interval between steps.
  - d) This protocol applies until the Pit 3 Powerhouse reaches full flow or the rate of stream flow passing Pit 3 Dam is less than 200 cfs above the required minimum stream flow for the Pit 3 Reach. If the powerhouse is not at full flow at this point, the stream flow passing the Pit 3 Dam may be reduced to the required minimum stream flow.

**B. Operation Protocols for Pit 4 Dam, Pit 4 Reservoir, and Pit 4 Powerhouse**

1. The normal operating elevation for Pit 4 Reservoir shall be between 2,415.5 feet and 2,422.5 feet (NGVD) (2,435 feet and 2,442 feet, PG&E datum).
2. During periods of increasing inflow to Pit 4 Reservoir, Licensee shall take the following steps in the sequence indicated, until inflow ceases to increase:
  - a) As inflow to Pit 4 Reservoir increases, Pit 4 Powerhouse flows shall be ramped up to match inflow, up to full powerhouse flow.
  - b) If inflow to Pit 4 Reservoir continues to increase, and the reservoir water surface elevation reaches 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), the #1 low-level outlet gate shall be fully opened. As the #1 low-

level outlet gate is opened, stream flow shall be transferred smoothly from spill to release. The minimum stream flow release valve shall be closed to prevent plugging with sediment or debris.

- c) Step b) above shall be repeated for low level outlet gates #2 and #3 until all three low level outlets are opened or inflow ceases to increase.
  - d) If inflow continues to increase, and the reservoir water surface elevation again reaches 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), all three low-level outlets shall be closed and the #2 spillway drum gate shall be lowered, smoothly transferring the release from the low-level outlets to the open spillway.
  - e) If inflow continues to increase, and the reservoir water surface elevation again reaches 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), step b) and c) above shall be repeated until all three low level outlets are opened or inflow ceases to increase.
  - f) If inflow continues to increase, and the reservoir water surface elevation again reaches 2,424.2 (NGVD) feet (2,443.7 feet, PG&E datum), step d) shall be repeated for the #1 spillway drum gate.
  - g) If inflow continues to increase, and the reservoir water surface elevation again reaches 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), step b) and c) above shall be repeated until all three low level outlets are opened or inflow ceases to increase.
  - h) Further inflow increases shall be allowed to pass through the open spillway and open low-level outlets.
3. In order to minimize flow pulses during the recession of spill flow, after inflow has reached a peak and inflow to Pit 4 Reservoir is decreasing, the Licensee shall take the following actions in the sequence listed, beginning with the action corresponding to the actual peak inflow:
- a) As inflow to the reservoir declines, and the water surface elevation drops to 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
  - b) As inflow to the reservoir continues to decline, and the water surface elevation drops to approximately 2,415.5 feet (NGVD) (2,435.0 feet, PG&E datum), the # 2 spillway drum gate shall be raised and all three low-level outlets shall be opened, smoothly transferring a portion of the spill flow to release flow.

- c) As inflow to the reservoir continues to decline, and the water surface elevation again drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the # 3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
- d) As inflow to the reservoir continues to decline, and the water surface drops to approximately 2,415.5 feet (NGVD) (2,435.0 feet, PG&E datum), the #1 spillway drum gate shall be raised and all low-level outlets shall again be opened, smoothly transferring spill flow to release flow.
- e) As inflow to the reservoir continues to decline, and the water surface elevation drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
- f) As the # 1 low-level outlet is closed, the minimum streamflow release valve shall be opened to the appropriate required minimum streamflow release setting.
- g) If the Pit 4 Powerhouse is operating at less than full load during a spill event, and is able to return to full load, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse load by utilizing the following protocol:
  - 1) Powerhouse load shall be increased in steps;
  - 2) Each step shall not exceed 50 percent of the flow passing Pit 4 Dam in excess of the required minimum streamflow for the Pit 4 Reach; and
  - 3) There shall be at least a 24-hour interval between steps.

This protocol applies until the powerhouse reaches full flow or the rate of stream flow passing Pit 4 Dam is less than 200 cfs above the required minimum stream flow for the Pit 4 Reach. If the powerhouse is not at full flow at this point, the stream flow passing the Pit 4 Dam may be reduced to the required minimum stream flow.

C. Operation Protocols for Pit 5 Dam, Pit 5 Reservoir, and Pit 5 Powerhouse

- 1. As inflow to Pit 5 Reservoir increases, Pit 5 Powerhouse flows shall be ramped up to match inflow up to the full powerhouse flow.
- 2. As inflow to Pit 5 Reservoir exceeds the full flow of Pit 5 Powerhouse, the Pit 5 Dam spillway gates shall be operated to maintain an approximately constant water surface elevation of 2,040.5 feet (NGVD) (2,060 feet PG&E datum) at Pit 5 Reservoir.

3. If the Pit 5 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
  - a) Powerhouse flow shall be increased in steps;
  - b) Each step shall not exceed 50 percent of the flow passing Pit 5 Dam in excess of required minimum stream flow for the Pit 5 Reach, based on the midnight stream flow measurements; and
  - c) There shall be at least a 24-hour interval between steps.

This protocol applies until the powerhouse reaches full flow or the rate of stream flow passing Pit 5 Dam is less than 200 cfs above the required minimum stream flow for the Pit 5 Reach and the powerhouse is not at full flow, at which point the stream flow passing the Pit 5 Dam may be reduced to the required minimum stream flow.

## 5. Freshet Flows

The Licensee shall make freshet flow releases into each of the three Project-affected reaches of the Pit River as described below. Project reaches shall be considered separately and independently when determining if a freshet flow is required. The Licensee shall not initiate a freshet flow in the Pit 4 Reach if mean daily water temperature at Licensee gage PH30 exceeds 11° C for two consecutive days in the two-week period prior to the scheduled initiation of the freshet flow. The temperature criteria for not initiating a freshet flow may be modified after consultation with the Deputy Director and other appropriate agencies, and with approval of the Deputy Director and the U.S. Forest Service, based on available information and monitoring of foothill yellow-legged frog breeding and egg deposition in the Pit River.

Licensee shall implement the following planning events and actions each year:

- A. If, as of January 1 of each year, there has been no spill, as defined in item D below, in the previous 15 months into a given Project-affected river reach, the Licensee shall notify by January 30 the Deputy Director, other appropriate agencies, and interested parties that there is a potential need for a freshet flow release for that reach during the upcoming March.
- B. If no spill has occurred per item A, the Licensee shall post, following the provisions in the Recreation Stream Flow Information condition, a notice prior to February 15 of a planned freshet flow for that reach beginning between March 1

and March 7, scheduled so that the peak flow occurs over a weekend to facilitate whitewater boating opportunities.

- C. A freshet flow shall have the following characteristics: the duration of the event, including the flow increase, decrease and the peak, must be at least 21 days in length; the instantaneous peak flow magnitude must be at least 1,500 cfs; and there must be a two-day average flow of at least 1,500 cfs. After the peak, stream flow shall decrease in five steps of approximately equal magnitude and duration over the remaining days of the freshet period, ending at the winter required minimum stream flow for the reach. Ramping between each flow step shall be 0.5 foot/hour or less, as defined by the Ramping Rates condition.
- D. For the purposes of this condition, spill is defined as a stream flow event at a Project dam during the 17 months prior to the March 1 freshet flow implementation date that meets all of the following characteristics: occurs between December 1 and May 31; has a cumulative volume of at least 25,000 acre-feet; has a duration of at least 21 days; and has at least two average daily flows exceeding 1,500 cfs. Spill may be made up of natural and released flows.

#### 6. Out-of-Season Spill Reduction

The Licensee shall operate the Project in a manner that does not cause discretionary, out-of-season spill flows in excess of twice the required minimum stream flow at Pit 3 Dam, Pit 4 Dam, and Pit 5 Dam. An out-of-season spill is defined as a spill that occurs during the normally non-spill summer and fall period. The Licensee shall take all reasonable controllable actions necessary to control out-of-season spill flows, which shall include, as a first priority, utilization of Project storage.

In the event an out-of-season spill occurs, the Licensee shall take reasonable controllable actions to minimize the magnitude, duration, and potential adverse ecological impacts of such spill. Such actions shall include, utilizing upstream reservoir capacity, and to the extent practicable, ramping the spill flow up and down as described in the Ramping Rates condition. The Licensee shall develop and implement, within one year of license issuance, reasonable actions to mitigate for adverse ecological impacts in the event a discretionary out-of-season spill occurs. Licensee shall submit proposed mitigation measures for review and approval by the Deputy Director. The Licensee shall prepare, maintain, and on an annual basis provide to the Deputy Director a record of any out-of-season spills, identifying the affected reach, hourly discharge, the maximum flow magnitude, dates and duration, cause of spill, and mitigation provided. Licensee may incorporate this requirement as a component of the Recreation Streamflow Release Plan (Condition 8 and Mitigation Measure 8).

## 7. Ramping Rates

To prevent adverse effects of rapid changes in regulated stream flow that are inconsistent with the natural rate of change in stream flow, the Licensee shall follow the ramping rates specified below when making stream flow releases from Pit 3, Pit 4, and Pit 5 Dams unless a different ramping rate is specified in another condition.

A ramping rate is defined as the rate of change in stream stage height, up or down, over a time period, such as 0.5 foot/hour. The Licensee shall be deemed in compliance with the specified up and down ramping rate if at least 75 percent of the actual incremental changes in flow are less than or equal to the specified ramping rate, and all of the actual incremental changes in flow are less than 150 percent of the specified ramping rate.

Ramping Rate for Freshet Flow Releases: A freshet flow may be released in March of some years, and will consist of a 21-day flow event that is described in detail in the Freshet Flow Release condition. The ramping rate to reach the daily target values for freshet flows shall be 0.5 foot/hour or less, up and down.

Ramping Rate after Spills Influenced by Powerhouse Outages: As described in the Reservoir Operations condition, some spills may include, or be composed entirely of, flow that would otherwise be going through a powerhouse but is instead released as spill due to a powerhouse outage. The Reservoir Operations condition specifies that when returning the powerhouse to full load, the 24-hour increase of powerhouse flow shall not exceed 50 percent of the flow passing the associated dam in excess of the required minimum stream flow for the affected reach, based on the midnight stream flow measurements. The ramping rate shall be 0.5 foot/hour or less. The final step to the required minimum stream flow is allowed when the difference between the flow passing the dam is less than 200 cfs above the required minimum stream flow for the affected reach. The ramping rate for the downstream reach shall be 0.5 foot/hour or less and there shall be an hour separation between each step until the daily decrease in spill is reached.

Ramping Rate Before and After Out-of-Season Spills: If the Licensee anticipates that an out-of-season spill is imminent because the storage capacity of the affected reservoir will be exceeded, the Licensee shall make a good faith effort to initiate stream flow releases that ramp up to the expected spill flow in at least three steps. An out-of-season spill is defined as a spill that occurs at Pit 3 Dam, Pit 4 Dam, or Pit 5 Dam during the normally non-spill summer and fall period.

The out-of-season spill shall be ramped down at a rate that is dependent on the duration of the spill. If the spill was less than 24 hours in duration, the down ramp shall be at a rate of 0.5 foot/hour. If the spill was longer than 24 hours in duration, the down ramp shall be at a rate of 0.5 foot/hour, but one hour shall separate each step so that the down ramp is more gradual.



Ramping Rate for Recreation Stream Flow Releases: The ramping rate up and down for recreation stream flow releases shall be 0.5 foot/hour or less. Both up and down ramping steps shall be separated by one hour until the specified recreation stream flow release (ramp up) or the required minimum stream flow (ramp down) is reached.

Ramping Rate for Changes in Required Minimum Stream Flow: Because the magnitude of changes in required minimum stream flow is less than the change in stream flow associated with a 0.5-foot change in stage height, no ramping is required for these changes in stream flow.

#### 8. Recreation Stream Flow Releases

The Licensee shall, within six months after license issuance and in consultation with Deputy Director, appropriate agencies, Pit River Tribe, American Whitewater, and other parties who request involvement, develop a plan for providing annual recreation stream flow releases in the Pit 5 Reach suitable for whitewater boating. The Licensee shall submit a draft plan for 30-day review and comment by the entities consulted, and shall within 30 days thereafter submit a final plan, addressing comments received on the draft plan, to the Deputy Director for approval. Within 10 days following approval by the Deputy Director, the Licensee shall file the plan with FERC for final approval. Upon approval by FERC, the Licensee shall implement the plan.

The plan shall consist of the following key elements: Baseline Data; Recreation Stream Flow Schedule; Monitoring; and Adjustment of Stream Flow Events, with each element providing the information specified below.

Baseline Data: This element shall identify essential baseline data necessary for effective evaluation of possible ecological effects of the recreation stream flow releases. The element shall identify existing data and data to be developed, shall include a study plan and schedule for obtaining such data, and shall describe how data will be used. Additionally, the element shall specify the timing relationship between data acquisition, initiation of recreation stream flow releases, and potential adjustment of recreation stream flow releases in response to data gathered. The period for acquisition of baseline data shall not exceed two years unless the Deputy Director finds that new information provides a compelling reason to initiate additional years of baseline data collection up to a maximum five years.

Recreation Stream Flow Schedule: The initial recreation stream flow release schedule shall be four recreation release flow days per year consisting of two consecutive weekend days in August with minimum flows of 1,500 cfs from 10 AM to 4 PM at Pit 5 Dam and two consecutive weekend days in September with minimum flows of 1,200 cfs from 10 AM to 4 PM at Pit 5 Dam. All flow magnitudes shall be a minimum of 1,200 cfs in years that Pit 3 Dam does not spill, as defined in the

Required Minimum Stream Flow condition. The initial recreation stream flow release schedule shall be maintained for a minimum of three consecutive years, unless the Deputy Director determines that the stream flow releases are or will have a significant effect on the environment, in which case, Licensee shall immediately cease releasing recreation flows. Thereafter, it may be modified as described in the Adjustment of Stream Flow Events element below.

Monitoring: The Monitoring element shall consist of two subsections: environmental monitoring and boater-use monitoring. (1) The environmental monitoring subsection shall describe the environmental monitoring to be performed to assess and evaluate potential environmental effects of the recreation stream flow releases. At a minimum, the environmental monitoring program shall include monitoring of impacts to aquatic biota, other river users, other recreation users, special status species, and cultural sites and uses. The environmental monitoring program shall commence upon implementation of the recreation stream flow releases. The monitoring period shall not exceed three years and the total cost of monitoring shall not exceed \$150,000. The monitoring shall be adjusted, as appropriate, to not exceed these limits. (2) The boater-use monitoring subsection shall describe the monitoring to be performed to assess the adequacy of the number of recreation stream flow release days in a year. The boater-use monitoring program shall provide for monitoring actual boater use of recreation stream flow releases. For the first three years of recreation stream flow releases, the Licensee shall, on each recreation stream flow release day, count observed boater use in "boater days." One boater day is defined as boating use of the Pit 5 Reach by one person for any part of a given day. After the first three years of recreation stream flow releases, boater-use monitoring shall be performed in any year that the number of recreation stream flow release days is increased or decreased and at least once every three years over the term of the license. Boater-use monitoring may be discontinued by mutual agreement between the Licensee and Deputy Director after consultation with American Whitewater, U.S. Fish and Wildlife Service and other interested members of the public, and with the concurrence of FERC.

Adjustment of Stream Flow Events: This element shall describe the program for potential adjustment of the recreation stream flow releases in response to the results of the boater-use and environmental monitoring programs specified in the Monitoring element. Adjustment of the magnitude of recreation stream flow releases and schedule may occur in response to the results of the environmental monitoring program. Such adjustments shall be objective and based on sound scientific study. The Licensee shall consult with the Deputy Director, other appropriate agencies, Pit River Tribe, American Whitewater, and other parties who request involvement regarding any such adjustments, and shall obtain approval by the Deputy Director and notify FERC before implementing such adjustments. Adjustment of the recreation stream flow release schedule in response to the results of the boater-use monitoring shall consist of adding or subtracting recreation stream flow release days based on actual use. One weekend day of recreation stream flow releases shall be added to the recreation stream flow release schedule for the next year if actual use

exceeds 80 boater days for each recreation stream flow release day in a given month. One weekend day of recreation stream flow releases shall be subtracted from the recreation stream flow release schedule for the next year if actual boater use is less than 25 boater days for each recreation stream flow release day in a given month. The number of recreation stream flow release days shall be adjusted for the same month in which the adjustment triggers were met. Based on boater use monitoring, the number of recreation stream flow release days shall not be reduced to less than one weekend day in August and two consecutive weekend days in September, and shall not be increased to more than four weekend days in August and four weekend days in September. If the maximum number of recreation stream flow release days is being provided, and actual use exceeds 80 boater days on all days, one additional weekend day of recreation stream flow release with flows of 1,200 cfs from 10 AM to 4 PM at Pit 5 Dam shall be provided in October of the next year. The October recreation stream flow release day is subject to the same future adjustment as the August and September recreation stream flow release days, with a maximum number of two consecutive weekend days, and a minimum number of no days. Recreation stream flow release days shall not be added during the three-year environmental monitoring period.

#### 9. Streamflow Information

The Licensee shall, beginning as soon as reasonably practicable and no later than one year after license issuance, each year make available to the public the recreation stream flow information listed below. Unless otherwise noted, the stream flow information shall be available to the public via toll-free phone and internet, which may be accomplished through a third party. The stream flow information protocols may be modified upon mutual agreement of the Licensee, U.S. Forest Service and other responsive parties who request involvement, and acceptance by FERC. Licensee shall make the following information available:

- A. The hourly average stream flow in the Pit River below each of the Pit 3, Pit 4 and Pit 5 Dams for the current day and the past seven days. The stream flow information may be measured, calculated or a combination of the two. The stream flow information shall be posted within four hours of collection. Stream flows shall be rounded up to the nearest 50 cfs, and all plots and tables showing these data shall be labeled: "These provisional data have not been reviewed or edited, and may be subject to significant change."
- B. By January 5, the proposed dates and magnitude for any freshet flow, if applicable, planned to be provided by the Licensee, with updates by February 15 and within two days of any changes in plans.
- C. By July 1, the proposed dates for any recreation stream flow releases, with updates at least two weeks and one week in advance of each proposed date.

In addition, the Licensee shall:

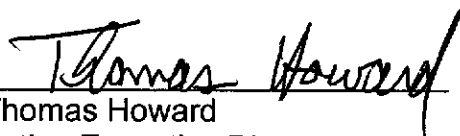
- D. As soon as reasonably practicable and no later than two years after license issuance, install and maintain one simple staff gage/depth indicator at the following locations: Licensee gage PH30 below Pit 4 Dam, Licensee gage PH27 at Big Bend Bridge, and provided a suitable location is identified in consultation with U.S. Forest Service, U.S. Fish and Wildlife Service, and American Whitewater, a site below Pit 3 Dam. The Licensee shall make a good faith effort to locate the staff gages/depth indicators near public access locations so they are easily accessible for public reference. The Licensee shall provide a means at each staff gage/depth indicator to reasonably correlate staff gage/depth indicator readings to cfs.
  - E. Notify the community of Big Bend and the Big Bend Rancheria in advance of planned freshet flow releases and recreation stream flow releases by posting bulletins on public bulletin boards located in those communities.
10. All Minimum Stream Flows are the average of seven days of the mean daily flow. Individual mean daily flows may be less than the required Minimum Stream Flow. The instantaneous, 15-minute stream flow shall be at least 90 percent of the required minimum stream flow. No ramping is required when changing between seasonal required minimum streamflow rates.
11. Where facility modification is required to meet the Minimum Stream Flows or Ramping Rate conditions, modifications must be completed within three years of the issuance of the license. Failure to complete modifications within three years will subject Licensee to enforcement action, including the assessment of monetary penalties. The Licensee shall submit an interim stream flow and facility modification plan to the Deputy Director within three months of license issuance. The plan shall include the minimum stream flows that will be provided prior to facility modification, proposed facility modifications, a schedule for facility modification, and a list of permits required.
12. All flow requirements of this certification are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee. The Licensee shall provide advance notification to the State Water Board, Deputy Director, prior to any temporary modification if possible. If advance notification is not possible because an event is unforeseeable, Licensee shall notify the Deputy Director immediately but no later than 48 hours from the time that any temporary modification has occurred.
13. The Licensee shall install water temperature monitors (i.e., telemetered, real time, year-round) at stream gage PH 30 in the Pit 4 Reach and at stream gage PH 27 in the Pit 5 Reach. Licensee shall immediately notify the Deputy Director if average daily water temperature at either of these locations exceeds 20° C. Licensee shall

provide yearly reports of water temperature recorded at these locations by December 30 of each year with data from the previous water year (September to October) to the Deputy Director. The report shall include raw temperature data, mean daily temperatures, and daily maximum and minimum temperatures.

14. The conditions and monitoring and reporting requirements detailed in the CEQA findings section (Attachment A) are hereby incorporated by reference. Notwithstanding any more specific conditions in this certification, Licensee shall comply with mitigation measures 1 through 10, and 12, identified in the CEQA findings and the mitigation monitoring and reporting plan in Attachment A.
15. Licensee must submit any change to the Pit 3, 4, and 5 Hydroelectric Project, including project operation that would have a significant or material effect on the findings, conclusions, or conditions of this certification, to the Deputy Director for prior review and written approval.
16. Notwithstanding any more specific conditions in this certification, the Project shall be operated in a manner consistent with all water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act. The Licensee shall take all reasonable measures to protect the beneficial uses of water of the Pit River.
17. The authorization to operate the Project pursuant to this certification is conditioned upon payment of all applicable fees for review and processing of the application for water quality certification and administering the State's water quality certification program, including but not limited to: timely payment of any annual fees or similar charges that may be imposed by future statutes or regulations for the State's reasonable costs of a program to monitor and oversee compliance with conditions of water quality certification.
18. This certification is not intended and shall not be construed to apply to issuance of any FERC license or FERC license amendment other than the FERC license specifically identified in the Licensee's application for certification described above.
19. This certification does not authorize any act which results in the "taking" of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code §§ 2050 - 2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531 - 1544). If a "take" will result from any act authorized under this certification or water rights held by the Licensee, the Licensee shall obtain authorization for the take prior to any construction or operation of the Project. The Licensee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the Project authorized under this certification.
20. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies,

penalties, process or sanctions as provided for under applicable State or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this certification, the State Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

21. This certification is subject to modification upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with § 3867).
22. The State Water Board reserves authority to modify this certification if monitoring results indicate that continued operation of the Project would violate water quality objectives or impair the beneficial uses of the Pit River.
23. The State Water Board may add to or modify the conditions of this certification, as appropriate, to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.
24. The State Water Board may add to or modify the conditions of this certification as appropriate to coordinate the operations of this Project and other hydrologically connected water development projects, where coordination of operations is reasonably necessary to achieve water quality standards or protect beneficial uses of water.
25. The State Water Board shall provide notice and an opportunity for hearing in exercising its authority under conditions 22, 23, and 24 above.

  
Thomas Howard  
Acting Executive Director

Date: **JAN 25 2007**

Attachment

## Attachment A

### California Environmental Quality Act Findings and Mitigation Monitoring and Reporting Plan for the Pit 3, 4, and 5 Hydroelectric Project

#### WATER RESOURCES

##### **Impact 1: Impacts from the installation of a flow gaging system adjacent to Pit 3 Bypass Reach**

Pacific Gas & Electric Company (PG&E) proposes various measures that pertain to flow releases and the water surface elevation of Project reservoirs that include: (1) minimum flow recommendations in all three bypassed reaches with provisions for flow shaping; (2) establishment and implementation of appropriate up and down ramping rates; (3) the release of dry-year freshet flows in a controlled manner; (4) implementation of measures that would minimize, to the extent feasible, the effects of uncontrolled high-flow releases to the bypassed reaches; and (5) restrictions to the water surface elevations at Lake Britton. The State Water Resources Control Board (State Water Board) must be able to verify compliance with the flow and water-level restrictions. No gage currently exists to provide a direct measurement of the flows in the Pit 3 Bypass Reach. Installation of a flow gaging station adjacent to the bypassed reach would result in environmental consequences associated with the construction of the gage station itself, the associated access road, and provision of electricity to operate the gaging station instrumentation (e.g., potential erosion and sedimentation, destabilization of existing steep slopes, disturbance of aquatic habitat, disturbances to bald eagles, potential degradation of the local visual quality, and potential disturbance of cultural sites). This impact is considered significant.

Implementation of Mitigation Measure 1 will reduce this impact to a less than significant level.

##### **Mitigation Measure 1: Streamflow and Reservoir Level Monitoring Plan**

PG&E shall develop a streamflow and reservoir level monitoring plan that includes provisions to measure streamflows required under conditions of the water quality certification. In the Pit 3 Reach this would be accomplished by using the sum of spillway flow calculated from hourly reservoir elevation to account for spill volume and the hourly mean release from a calibrated release valve at the dam or by other means acceptable to the U.S. Geological Survey (USGS); in the Pit 4 Reach this would be accomplished at USGS gage No. 11362500; and in the Pit 5 Reach this would be accomplished at USGS gage No. 11363000. The plan shall be developed within 1 year of license issuance, in consultation with the U.S. Forest Service (FS), U.S. Fish and Wildlife Service (FWS), California Department of Fish and Game (CDFG), State Water Board, and USGS and submitted for review and approval of the Deputy Director of the Division of Water Rights (Deputy Director). The Plan shall include a provision for PG&E to provide streamflow information to the public beginning no later than 1 year from license issuance, in accordance with the provisions in the section of the Pit River

Collaborative Team (PRCT) agreement entitled Streamflow Information. The plan shall include the following components and considerations:

- A. A description of the existing flow and any existing water surface elevation monitoring devices, including location and type of instrumentation;
- B. Installation and calibration of a flow measurement device in the Pit 3 Reach (either a device in the release valve at the Pit 3 Dam, or a gage in the Pit 3 Reach) which can accurately (i.e. meets USGS standards) measure compliance with the flow regime specified in the license order. PG&E shall submit to the Deputy Director for review and approval a plan for the installation of the selected flow measurement device, including specific measures that will be used to protect water quality;
- C. The proposed frequency of data downloads, how the data would be accessed during the term of the new license, and the proposed technique and frequency of calibration (for those existing flow gaging stations that are operated in cooperation with USGS, we anticipate that future calibration would be similar to current calibration procedures);
- D. A detailed description of any structural modifications that would be necessary to accommodate the flow regime (and its measurement) specified in the new license, including design drawings, conceptual cost estimates, and schedule for implementation of the proposed modifications;
- E. Proposed interim measures to comply with required flow releases until structural modifications have been completed;
- F. Identification of the entities responsible for installing, maintaining, and ensuring the continued accuracy of the flow and water surface elevation monitoring devices; and
- G. Reporting frequencies to the State Water Board, appropriate agencies and Federal Energy Regulatory Commission (FERC).

**Impact 2: PG&E may need to either reduce generation flows, or exercise its senior water rights to meet instream minimum flows**

The exercise of PG&E's senior water rights could have an economic effect on junior water right holders upstream of the Project.

While economic and social effects are not considered environmental effects under CEQA, to the extent that this impact could lead to a physical change in the environment (by junior water right holders implementing water supply alternatives), the State Water Board finds that this impact is avoided by the implementation of PG&E's commitment. As a result of negotiations with upstream water users, PG&E has withdrawn its water right complaints related to the existing operation of the Pit 3, 4, 5 Project that it had filed with the State Water Board. PG&E also developed a "commitment" in consultation with upstream water rights holders that provides assurance that PG&E would not initiate new water right complaints for specified uses of water consistent with state law. This commitment becomes effective after issuance of a new license (and resolution of any associated appeals) with instream flow and other operating requirements that are consistent with the PRCT agreement.



This finding and the commitment itself shall in no way prevent the State Water Board from taking any appropriate water right enforcement action on its own motion or on a motion from a party other than PG&E.

**Impact 3: Proposed flow regimes could influence water temperature and impact the habitat for temperature sensitive aquatic biota**

Changes in flow can impact water temperature. Certain aquatic biota are sensitive to water temperature and may be affected by changes associated with change in flow. This impact is considered significant.

Implementation of Mitigation Measures 2, 3, 7, and 11 will reduce this impact to a less than significant level.

**Mitigation Measure 2: Water Temperature and Water Quality Monitoring Plan**

PG&E shall develop and implement a water temperature and water quality monitoring plan, including monitoring during months when temperatures could be limiting to aquatic biota, which for most species is from June through September. The Plan should help define parameters that would optimize foothill yellow-legged frog reproduction, which typically occurs during the spring, and would serve as a basis for establishing the timing of spring freshet flow releases. Therefore, during the spring, PG&E shall monitor temperature at known or potential foothill yellow-legged frog habitat locations. Taking spot dissolved oxygen (DO) measurement and periodic temperature and DO profiles in Lake Britton near the Pit 3 Dam during high temperature low flow conditions (which typically occur during July and August), along with monitoring water temperature in the river reaches, will provide a basis for documenting that Project operations comply with water quality objectives. This plan shall be developed in consultation with the FS, FWS, CDFG, U.S. Environmental Protection Agency (EPA), and State Water Board, and submitted to the Deputy Director for approval. The approved plan must be submitted to FERC within one year of license issuance. The plan shall include the following:

- A. The location of stations in each reach at which water temperature will be monitored;
- B. The time frame during which water temperature will be monitored at each station;
- C. The type of instrumentation, frequency of data collection, and calibration procedures that will be used to monitor temperature and DO;
- D. Temperature conditions that will trigger spot DO measurements at specific stations;
- E. Potential Project operational procedures that could be implemented to maintain Project waters at or below 20 degrees C (68 degrees F) and identification of circumstances that would trigger implementation of those procedures. If monitoring shows water temperature exceeding 20 degrees C, it may be possible to temporarily modify Project operations to maintain cooler water in the affected reach;

- F. A schedule for installation of temperature monitoring equipment (to be completed no later than six months after submission of the plan to FERC); and
- G. Procedures to report monitoring results to the State Water Board, other resource agencies, and FERC.

**Mitigation Measure 3: Fish and Invertebrate Monitoring Plan**

PG&E shall develop and implement a fish and invertebrate monitoring plan that is based on the methods used in surveys conducted during the relicensing effort and the current Biological Compliance Monitoring Plan (BCMP), including angler surveys, reservoir fish surveys, river reach surveys, macroinvertebrate surveys, and aquatic mollusk surveys. This plan shall be developed within six months of license issuance, and for surveys in years 1 through 4 and in years 8, 12, 16, 20, and 24 (unless an alternative monitoring schedule is approved by Deputy Director), in consultation with the State Water Board, FS, CDFG, FWS, and the Tribe, at a minimum, and submitted to the Deputy Director for review and approval. The plan should be coordinated with the BCMP (Mitigation Measure 11), any gravel augmentation, and the collection of baseline data for potential recreation streamflow releases to the Pit 5 Reach (Mitigation Measure 8).

**Impact 4: Project operations, including expanded recreational use, could increase turbidity and suspended solids due to erosion and sedimentation**

Operation of the Project, along with development of additional recreational uses has the potential to impact water quality from increased erosion and sedimentation. This impact is considered significant.

Implementation of Mitigation Measures 4, 11, and 12 will reduce this impact to a less than significant level.

**Mitigation Measure 4: Erosion and Sedimentation Control Plan**

PG&E shall develop and implement an Erosion and Sedimentation Control Plan that is coordinated with the spoils pile management plan, recreation management and road management plans, and the Historic Properties Management Plan. For Lake Britton, this plan shall include: 1) periodic monitoring of the shoreline to identify actively eroding sites, assessing whether problems at identified sites are Project-related and if stabilization measures are warranted, 2) if warranted, provisions for designing and implementing shoreline stabilization in consultation with Deputy Director and or Executive Officer of the Central Valley Regional Water Quality Control Board, and 3) coordination of this component of the plan with the monitoring requirements for bank swallows under Mitigation Measure 11(B). The plan also shall specify protocols for addressing emergency erosion and sedimentation control measures, both for immediate short-term stabilization and, if necessary, permanent long-term measures to replace any temporary stabilization measures that may have been implemented. The plan should include protocols for notification of the FS, State Water Board, and FERC in the event that emergency erosion and sedimentation control measures are needed. The plan shall be developed within one year of license issuance in consultation with the Tribe, CDFG, FWS, State Water Board, and, as appropriate, the FS and submitted to the Deputy Director for approval. Erosion control measures must ensure that existing and

future erosion sites are identified and stabilized, and monitored. The Erosion and Sediment Control Plan shall incorporate the following measures:

- A. Signage that encourages recreationists to stay on marked trails and obey designated boating speed limits
- B. Procedures for detecting erosion sites
- C. Procedures for stabilizing and monitoring erosion sites
- D. Requirements for obtaining a General Permit for Discharges of Storm Water Associated with Construction Activity, including the development of a Storm Water Pollution Prevention Plan

**Impact 5: Spoil piles 4D and Miners Creek could impact water quality from excessive erosion, leaching of hazardous materials buried in the piles, and non-native materials in spoil piles**

Spoil pile 4D may cause an impact to the river channel and adjacent embankments causing excessive erosion and bank failure. Ongoing erosion is expected from the Miners Creek spoil pile. This impact is considered significant.

Implementation of Mitigation Measure 5 will reduce this impact to a less than significant level.

**Mitigation Measure 5: Spoil Pile Management Plan**

PG&E shall develop, within one year of license issuance, a single spoil pile management plan, in consultation with the FWS, CDFG, State Water Board, the Tribe, and, as appropriate, the FS, that contains provisions for slope stabilization, water quality protection, and revegetation. The plan shall be submitted to the Deputy Director and the Executive Officer of the Central Valley Regional Water Quality Control Board for review and approval. The plan shall: (a) include proposed remedial measures for the Miners Creek spoil pile, including the measures recommended by PG&E's consultant to control surface water runoff and protection of the toe from high flows in Miners Creek, as appropriate; (b) specify management and maintenance measures for all spoil piles created during Project construction; (c) address whether or not stabilization measures are warranted at the erosion site across the Pit River from spoil pile 4D; and (d) address the measures specified by the FS in its final 4(e) condition No. 20.a as follows:

**General Measures:**

- Stabilization/erosion control (using only certified weed-free straw)
- Revegetation
- Noxious weed management
- Foreign material treatment, including removal of visible non-native materials
- Monitoring of water quality (as per pre-licensing study protocol) and adherence to best management practices (BMPs)
- Consideration of visual quality
- Utilization of material (especially Pit 4 valve house site #4P)

- Other measures (i.e. recreational overlook improvements at Pit 4 Dam site #4D dispersed camping at the Adit pile #4A, road closure #4D)

Specific measures for spoil pile site #4P (at Pit 4 powerhouse) management:

- Develop a stabilization/rehabilitation plan for the site incorporating future placement of road spoils from Project roads, site leveling, slope revegetation, and other erosion prevention measures.
- Show the current site (after above work considered) and calculations showing the amount of material the site could hold for future spoils placement.
- Include a final pit plan including reclamation that shall also be submitted to Shasta County for compliance with Surface Mining and Reclamation Act (SMARA) regulations.
- Additional visual and safety mitigations may be necessary if this site is additionally used as a vista point for the public.
- The plan shall include the requirement to obtain a General Permit for Discharges of Storm Water Associated with Construction Activity from the Central Valley Regional Water Quality Control Board and Clean Water Act section 404 and 401 permits if necessary.

#### **Impact 6: Dredging**

Dredging activities, if needed during the term of the license, may cause sedimentation and downstream transport of fine-grained sediment that may be re-suspended at the dredging site. This impact is considered significant.

Implementation of Mitigation Measure 6 will reduce this impact to a less than significant level.

#### **Mitigation Measure 6: Dredging Plan**

PG&E shall develop a dredging plan that would apply should dredging in Project waters be needed during the term of a new license. The plan shall be developed and approved by the Deputy Director prior to conducting any dredging operation in Project waters, in consultation with the FWS, State Water Board, CDFG, U.S. Army Corps of Engineers (Corps), EPA, and, if the operation would affect National Forest System Lands, the FS, that includes the following: (a) a description of the need for the proposed dredging; (b) the selected method of dredging, and alternative methods considered; (c) a figure showing the areal extent of the dredging; (d) the estimated volume to be dredged; (e) a description of the substrate to be dredged; (f) a figure showing the proposed dredge spoil disposal site, with a description of measures to prevent erosion and sedimentation; and (g) a schedule for dredging, dredge disposal, and dredge spoil pile stabilization. PG&E shall implement BMPs to control sedimentation and downstream transport of fine-grained sediment that may be resuspended at the dredging site. Dredge spoil shall be disposed of in a manner that minimizes the potential for reintroduction of sediment. PG&E shall select an appropriate disposal site and implement spoil pile stabilization and restoration measures prior to the initiation of dredging. This water quality certification does not allow for dredging. When dredging is required, PG&E must obtain water quality certification, in addition to approval from the U.S. Army Corps of Engineers.

**Impact 7: The spring freshet (flushing) flow in dry years may reduce encroachment of riparian vegetation, which could reduce cover, increase solar warming, reduce nutrient inputs, and reduce habitat for some species of invertebrates and native fish.**

The purpose of the freshet flow releases is to simulate a natural spill event in order to clean the river substrate of sediments and organic debris, and move, sort and redistribute spawning gravels for fish and other aquatic organisms. In addition, the freshet flows are intended to recharge the riparian water table prior to seed germination and the plant-growing season, and to assist in reducing vegetation encroachment into the stream channel. The Freshet Flow Release Plan contains defined criteria for when freshet flow release would be provided. Any unacceptable increase in water temperature is addressed adequately in the Water Temperature Monitoring Plan (Mitigation Measure 2). This impact is considered significant.

Implementation of Mitigation Measure 2 will reduce this impact to less than significant.

**Impact 8: Impacts of increased out of season spill events**

An increase in the frequency of out of season spill events from Lake Britton could adversely affect algae beds, aquatic macroinvertebrates, mollusks, fish, and native amphibians through scouring, displacement and stranding. This impact is considered significant.

Implementation of Mitigation Measure 7 will reduce this impact to less than significant.

**Mitigation Measure 7: Biological Monitoring and Adaptive Management Plan**

PG&E shall develop a biological monitoring and adaptive management plan within one year of license issuance, in consultation with the FS, CDFG, FWS, State Water Board, and the Tribe, at a minimum, that establishes the framework for evaluating the effects of minimum instream flows, reservoir level and operations protocols, and freshet flows, on fish and wildlife, including defining the resource goals and objectives that are expected to be achieved under the conditions of a new license. The plan shall also define the process that would be used to determine whether: (1) measures result in any unanticipated significant impacts, and (2) if there is a need to adjust measures or implement new measures. The plan shall also define consultation procedures that will be taken prior to undertaking any actions that could affect FS sensitive species or their habitat, to determine whether preparation of a Biological Evaluation would be necessary (see Mitigation Measure 11). The plan shall be revised, as needed, every four years and filed with the Deputy Director, including a summary of monitoring results and description of any changes in water quality certification conditions that are proposed, and the basis for the changes. The State Water Board may, in its discretion and after notice and opportunity for hearing, amend the certification condition as appropriate.

### **Impact 9: Impact of Recreational Release on Aquatic Biota**

Recreational releases during August and September could adversely affect aquatic biota, including trout populations, by scouring algae and invertebrates from the stream channel. Implementation of the whitewater boating flow releases in the Pit 5 Reach during the summer would likely affect the western pond turtle, since both hatchlings and adults rely on aquatic insect larvae, crustaceans, and annelids that could be flushed out of the system during high summer flows. Turtles may also rely on plant and animal detritus that is abundant on filamentous algae to supplement their diet. FYLF has not been found in the Pit 5 Reach during recent surveys. The proposed measure limits whitewater flow releases to the Pit 5 Reach and restricts the timing (2 weekends per year in August and September) and magnitude to reduce the impacts of the event on FLYF and western pond turtle. Recreational flow releases in August and September have the potential to adversely influence aquatic biota. This impact is considered significant.

Implementation of Mitigation Measures 7 and 8 will reduce this impact to less than significant.

### **Mitigation Measure 8: Recreation Streamflow Release Plan**

PG&E shall develop a plan within six months of license issuance for providing annual recreation streamflow releases consistent with the water quality certification condition eight in the Pit 5 Reach suitable for whitewater boating, in consultation with the State Water Board, CDFG, FWS, NPS, CDPR, the Tribe, and American Whitewater Association (AWA), at a minimum. The plan shall provide details on the collection of up to five years of ecological monitoring data, specify details of a recreation streamflow release schedule, provide for environmental and boater-use monitoring during actual releases, and describe an adaptive management program that will provide for potential adjustments to the number of releases based on the results of the monitoring. The plan shall specify a decision point, where the results of baseline monitoring will be assessed by the consulted parties and a final recommendation, with the basis for the recommendation, made to the Deputy Director regarding whether or not scheduled recreation streamflow releases should be implemented. If scheduled releases are recommended, specific measures that will be implemented during the releases for the protection of sensitive resources, river users (e.g., swimmers and anglers), and the safety of boaters shall be submitted to the Deputy Director for review and approval.

### **Impact 10: Implementation of the PCRT agreement flow-shaping concept may result in unanticipated negative consequences that were not predicted by the habitat modeling**

While this impact is not considered significant, Mitigation Measure 7 provides for a Biological Monitoring and Adaptive Management Plan for evaluating the effects of environmental measures on fish and wildlife, and adjusting measures if necessary.

## VEGETATION AND WILDLIFE

### **Impact 11: Special status plants**

Seven special status plants were identified along Project transmission line and access road rights of way and in the vicinity of recreational sites. These sites could be affected by the spread of noxious weeds or vegetation management activities, recreation related activities, or other ground disturbing activities. Noxious weeds have the potential to degrade native plant communities, out compete rare species, and reduce wildlife habitat values. Vegetation management could adversely impact natural resources, cultural values, recreation, aesthetics, and health and safety. This impact is considered significant.

Implementation of Mitigation Measure 9 will reduce this impact to less than significant.

### **Mitigation Measure 9: Vegetation and Noxious Weed Management Plan**

PG&E shall develop within two years of license issuance, in consultation with the FS, Shasta County Agricultural Commissioner, CDFG, FWS, National Parks Service (NPS), CNPS, CDFG, and the Tribe and subject to approval by the Deputy Director prior to conducting any ground-disturbing activities, a vegetation and noxious weed management plan for all Project lands that provides for the following: (a) protection of special status plants that includes maintenance of a Project GIS database that would allow mapping and tracking occurrences of special status plants, including Pacific fuzzwort, in order to assist in evaluating plans for vegetation management, developing protocols for maintenance personnel that may be working in areas near known sensitive plant locations, siting for new recreational facilities, and other activities that would cause ground disturbance or habitat alteration; (b) improvement of wildlife habitat, including fire fuel load reduction measures (for any such measures, consult with the FS to evaluate the consistency with the FS standards and guidelines for management of the Chalk Mountain LSR, and protection of listed and sensitive species); (c) enhancement of ethnobotanical resources (identification of ethnobotanical resources, including the potential establishment and protection of plant gathering sites and the incorporation of important species into plans for revegetation); and (d) control of noxious weeds (including in the bypassed reaches), including the following:

- A. Provisions for noxious weed surveys and management on all PG&E Project lands, including transmission line and access road rights-of-way and recreational facilities;
- B. Identification of management responsibilities, goals, and objectives;
- C. Definitions of realistic control intensities for each noxious weed that meets management objectives;
- D. Comparisons and evaluations of resource trade-offs of various control methods;
- E. Prioritization of treatment sites;
- F. Presentation of an integrated noxious weed treatment scenario, including plans for long-term monitoring; and details of a plan for action, showing a schedule for

- implementation, funding requirements, and a mechanism for annual review and revision of the plan to incorporate information collected during monitoring efforts;
- G. Proposed measures for revegetation following noxious weed treatments;
  - H. Emphasis on education and other pro-active measures (e.g., washing down construction equipment, certifying fill materials, public education and signing of public boat access points to prevent aquatic weed infestations) to prevent establishment and spread of weeds;
  - I. Emphasis on the use of non-herbicide techniques, and allow for herbicide use, if any, only at specific sites; for these sites, the plan should indicate why other techniques would not be effective and identify measures that would be taken to protect non-target plants and animals; and
  - J. Incorporation of noxious weed monitoring into other programs PG&E would be implementing, where possible, to maximize the potential for detection and early treatment.

Prepare a plan within one year of issuance of the recreation management plan in consultation with the FS and the Tribe that will address management of the overstory and understory at PG&E's existing and proposed developed recreational areas.

**Impact 12: Loss of up to 50 acres of riparian vegetation**

The proposed flows will improve riparian habitat by providing flows that will remove vegetation that has encroached into the active channel, while promoting the establishment of cottonwood on gravel bars, floodplains and terraces. Higher minimum instream flows could remove up to 50 acres of riparian vegetation. Most losses would occur in the torrent sedge series. Torrent sedge, willow, and alder would be likely to re-establish along the new high water mark in a relatively short period of time. Loss of riparian habitat could also reduce bank stability and increase the risk of establishment and spread of noxious weed populations on exposed soils. The higher minimum instream flow will have an overall positive effect on riparian habitat. Nonetheless, this impact is considered significant.

Implementation of Mitigation Measures 7 and 10 will reduce this impact to less than significant.

**Mitigation Measure 10: Riparian Vegetation Monitoring Plan**

In coordination with the Biological Monitoring and Adaptive Management Plan (Mitigation Measure 7), develop and implement a riparian vegetation monitoring plan for the three bypassed reaches to document changes over time and in response to any new instream flow requirements. The plan shall be developed within 1 year of license issuance in consultation with the FS, FWS, CDFG, and the Tribe to identify measurable riparian habitat parameters, survey protocols and timing, and provisions for reporting, prior to submission to the Deputy Director for approval.

**Impact 13: Impacts to Special Status Birds and Mammals**

Construction of new recreational facilities, increased minimum flows, vegetation management measures, and whitewater flow releases may impact special status birds



and mammals. Improvements to roads and existing facilities during the breeding season could disturb nesting birds, and cause long-term disturbance to bald eagles.

Implementation of Mitigation Measure 11 will reduce this impact to a less than significant level.

**Mitigation Measure 11: Species Management and Monitoring Plan**

PG&E shall consult with the FS, FWS, and CDFG prior to undertaking any actions that would affect FS sensitive species, including but not limited to the species listed below, or their habitat. The consultation shall determine whether preparation of a Biological Evaluation is necessary, identify best management practices that are consistent with the FS standards and guidelines, and develop additional specific protection measures that should be implemented. Results of the consultation shall be submitted to the FERC for approval.

**A. Bats**

Develop methods to prevent bats from entering the stairway chamber at the Pit 5 Dam and the control room at the Pit 5 Gaging Station to minimize human/bat interactions. Implement measures, following consultation with a recognized bat expert, to exclude bats from the stairwell chamber at the Pit 5 Dam and the control room at the Pit 5 Gaging station and construct a bat-friendly gate at the Pit 4 Tunnel adit that would prevent public access while allowing bats to enter and exit. Provide for annual inspections of structures designed and installed to protect bats at the Pit 4 tunnel adit, and exclude bats at the Pit 5 Dam, and Pit 5 Gaging Station control room. Monitoring should be coordinated with full time Project patrol to ensure the structures are functional and properly maintained .

**B. Bank Swallows**

Develop bank swallow monitoring protocols including the timing and frequency (maximum five-year intervals) of monitoring and provisions for reporting. Include in the protocols measures to coordinate bank swallow monitoring with the results of other Lake Britton erosion monitoring that will occur under the erosion and sedimentation control plan (Mitigation Measure 4) and the final Historic Properties Management Plan (Mitigation Measure 21). Monitoring will provide a basis to evaluate the potential effects of changes in reservoir operation on bank swallows. Develop the protocols within one year of license issuance in consultation with at a minimum the FS, FWS, and CDFG and State Water Board.

**C. Neotropical Migrant Songbirds**

Develop and implement plans to monitor neotropical migrant songbirds (using point count surveys to monitor breeding populations) that could be affected by changes in riparian habitat as a result of increased flows in the bypassed reaches and other changes to the Project (e.g., construction of modified or new recreational facilities), within one year of license issuance, in consultation with the FS, FWS, and CDFG, at a minimum. Surveys for neotropical migrants shall

be conducted annually for five years following implementation of the new flow regime, and then at five-year intervals through any new license term to monitor changes over time.

D. Northern Goshawk

Conduct northern goshawk surveys, if it is determined that Project-related construction measures and vegetation management activities would affect potential nesting habitat. If nests are detected, consult with the FWS, CDFG, and FS regarding the need for implementing timing or spatial restrictions, or both, to protect them from disturbance.

E. Peregrine Falcon

Conduct annual surveys of known peregrine falcon nesting territories, and note any Project-related activities in the vicinity (within 0.25 miles) of the nest territories and any behavioral responses observed. Consult with the FS, FWS, and CDFG prior to initiation of the annual surveys to determine if adjustments to the timing of the proposed peregrine falcon surveys and the survey protocol to match the guidelines of the federal monitoring plan are warranted.

F. Foothill Yellow-Legged Frog

Develop a foothill yellow-legged frog monitoring plan within one year of license issuance, in consultation with the State Water Board, FS, CDFG, and FWS, at a minimum, that includes provisions for conducting a four-year study (at a minimum) of breeding site characteristics that includes the following:

- 1) Surveys of foothill yellow-legged frog distribution in the Pit 4 Reach throughout the spring and summer to determine presence and life stage development as well as distribution and presence in the Pit 3 and Pit 5 Reach (latter to be coordinated with baseline data collection for the recreation streamflow release plan, Mitigation Measure 16);
- 2) A more thorough search than the spring and summer surveys during the spring breeding season to identify population centers and breeding sites and count numbers of clutches found;
- 3) Descriptions of the physical features of all identified frog breeding sites, including substrate, water temperature at the onset of egg deposition, vegetative cover, water velocities at egg deposition sites, canopy categories, patch size channel habitat type, and evidence of predation;
- 4) Determination of whether changes in flows result in breeding in newly inundated margins, or use of old sites that are now deeper;
- 5) Assessments of whether the new breeding sites connect with the summer lower flow channel, remain as disconnected off channel water bodies, or dry up entirely;

- 6) Return visits to breeding sites and adjacent low flow areas that may be tadpole rearing habitat to assess survival of tadpoles to metamorphosis;
- 7) Estimates of the number of adults at the onset of breeding at each breeding site;
- 8) Monitoring of the time from egg deposition to hatching;
- 9) Monitoring of tadpole numbers and life stage development;
- 10) Monitoring of water temperatures annually in March through May to determine the temperature at which breeding initiates and terminates in coordination with the Water Temperature Monitoring Plan (Mitigation Measure 2);
- 11) An assessment of whether the high tadpole mortality observed in 2002 was due to a water quality factor or predation;
- 12) Taking advantage of unplanned spring or summer high flow events, to the extent possible, to determine any correlation between these spill events and changes in tadpole or metamorph numbers from years when these events did not occur;
- 13) Taking advantage of the receding spring hydrograph to determine flow vectors at known breeding sites and their changes with flows; and
- 14) Reporting procedures for survey and monitoring results.

G. Western Pond Turtle

Within 1 year of license issuance develop a monitoring plan for western pond turtle in consultation with, at a minimum, the State Water Board, FS, FWS, and CDFG. The plan shall consider monitoring at sites where turtles were observed during pre-licensing studies (Spring Rivers, 2001b), e.g., near Camp Nine Flat, Malinda Gulch, Canyon Creek, Blackberry Creek, Big Bend Hot Springs, and the two sites just downstream of the hot springs.

H. Valley Elderberry Longhorn Beetle

Develop and implement a plan in consultation with the DFG, FS, and FWS for the protection of valley elderberry longhorn beetle (VELB), including pre-construction surveys, where needed, and training and education for crews that are responsible for management (operation and maintenance) of the Project. Include in the plan provisions for ensuring that measures identified in the plan (e.g., flagging and protecting elderberry shrubs with stems over one inch in diameter) are consistent with the current FWS guidelines.

I. Northern Spotted Owl

Consult with the FS, FWS, and CDFG in the development of mapping of suitable habitat for northern spotted owl that could be affected by Project operations. Identify during this consultation, the process that would be used to determine if field surveys or protection measures might be required. PG&E's survey responsibilities in general should be confined to areas within 0.25 miles of Project activity sites (or an alternative buffer determined during agency consultation) where potential disturbance of owls is a concern, unless specific activities (e.g., those that may generate noise beyond the designated buffer) that would require adjustment of this survey limit are identified during agency consultation. File a plan with FERC within one year of license issuance that identifies the area to be mapped and subject to potential survey, the process that would be used to determine when field surveys and assessment of potential protective measures would be needed, and a schedule for submitting maps of suitable northern spotted owl habitat within the defined study area to FERC.

J. Bald Eagle

Prepare a revised Interagency Bald Eagle Management Plan (IBEMP) and update every five years. Include local communities, commercial operators (e.g., angling guides, outfitters, rafting companies), and recreational groups in the consultation process for the proposed IBEMP update, since measures to protect bald eagles would affect their activities and businesses and would require their cooperation. Include the Tribe in the consultation process, due to the cultural importance of the bald eagle. Include a mechanism for regular meetings with plan cooperators to identify any changes to the plan that may be needed. The IBEMP should focus on:

- 1) Protection of habitat to ensure that suitable nest, roost, and perch trees (and stands) would be available through the license period; and
- 2) Identification of specific measures that would effectively minimize disturbance to both nesting and wintering bald eagles (existing measures such as boating speed restrictions in upper Lake Britton, would likely need to be continued); additional measures may also be needed to respond to changes in bald eagle nest locations; implementation of scheduled whitewater releases could disturb bald eagles and would need to be carefully managed in order to minimize the risk of adverse effects. Update the 1993 Biological Compliance Monitoring Plan (BCMP), implement the monitoring specified in the updated Interagency IBEMP, and prepare a comprehensive report at five-year intervals. The updated IBEMP should include annual bald eagle breeding, productivity, and wintering surveys and maintain mapped information on nesting, roosting, and perch trees and foraging areas to monitor how these locations relate to proposed recreational facility construction or changes in recreational use patterns. The updated BCMP shall include fish monitoring. The plan should also include provisions to reduce the frequency, or discontinue elements, of

the monitoring program if they are no longer necessary to protect bald eagle populations in the Project area.

**K. Terrestrial mollusks**

Surveys for terrestrial mollusks shall occur prior to construction or modification of Project-related facilities that may influence potential habitat. Survey results shall be submitted to the FS, CDFG, and FWS and the survey results should be used to determine appropriate protective measures, if any.

**Impact 14: Project impacts on Valley Elderberry Longhorn Beetle**

Valley Elderberry Longhorn Beetle (VELB) was listed on the Endangered Species Act as threatened in 1980. Habitat for the VELB in the Project area is extremely limited, and occurrences of this species are unlikely. Maintenance, construction, or other ground-disturbing activities may impact elderberry shrubs in the Project area not previously surveyed. This impact is considered significant.

Implementation of Mitigation Measure 11 will reduce this impact to a less than significant level.

**Impact 15: Noise impacts on nesting owls and other species**

Noise from road improvements and improvements at recreation sites (heavy equipment operation for grading, excavating, loading, hauling, culvert installation, or bridge construction) could disturb nesting owls and other species if conducted within the proximity of nests during the breeding season. This impact is considered significant.

Implementation of Mitigation Measure 11 will reduce this impact to a less than significant level.

**RECREATION**

**Impact 16: Impacts from increased recreational use**

Increased recreational use may exacerbate existing sanitation problems in the area surrounding Lake Britton and other recreation sites. Increased recreation may also increase safety problems, road impacts, and increase off-road vehicle (ORV) effects on resources, including the demand for parking. Regular monitoring of the Project area would act as a deterrent to minimize vandalism, cultural resource disturbance, and trash dumping. This impact is considered significant.

Implementation of Mitigation Measures 12, 13, and 14 will reduce this impact to a less than significant level.

**Mitigation Measure 12: Recreation Management Plan**

PG&E shall develop a comprehensive Recreation Management Plan that includes site drawings and an implementation schedule. The FS, FWS, NPS, California Department of Parks and Recreation (CDPR), CDFG, State Water Board, Shasta County, the Tribe, and the Hat Creek Technical Advisory Committee, shall be consulted during

development of PG&E's proposed recreation management plan. The Plan shall be submitted to the Deputy Director for approval within one year of license issuance. The plan shall include the following components and considerations:

- A. Identification of recreational use management objectives for the Project area, specifically for the upper and lower Lake Britton area and the Pit River Canyon Reaches, and consideration of FS Recreation Opportunity Spectrum (ROS) objectives associated with these areas, as appropriate, in developing these objectives.
- B. A summary of the existing Project-related facilities, including type, location, owner, and entity responsible for the management of the facilities.
- C. Recreational-use capacity triggers to help assess the need for future development of additional facilities, such as an expanded campground or day-use facility at Lake Britton, or a new primitive campground in the Pit River Canyon area.
- D. The results of PG&E's proposed assessment of whether a primitive campground can be developed along the Pit 5 Bypassed Reach, including: (a) potential sites; (b) the estimated cost of developing a site; (c) documentation of consultation with CDPR, FWS, CDFG, and representatives of the community of Big Bend; (d) a recommendation regarding whether the site should be developed; and (e), if so, a schedule or capacity trigger that would be used to initiate site development.
- E. Measures to provide new and upgraded existing Project-related recreational facilities and trails within the Project area, including triggers to address the need for sanitation facilities and trash receptacles. The plan shall include preliminary designs, implementation schedule, and estimated costs for these facilities. Facility design should consider providing accessibility to persons with disabilities, as appropriate, and be consistent with the recreational-use management objectives.
- F. Assessment of the potential effects of the proposed facilities on the Project area sensitive resources, and development of additional appropriate site-specific mitigation measures, if needed.
- G. Coordination of the development of the plan and facility upgrades with development with the road and facilities management plan, particularly the off-road vehicle (ORV) management component of that plan, the vegetation management plan, the IBEMP, and the Historic Properties Management Plan (Mitigation Measure 20) for the Project.
- H. Identification of measures to maintain and manage the existing and new Project-related recreational facilities and trails within the Project area, including identifying the entity responsible for managing the facility, and recreational site

vegetation management measures for the existing and proposed recreational access areas within the Project boundary.

- I. Documentation of consultation conducted in the development of the recreation management plan with agencies, tribes, and other interested parties, including copies of any correspondence with the consulted parties, summary of key meetings conducted with the consulted parties in the development of the plan, and PG&E's response to comments on the plan.
- J. The following measures that pertain to Lake Britton:
  - 1) Develop a plan for public access to Lower Hat Creek consistent with the Historic Properties Management Plan.
  - 2) Implementation of the following improvements at the North Shore Campground: (a) institute measures to create and maintain beach areas and to reduce shoreline erosion due to beach use; (b) designate swimming areas to separate swimming and boat mooring and beaching; (c) provide directional signage, as appropriate; (d) evaluate the need for and feasibility of constructing additional road pullouts on the North Shore Campground access road; assess measures to provide 10 to 15 parking spaces for day use only near the boat launch or east bluff beach access areas; (e) provide firewood to campground users (either for sale or free of charge); and (f) install flush toilets and showers;
  - 3) Identification of additional beach day-use capacity around Lake Britton that would increase the existing capacity by 100 people at one time and concentrate on enhancing existing sites or disturbed areas before any new locations are considered. Day use areas would include the following: (a) regularly maintained beach sand, if needed; (b) access to the shore designed to minimize erosion; (c) restrooms on site or nearby; (d) access by road or boat; (e) designated parking, if access is by road; (f) trash collection; and (g) regular monitoring by a host or PG&E employee;
  - 4) Addition of 25 percent more public overnight developed camping units over the life of the license (an increase of 39 sites); at least half of the capacity would be added during the first 10 years from license issuance and the balance within 15 years of license issuance; additions to capacity should be within the Project boundary or situated to enhance public access to Project lands and waters; new capacity would emphasize expansion of existing sites and use areas over the development of new sites and use areas;
  - 5) Establishment of a reservoir water surface zoning plan that documents existing speed zones and displays recommended changes; and
  - 6) Identification of measures to enhance the existing Jamo Point boat launch area, including: (a) designating parking spaces for vehicles with trailers; (b) providing a picnic table between the restroom and shoreline; (c) developing a potable water source at the Jamo Point boat launch or Pines picnic area, including an assessment of whether this source should be available on a year-round basis, to help improve the recreational user experience at this

area; and (d) providing personnel at the Jamo Point boat launch area and Pines picnic area to provide trash removal and maintenance of restrooms during weekends from Labor Day through the end of September.

K. Include in the recreation management plan the following measures that pertain to the Pit River Canyon:

- 1) If the Shasta County ordinance prohibiting boating on the Pit 4 Reservoir is modified to allow public use by non-gasoline powered boats, address the most appropriate location for this access;
- 2) Provide a day-use access area at the Pit 5 or Tunnel Reservoirs;
- 3) Improve and provide adequate parking at Talus Siren by removing road debris piles on the south side of the road. Implement the following trail improvements to enhance access to the bypassed reaches at Powder Spur, Delucci Ridge, Rock Creek, Malinda Gulch, and Oak Flat in a manner that is consistent with the FS ROS objectives for this area, Roaded Natural and Semi-Primitive Motorized: (a) erosion and sedimentation control measures; (b) stabilization of existing erosion sites; (c) provide signage to designate trails; (d) improve and provide adequate parking at each trailhead; (e) provide trailhead trash receptacles, as appropriate; and (f) provide sanitation facilities, as appropriate;
- 4) Develop spoil pile 4D, near the Pit 4 Dam, into a scenic canyon overlook vista and include in the design: (a) parking areas; (b) pathways; (c) interpretive signage, and (d) safety barriers at the edge of the steep slope, as needed; coordinate the design with the spoil pile management plan;
- 5) Address the following issues that pertain to dispersed use along the Project bypassed reaches: (a) fire prevention; (b) sanitation; (c) parking; (d) unintended expansion of the area influenced by recreational use (site creep); (e) crowding; and (f) length of stay limits;
- 6) Provide recreation-related improvements at Ruling Creek to include: (a) a vault toilet; (b) trash receptacles; (c) provisions to either remove or incorporate into the site design the piles of road debris; (d) realignment of the access road away from the river; (e) stabilization of riverbank erosion associated with the old roadbed; (f) designated camping and parking locations; (g) installation of metal fire rings; and (h) improvements of pedestrian access to the river; and
- 7) Provide whitewater boater put in and take out sites at each of the three bypassed reaches, including: (a) on the Pit 3 Reach, improve egress from the river in the vicinity of the powerhouse; (b) on the Pit 4 Reach, improve egress from the river in the vicinity of the existing informal take-out at the Pit 4



Powerhouse, grade the parking lot, and provide a vault toilet; and (c) on the Pit 5 Reach, improve ingress to the river by improving access and providing additional parking in the vicinity of the existing informal put-in near Trailer Road, and at the take-out in the vicinity of the existing informal access just upstream of the Pit 5 Powerhouse, grade and gravel the parking area and provide a vault toilet.

**Mitigation Measure 13: Road and Facilities Management Plan**

PG&E shall develop a road and facilities management plan within one year of license issuance, in consultation with the FS, FWS, the Tribe, the Hat Creek TAC, and State Water Board. The plan shall be submitted to the FERC for approval and shall include the following:

- A. An inventory and map of existing road segments and parking areas within the Project boundary, both FS classified and unclassified, including: (1) the purpose of each road and parking area, relative to Project purposes; (2) season of operation; (3) designated FS road management objectives (RMO) (if applicable); (4) drainage crossings or bridges and culverts and verification of ability to pass water and debris during a 100-year storm event; (5) location of road watering sources; and (6) disposal sites for surplus material such as rocks, brush, and spoil piles; this inventory would serve to identify those roads that serve Project purposes and are the responsibility of PG&E to be maintained in a manner consistent with current criteria and consistent with the FS RMOs; of the roads listed in table 46 of the EIS, unless evidence to the contrary is presented, the following roads do not have a nexus to the Project and are not considered Project roads: bald eagle management area road; Pit 4 Reservoir Spurs; Big Pine Deer Camp Road; Deep Creek Campground Road; and Gravel Bar Road, and do not recommend that these roads be considered Project roads, unless evidence to the contrary is presented.
- B. Provisions to restrict vehicular access to designated roadways and prohibit off road activities within the Project area including: (1) grading and adding red cinder to limit rutting and muddiness; (2) revegetating and bouldering Offroad Recreational Vehicle (ORV) created roads; (3) consultation to determine which roads should be closed; and (4) development of an ORV management plan to protect sensitive cultural and terrestrial resources that includes: (a) identification of damaged areas; (b) identification of rehabilitation needs for damaged areas; (c) time frames for seasonal road closures; (d) restrictions to protect bald eagles, cultural resources, and sensitive habitats; and (e) measures to address access roads near the Hat Creek fish barrier dam to assess the need for vehicular access roads and ways to balance access with protection of sensitive areas. Development of the ORV management plan would be coordinated with the implementation of the Historic Properties Management Plan;
- C. Provisions to consult with the FS, the Tribe, and California Department of Transportation (CalTrans), to develop road maintenance standards and specific road rehabilitation needs;

- D. Provisions to consult with the FS, CalTrans, and Shasta County to develop interim measures to address the current condition of the intersection of Jamo Point/Pines picnic area access road with State Route 89;
- E. Establishment of designated areas for disposal of rock and soil from road management and a description of the types of materials allowed to be disposed of in the designated areas and how organic materials would be treated;
- F. A road rehabilitation schedule to bring existing Project-related roads and associated facilities (i.e., culverts, gates, bridges, crossings, cribwalls) into compliance with applicable standards that achieve the FS designated RMOs (for roads on National Forest System Lands);
- G. Specification of applicable limited operating periods for road rehabilitation and maintenance that would protect sensitive species of wildlife;
- H. Measures to address existing road and parking area rehabilitation needs to bring existing Project roads up to current public safety levels; general road rehabilitation needs would include items such as: (1) gates and signage for road closures as specified in the latest edition of the *Manual of Uniform Traffic Control Devices*; (2) measures to prevent introduction of noxious weeds at construction sites; (3) implementation of the FS's *Best Management Practices - Water Quality Management for Forest System Lands in California*; (4) bridge inspections; (5) installation of vehicle control measures to protect against erosion; and (6) regular maintenance of roadways including replacing faded signs, clearing vegetation to provide adequate sight distances, and repairing or replacing damaged culverts. Specific rehabilitation needs should include upgrades developed in consultation with the above entities;
- I. Where dust from Project roads has been identified as a problem (e.g., Hagan Flat Road from Tunnel Reservoir to the Pit 5 Dam), address dust control measures that are proposed for implementation;
- J. Measures to monitor future use and condition of the Project area road segments and parking areas, including traffic-use surveys every six years at designated sites, time frames, and frequencies; and conduct future Project-related road and parking area rehabilitation, as necessary, based on the results of this monitoring, in consultation with the FS, FWS, the Tribe, the Hat Creek TAC, and State Water Board;
- K. Measures to monitor and address landslide and soil erosion activity related to Project roads and parking areas;
- L. A water quality monitoring plan that includes runoff management;
- M. A traffic safety plan;
- N. An adaptive management component to allow changes to the plan should use or applicable standards necessitate;
- O. Provisions to submit a summary report to FERC every six years to include the road survey results, documentation of consultation, and a summary of planned road segment and parking area rehabilitation measures, including schedule, party responsible for funding and implementing the measures, and estimated costs for implementation;

- P. An implementation schedule and estimated costs for road rehabilitation and ORV management measures that would be conducted during the period that precedes the submittal of the first summary report specified in the above measure; and
- Q. Documentation of consultation conducted in the development of the road management and maintenance plan, including copies of any correspondence with the consulted parties and licensee's response to comments on the plan.

Develop a plan, in consultation with the FS and the Tribe, and submitted to the FERC for approval within one year of license issuance, for providing full time patrol of the Project for purposes of resource protection that provides for routine and regular physical inspections of affected lands, Project facilities, and structures including implemented protection, mitigation, and enhancement measures and the provisions of the Historic Properties Management Plan. The plan shall also include a description of reporting responsibilities, including observed violations of laws, and communications with law enforcement agencies as well as required documentation of inspections.

#### **Mitigation Measure 14: Signage Plan**

PG&E shall develop a signage plan in consultation with the FS, California Department of Parks and Recreation (CDPR), and CalTrans, at a minimum, within one year of license issuance that specifies the location, design, size, color, and message for the following types of signs: (a) information and education; (b) fire prevention; (c) regulatory and warning; (d) Project license; (e) road; (f) recreation; (g) directional; and (h) safety. The plan should address maintenance standards, so that all signs are maintained in a neat and presentable condition, and provisions to ensure sign format is consistent throughout the Project area. The plan shall be submitted to the FERC for approval.

#### **Impact 17: Impacts of recreation flow releases**

Recreational flow releases in August and September may increase fire risk, create a need to train local fire department personnel in whitewater rescue techniques, increase the amount of litter, and affect sensitive cultural resources. This impact is considered significant.

Implementation of Mitigation Measures 8, 15, and 16 will reduce this impact to less than significant.

#### **Mitigation Measure 15: Interpretive and Education Plan**

PG&E shall develop an Interpretive and Education (I&E) Plan for Lake Britton and the Pit River Canyon area in consultation with the FS, CDPR, NPS, FWS, CDFG, and the Tribe, and submit the plan to FERC within two years of license issuance; include in the plan the following components:

- A. Information to be publicized about the Pit River Hydroelectric System; Native American history; local history; Project area aquatic, botanical, and wildlife resources;
- B. Resource management actions planned and under way;

- C. Appropriate recreation behavior and resource protection (leave-no-trace practices, fire safety, vandalism awareness, and recreation use impacts);
- D. Maps (indicating roads, parking areas, developments, and trails);
- E. Public safety information, such as safe boating and angling practices on Project waters;
- F. Specific measures that would be used to provide interpretive materials (e.g., brochures and location of signage, as appropriate) to educate the public about the above topics; and
- G. Documentation of consultation conducted in the development of the I&E plan, including copies of any correspondence with the consulted parties, summary of key meetings conducted with the consulted parties in the development of the plan, and PG&E's response to comments on the plan.

#### **Mitigation Measure 16: Fire Management and Response Plan**

PG&E shall develop a fire management and response plan for Project lands within six months of license issuance in consultation with the California Department of Forestry and Fire Protection, local fire departments, such as Burney and Big Bend, and the FS that is consistent with existing fire management strategies on lands within and adjacent to the Project boundary. The plan shall be submitted to the FERC for approval. The fire management and response plan shall include the following: (a) how fire danger and public safety associated with Project induced recreation, including fire danger associated with dispersed camping, existing and proposed developed recreation sites, trails, and vehicular access would be addressed; (b) measures to increase public awareness about fire danger, including signs and brochures; (c) an analysis of fire prevention needs including equipment and personnel availability and fire patrols; (d) a list of the location of available fire prevention equipment and the location and availability of fire prevention personnel; (e) provisions for reporting any Project related fires to the FS as soon as practicable; (f) how fire control and extinguishing would be addressed; and (g) how PG&E would ensure that fire prevention measures would meet water quality best management practices. The fire management and response plan would be coordinated with the recommended vegetation management plan, including measures for vegetation management to control the potential fuel supply for fires, and the I&E plan.

#### **LAND USE AND AESTHETICS**

##### **Impact 18: Fire risk from increased recreational use**

Increased recreational use at developed and dispersed recreational areas with user-created fire rings adds to the threat of fires. Additional fires could result in property damage, destruction of the scenic beauty of the Pit River Canyon, increase particulate matter and decrease air quality due to smoke. This impact is considered significant.

Implementation of Mitigation Measures 14, 15, 16, 17, and 21 will reduce this impact to a less than significant level.

### **Mitigation Measure 17: Recreation Monitoring Plan**

PG&E shall develop a recreation monitoring component to the Recreation Management Plan to assess levels of recreation use, need for additional resource protection measures, and need for facility expansion. The monitoring component shall include the following:

- A. A definition of recreation monitoring indicators, such as recreational facility occupancy rates, dispersed site occupancy rates, perceived crowding, reservoir boating use levels, river shoreline use densities, number and area of user created dispersed areas, litter and debris, recreational facility condition, vandalism, and effects on cultural resources, bald eagle, aquatic habitat, and water quality;
- B. Standards that would help define the minimum acceptable condition for each indicator;
- C. Identification of the frequency the indicators would be monitored and provisions for stakeholders to meet to discuss monitoring results;
- D. Identification of measures that will be used, based on the results of monitoring, to determine if recreational use should be limited due to effects on resources or if recreational use should be allowed to grow and additional facilities constructed to accommodate growth in recreational use; these measures should coincide with the recreational use capacity triggers to help assess the need for future development of additional facilities;
- E. Identification of measures to provide recreational use data for the year prior to the submittal of the summary report (i.e., every six years) by activity and by facility location and information related to boating use with a description of the methodology used to collect the data;
- F. The process for identification of unforeseen management factors or issues, based on the results of the monitoring, that were not addressed in the original recreation management plan, and measures to address these issues;
- G. Submittal of a summary report to FERC every six years (coinciding with the FERC Form 80 submittal) to include the recreation monitoring results, documentation of consultation, and a summary of any planned recreational facility improvement measures or resources protection mitigation measures associated with the recreational facilities, including schedule, party responsible for funding and implementing the measures, estimated costs for implementation, and entity responsible for the long-term maintenance and management of the planned recreational facilities or mitigation measures; and
- H. Documentation of consultation conducted in the development of the recreation-monitoring plan, including copies of any correspondence with the consulted parties, summary of key meetings conducted with the consulted parties in the development of the plan, and licensee's response to comments on the plan.

### **Mitigation Measure 21: Project Patrol**

PG&E shall develop a plan, in consultation with the FS and Tribe, within one year of license issuance, for providing full time patrol of the Project for purposes of resource protection that provided for routine and regular physical inspection of affected lands,

Project facilities, and structures including implemented protection, mitigation, and enhancement measures and the provisions of the Historic Properties Management Plan. The plan shall also include a description of reporting responsibilities, including observed violations of the laws, and communications with law enforcement agencies as well as required documentation of inspections. The plan shall be submitted to the FERC for approval.

**Impact 19: Proposed recreational enhancements may affect the aesthetics of the Project area**

During construction of new facilities, earth-disturbing activities and equipment operations could have short-term adverse effects on the scenic value of the area. Vegetation removal to accommodate new facilities may result in temporary or long-term change of the visual character of the immediate surroundings. This impact is considered significant.

Implementation of Mitigation Measure 18 will reduce this impact to a less than significant level.

**Mitigation Measure 18: Visual Management Plan**

PG&E shall develop a visual management plan (VMP) in consultation with the FS and CDPR within one year of license issuance that would: (a) specify practical methods that would be implemented to reduce visual effects of existing facilities during regular maintenance and upgrading; (b) specify practical methods that would be implemented to minimize visual effects of proposed and recommended new facilities (including use of surface treatments with colors and materials that are in harmony with the surrounding landscape, use of native plant species to screen facilities from view, and the rescape and revegetation of disturbed areas to blend with surrounding scenic characteristics); and (c) specify practical methods that would be implemented for removal of Project-related debris from Project-influenced waters. The plan shall be submitted to the FERC for approval.

**CULTURAL RESOURCES**

**Impact 20: Impacts on cultural resources**

Effects on cultural resources can result from use and maintenance of roads, wind and water erosion, recreation, vandalism, and modifications and repairs to Project facilities. Effects may be attributable to Project operations, or to Project related recreational or other enhancements. They may also be attributable to natural and human forces unrelated to the existence or operation of the Project. This impact is considered significant.

Implementation of Mitigation Measures 14, 19, 20, and 21 will reduce this impact to less than significant.

### **Mitigation Measure 19: Land and Habitat Management Plan**

PG&E shall develop a land and habitat management plan (LHMP) for Project lands, that includes previously described plans to facilitate cross-referencing the many inter-related component plans and help ensure that management of Project resources is coordinated throughout the term of the license. The LHMP would be filed for FERC approval within two years of license issuance. The LHMP would include the following:

- A. Overview and discussion of general land management measures within the Project area (this section would include a discussion of key land management objectives, and a description of how coordination of the various components of the LHMP would be accomplished)
- B. Erosion and sedimentation control plan (Mitigation Measure 4)
- C. Spoil pile management plan (Mitigation Measure 5)
- D. Biological monitoring and adaptive management plan (Mitigation Measure 7) that includes the following components: the fish and invertebrate monitoring plan; foothill yellow-legged frog monitoring plan; western pond turtle monitoring plan; IBEMP; Biological Compliance Monitoring Plan; wildlife management plan (which specifies monitoring and mitigation to protect sensitive wildlife species proposed and recommended elsewhere); and vegetation and noxious weed management plan (Mitigation Measure 9)
- E. Historic Properties Management Plan (portions that do not include sensitive materials) (Mitigation Measure 20)
- F. Recreation management plan (Mitigation Measure 12)
- G. Project patrol plan (Mitigation Measure 21)
- H. Road and facilities management plan (Mitigation Measure 13)
- I. Sign plan (Mitigation Measure 14)
- J. Fire management and response plan (Mitigation Measure 16)
- K. Visual Management Plan (Mitigation Measure 18)

Each chapter shall consist of the specified plan, with cross-references to related plans to avoid redundancy, as appropriate, and would include a description of the proposed management and enhancement measures, an implementation schedule, monitoring and maintenance measures, and documentation of consultation conducted in the development of the plan.

### **Mitigation Measure 20: Historic Properties Management Plan (or Cultural Resources Management Plan)**

PG&E shall prepare and implement a Historic Properties Management Plan in consultation with the Tribes, State Historic Preservation Officer (SHPO), and FS, within one year of license issuance that will resolve any adverse effects on cultural resources. The plan shall be submitted to the FERC for approval. The Historic Properties Management Plan shall provide measures to mitigate any identified impacts, including a monitoring program, a patrolling program, and management protocols for the on-going protection of archaeological properties. If items of potential cultural, historical, archaeological, or paleontological value are discovered, PG&E shall immediately cease work in the area affected. PG&E shall then, in consultation with the SHPO and FS,

prepare a site-specific plan for the affected area for approval by FERC, and implement the steps identified in the plan to protect the site from impact. The Historic Properties Management Plan shall include provisions identified in the ongoing supplemental ethnographic studies that pertain to identification of ethnobotanical resources, including the potential establishment and protection of plant gathering sites and the incorporation of important species into plans for revegetation. Shoreline stabilization procedures are addressed in Mitigation Measure 4.