

COVER SHEET

FEDERAL ENERGY REGULATORY COMMISSION

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE
UPPER NORTH FORK FEATHER RIVER PROJECT

Project No. 2105-089

SECTION 2

PROPOSED ACTION AND ALTERNATIVES

PAGES 2-1 to 2-16

FEIS

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 APPLICANT'S PROPOSAL

PG&E proposes to maintain its existing operations, with minor modifications, at the UNFFR Project. No new construction is proposed.

2.1.1 Project Description and Operation

2.1.1.1 Project Description

The existing UNFFR Project consists of three dams and reservoirs; five powerhouses; tunnels and penstocks connecting the reservoirs to the powerhouses, and associated transmission, operations and maintenance (O&M), and access facilities. The five developments include a total of eight hydroelectric generating units with a total installed capacity of 342.6 MW. All three reservoirs provide regulated storage. The project waters continue downstream in the NFFR to the Rock Creek reservoir and the Rock Creek-Cresta Hydroelectric Project (FERC No. 1962).

The upstream-most reservoir is Lake Almanor, located on the NFFR. Lake Almanor has a usable storage capacity of 1,134,016 acre-feet, a maximum water surface area of 27,000 acres, and a maximum normal water surface elevation of 4,494 feet (PG&E datum). Lake Almanor is impounded by Canyon dam, an earth-filled structure 135 feet high and 1,400 feet wide at its base. The dam has an outlet tower and tunnel capable of releasing up to 2,100 cubic feet per second (cfs) to the NFFR through outlets with inverts at 4,420 feet and 4,465.0 feet (PG&E datum), as well as a simple overflow spillway at 4,500 feet (PG&E datum). The maximum water storage elevation, as authorized by the California Division of Safety of Dams, is 4,994 feet (PG&E datum). Water also leaves Lake Almanor through the Prattville intake, which has an invert located at 4,410.0 feet (PG&E datum). From the Prattville intake, flow passes through the 10,899-foot-long Prattville Tunnel No. 1A, then the 5,568-foot-long Butt Valley penstock to the Butt Valley powerhouse.

Butt Valley reservoir, located on Butt Creek, takes inflows from Butt Creek as well as the Butt Valley powerhouse. Butt Valley reservoir has a usable storage capacity of 49,897 acre-feet, a maximum water surface area of 1,600 acres, and a maximum normal water surface elevation of 4,132.1 feet (PG&E datum). Butt Valley reservoir is impounded by Butt Valley dam, an earth filled structure 1,350 feet long, 74 feet high, and 850 feet wide at its base. The dam has no low-level outlet, and an ungated overflow spillway has a crest elevation of 4,132.1 feet (PG&E datum). Water also leaves Butt Valley reservoir through the Tunnel No. 2 intake, which has an invert elevation of 4,066.9 feet (PG&E datum), through the 9,776-foot-long Tunnel No. 2 and the 2,222-foot-long Caribou No. 1 penstock to the Caribou No. 1 powerhouse, and through the Tunnel No. 2A intake, which has an invert elevation of 4,093.0 feet (PG&E datum)

through the 8,710-foot-long Tunnel No. 2A and the 2,322-foot-long Caribou No. 2 penstock to the Caribou No. 2 powerhouse.

Belden forebay, located on the NFFR, receives water from the Seneca bypassed reach, and the Caribou Nos. 1 and 2 powerhouses. Belden forebay has a usable storage capacity of 2,421 acre-feet, a maximum water surface area of 42 acres, and a maximum normal water surface elevation of 2,975.0 feet (PG&E datum). Belden forebay is impounded by Belden forebay dam, a rock filled structure 500 feet long, 152 feet high, and 630 feet wide. Water exiting the Belden forebay is either diverted to the Belden powerhouse via the Belden intake, which has an invert elevation of 2,930.0 feet (PG&E datum), then through the Belden tunnel and penstock, or continues down the NFFR. The dam also has a spillway with four radial gates and a siphon that activates if the reservoir exceeds 2,975.5 feet (PG&E datum).

The Butt Valley powerhouse includes a single, 55,000-hp vertical Francis turbine. The generator is a 13.8-kV, 44,400-kVA, 3-phase unit with a 0.9 power factor. The development includes a 40,000-kVA transformer bank that steps up voltage from 13.8 kV to 115 kV for transmission.

The Caribou No. 1 powerhouse includes three, 30,000-hp double overhung impulse turbines. Two of the turbines are connected to 11.5-kV, 27,777-kVA, 3-phase generators with a 0.9 power factor, and one turbine is connected to an 11.5-kV, 26,500-kVA, 3-phase generator with a 0.9 power factor. The generating units are connected to a 90,000-kVA transformer bank that steps up voltage from 13.8 kV to 115 kV for transmission, and the development's output can also be tied to Caribou No. 2 development through a 56,000-kVA autobank.

The Caribou No. 2 development has two, 76,000-hp, six-jet vertical shaft impulse turbines. One of the turbines is connected to 13.8-kV, 64,000-kVA, 3-phase generators with a 0.9 power factor, and one turbine is connected to a 13.8-kV, 67,000-kVA, 3-phase generator with a 0.9 power factor. The generating units are connected to a 137,800-kVA transformer bank that steps up voltage from 13.8 kV to 230 kV for transmission, and the development's output can also be tied to Caribou No. 1 development through a 56,000-kVA autobank.

The Oak Flat development, located at the base of Belden forebay dam, has a single 1,837-hp horizontal shaft Francis turbine. The turbine is connected to a 1,628-kVA, 3-phase generator with a 0.86 power factor. The generating unit is connected to a 2,001-kVA transformer bank which connects to a 21/2.4-kV distribution line.

The Belden powerhouse contains a single, 158,000-hp vertical shaft Francis turbine. The turbine is connected to 13.8-kV, 131,000-kVA, 3-phase generator with a 0.90 power factor. The generating unit is connected to a 131,000-kVA transformer bank that steps up voltage from 13.8 kV to 230 kV for transmission.

There are two transmission lines associated with the project. A 7.4-mile-long line from Butt Valley to the Caribou development was developed to 230 kV standards but is currently operated at 115 kV. A 12-kV tap line carries power from the Oak Flat development to a local distribution line.

The applicant proposes no new facilities, but it does propose to add 33.73 acres of lands of the Plumas National Forest to the project because of historical and future project use of these lands.

2.1.1.2 Project Boundary

The UNFFR Project boundary includes approximately 31,060 acres of land. Of this acreage, 30,032 acres are owned by PG&E, 1,024 acres are federal lands, and 2.84 acres are privately owned. The FS administers about 986 acres of the federal land (577 acres of the Lassen National Forest and 409 acres of the Plumas National Forest) and the BLM manages the remaining 38 acres of federal land. The UNFFR Project is located entirely in Plumas County, California.

The UNFFR Project boundary encompasses all of Lake Almanor up to the 4,500' elevation contour (PG&E datum); several recreational facilities located along the shoreline of Lake Almanor including the Almanor scenic overlook, the Canyon dam day-use area, the East Shore picnic area, the Rocky Point campground (three road loops), Camp Connery group camp, Last Chance campground, and Last Chance group camp; Canyon dam, including its outlet tower and tunnel; the Prattville intake, including a concrete tower with an enclosed control building; the Prattville Tunnel No. 1A; the Butt Valley penstock; the Butt Valley powerhouse; all of Butt Valley reservoir up to the 4,180' elevation contour (PG&E datum); three recreational facilities on the eastern shore of the reservoir including Ponderosa Flat campground, Cool Springs campground, and Alder Creek day-use area; Butt Valley dam; Tunnel No. 2, including a concrete tower and hoist house; Tunnel No. 2A, including a concrete tower and a hoist house; the Caribou No. 1 penstock and powerhouse, including an outdoor switchyard (shared with Caribou No. 2); the Caribou No. 2 penstock and powerhouse, including an outdoor generation unit and switchyard; the Belden forebay; the Oak Flat powerhouse; Belden forebay dam and intake; the Belden tunnel and penstock; the Belden Adit; the Belden powerhouse; a 7.4 mile-long transmission line extending from Butt Valley to the Caribou powerhouse; a 600 foot-long 12 kV tap line extending from the Oak Flat powerhouse to a local distribution line; and six roads including the Butt Valley Dam Road (two roads), the Butt Valley Powerhouse Road, the Oak Flat Powerhouse Road, the French Creek Road, and the Belden Surge Chamber Road (the project boundary is 60-feet wide along most of the project roads and 40-feet wide along the French Creek Water Supply Road).

2.1.1.3 Project Operation

The developments are operated in an integrated manner, and their operation is also coordinated with other facilities in the Feather River system, including the upstream

unlicensed Hamilton Branch Project, and the downstream Rock Creek-Cresta (FERC No. 1962), Bucks Creek (FERC No. 619), and Poe (FERC No. 2107) projects.

Water levels in Lake Almanor are maintained below the authorized level of 4,994.0 feet (PG&E datum) by releases through the Prattville intake to the Butt Valley development, and through the low-level outlet at Canyon dam, which releases flows into the NFFR. Due to the large capacity of Lake Almanor, Canyon dam is rarely operated to control water level. The water level has never exceeded the authorized level, and thus the spillway has never been used to pass flows. The minimum flow requirement downstream of Canyon dam in the UNFFR is 35 cfs. Outflow from Lake Almanor is controlled in the spring to refill the lake with snowmelt, though in drier years the reservoir will not completely fill.

Butt Valley reservoir is operated to meet power system needs. The average daily reservoir fluctuation was 0.27 foot, and daily fluctuations exceeded 1 foot about 3.5 percent of the time over the period of record. Spill at Butt Valley dam is rare due to the high hydraulic capacity of the Caribou developments.

Belden forebay can fluctuate up to 10 feet in a day due to changing upstream inflows. The minimum flow to the NFFR is 140 cfs from the last Saturday in April to Labor Day, and 60 cfs for the remainder of the year. Spill at the dam is infrequent due to upstream control of inflows and the control of flows to the Belden development.

Operation of all project developments is controlled from the Caribou No. 1 powerhouse. The maximum flow through (i.e., hydraulic capacity of) each development is as follows:

- Butt Valley: 2,118 cfs
- Caribou No. 1: 1,114 cfs
- Caribou No. 2: 1,464 cfs
- Oak Flat: 140 cfs
- Belden: 2,410 cfs

2.1.2 Proposed Environmental Measures

PG&E proposes the following PM&E measures:

1. Use the upper-level gates in the Canyon dam outlet tower for releases to the Seneca reach beginning in September and continuing until at least mid-October.

2. Continue to implement the road maintenance agreement between PG&E and the Plumas National Forest.
3. Operate and maintain the existing gages to determine river stage and minimum streamflow below Canyon dam (NF-2) and Belden forebay dam (NF-70) under the supervision of the U.S. Geological Survey (USGS).
4. Prepare annual water quality report(s) that contain elements consistent with reporting requirements from five water quality programs.
5. Develop a monitoring program to evaluate the effectiveness of seasonal switching of the Canyon dam outlet tower gates used.
6. Develop a monitoring program to determine if the elevated dissolved cadmium and specific conductance levels recorded within the UNFFR basin during 2002 and 2003 were caused by the project and potential solution(s) if they are project effects.
7. Develop a monitoring program to document long-term water quality conditions in Lake Almanor under altered project operations for the new license.
8. Develop a monitoring program to assess potential bioaccumulation of methylmercury, silver, and PCBs in catchable-sized fish in the UNFFR Project area.
9. Develop a bacteriological monitoring program, using a methodology appropriate to determine compliance with state water quality standards.
10. Provide minimum streamflows to the Seneca and Belden reaches, as measured at gages NF-2 and NF-70, in accordance with tables A-1 and A-2 in the SA. Minimum streamflows would commence within 60 days of the issuance of the new license, unless facility modifications are required.
11. Maintain existing streamflow in lower Butt Creek. No action would be taken to reduce dam leakage, tunnel leakage, spring, or other natural flows that currently provide inflow to Butt Creek below the Butt Valley dam.
12. Provide one pulse flow release from both Canyon dam (Seneca reach) and Belden dam (Belden reach) in each of January, February, and March if the forecasted water year type for that month indicates that the water year is anticipated to be either normal or wet. No pulse flows are proposed in months where the water year type forecast for that month indicates that the water year would be dry or critically dry.
13. Develop a monitoring plan to evaluate movement of sediment that occurs during scheduled pulse flow events and other flows of a similar magnitude as scheduled pulse flows. Emphasis would be placed on monitoring the movement of spawning-sized gravel and recruitment of similar-sized

materials into the Belden and Seneca reaches. This plan would be developed after consultation with the FS, FWS, SWRCB, and CDFG. If it is determined that the pulse flows appear to have a detrimental effect on the availability and distribution of spawning-sized gravel or it appears that a pulse flow of a different magnitude or duration would be beneficial, the pulse flow schedule would be altered to achieve the desired results.

14. Implement a ramping rate of 0.5 foot per hour, in all months, at Canyon dam, measured at gage NF-2, and Belden dam, measured at gage NF-70, when ramping rate can be controlled.
15. Block load at the Belden powerhouse at times when the Rock Creek dam is spilling water in excess of the minimum streamflow required under the license for the Rock Creek-Cresta Project but less than 3,000 cfs.
16. Rehabilitate and maintain an existing streamflow gaging station on lower Butt Creek designated as NF-9 and read the gage four times a year.
17. Develop a monitoring plan in lower Butt Creek to (a) determine if the weir for gage NF-9 is acting to block upstream fish passage, and (b) evaluate habitat quality at intervals of 3 to 5 years.
18. If determined to be necessary based on the results of the monitoring program in lower Butt Creek, provide pulse flows in lower Butt Creek via use of the Butt Valley reservoir spillway or an acceptable alternative.
19. Develop an aquatic monitoring plan in the Seneca and Belden reaches that includes monitoring of fish and benthic macroinvertebrates in at least three sites in each reach.
20. Maintain Lake Almanor water levels (PG&E datum) as follows:
 - Wet and Normal Water Years—By May 31, the water surface elevation would be at or above 4,485.0 feet¹⁰ (908,000 acre-feet) and from June 1 through August 31, at or above 4,485.0 feet (908,000 acre-feet);
 - Dry Water Years—By May 31, the water surface elevation would be at or above 4,483.0 feet (859,000 acre-feet) and from June 1 through August 31, at or above 4,480.0 feet (787,000 acre-feet);
 - Critically Dry Water Years—By May 31, the water surface elevation would be at or above 4,482.0 feet (835,000 acre-feet) and from June 1 through August 31, the water surface elevation is at or above 4,480.0 feet (787,000 acre-feet); and

¹⁰ Lake level is defined as the water surface elevation, expressed in PG&E datum, which is 10.2 feet lower than the USGS datum.

- Multiple Dry Water Years—In the event of multiple, sequential dry or critically dry water years, decreases in surface water elevations below those specified above would be allowed, as well as the current minimum elevations specified for the Butt Valley and Belden reservoirs. By March 10 of the second or subsequent dry or critically dry water year and the year following the end of a sequence of dry or critically dry water years, notify CDFG, FWS, SWRCB, FS, and Plumas of drought concerns. By May 1 of these same years consult with representatives from CDFG, FWS, SWRCB, FS, Plumas, and other parties to discuss operational plans to manage the drought conditions.
21. Take such reasonable actions as may be prudent to prevent the water surface elevation in Lake Almanor from exceeding elevation 4,494.0 feet unless a higher level is approved by the Commission and CDWR, Division of Safety of Dams.
 22. Operate Butt Valley reservoir so that the minimum water surface elevation from June 1 through September 30 is at or above 4,120.0 feet (32,000 acre-feet) and from October 1 through May 31 at or above 4,115.0 feet (24,500 acre-feet).
 23. Continue to operate Belden reservoir so that the minimum water surface elevation is 2,905.0 feet (300 acre-feet), year round.
 24. Forecast the water year type on or about January 10; notify the FS, CDFG, FWS, SWRCB, and Plumas County within 15 days; and operate for the remainder of that month and until the next forecast, based on that January forecast. New forecasts would be made on or about the tenth of February, March, April, and May, after snow surveys are completed, and operations would be changed as appropriate. The May forecast would be used to establish the water year type for the remaining months of the year and until the following January 10, when forecasting should begin again.
 25. Remove the Gansner Bar fish barrier on the Belden reach.
 26. Design a wildlife habitat enhancement plan, within 1 year of license issuance.
 27. Develop an amphibian monitoring plan for FS-sensitive species for the Seneca, Butt Creek, and Belden bypassed reaches.
 28. Continue to comply with measures protecting bald eagles according to existing nesting territory management plans.
 29. Finalize and implement a recreation resource management plan (RRMP) for the project that includes the following elements:
 - A recreation facilities development program;

- A recreation operations and maintenance (O&M) program;
 - An I&E program, including the development of a bathymetric map of Lake Almanor;
 - A recreation monitoring program;
 - A resource integration and coordination program; and
 - A RRMP review and revision program.
30. Implement recreational facility enhancement measures (part of the recreation facilities development program) at Lake Almanor, Butt Valley reservoir, Belden forebay, and the bypassed reaches based on target completion dates and monitoring triggers (standards) in the RRMP.
 31. Provide the FS with matching funds up to a maximum of \$5,000,000 (2004 dollars) to construct recreation improvements at FS-owned recreation facilities.
 32. Assume responsibility for operational maintenance and heavy maintenance of the following FS facilities prior to the start of the first recreation season following license issuance: the Dyer View day-use area, the Canyon dam boat launch and day-use area, and the Almanor boat launch. As each recreation facility is individually constructed, assume operational maintenance and heavy maintenance responsibility for the southwest shoreline access zone facilities. Within 6 months of completion of construction of the recreation improvements planned for the FS Almanor Family Campground and amphitheater, the FS Almanor Group Campground, and the FS Almanor beach, apply to the Commission to incorporate these additional FS facilities within the project boundary and include these facilities in the O&M program.
 33. If a decision is made to proceed with recreation river flow releases, upon FS request, provide up to a maximum of \$125,000 (2005 dollars) to the FS for construction of non-project river access to the lower Belden reach.
 34. Provide up to \$50,000 (2004 escalated dollars) to (1) reimburse CDFG for stocking approximately 5,000 pounds of catchable trout per calendar year in the waters of the NFFR between its confluence with the East Branch of the North Fork Feather River (EBNFFR) and the Belden diversion dam; and (2) augment CDFG's existing Lake Almanor fisheries program.
 35. Provide up to \$25,000 (2004 dollars) to the FS by March 1 of each year of the new project license to assist in funding a river ranger position to provide additional light maintenance, visitor information/assistance, user safety, and law enforcement presence in the project's bypassed river reaches.

36. Coordinate with the FS, Plumas County, and CalTrans to develop an MOU to produce a Belden interagency recreation river flow management plan.
37. Establish a recreation river flow TRG within 6 months of issuance of a new license for the purpose of consulting with PG&E in the design of recreation and resource river flow management and monitoring plans, reviewing and evaluating recreation and resource data, and in developing possible recreation river flows in the Belden reach.
38. Implement the recreation flow implementation plan (RFIP) as described in the SA.
39. Implement the recreation river flow schedule and other provisions as presented in the SA.
40. Post, through a third party or other mechanism, an annual recreation flow calendar scheduling the initial recreation flow day per month.
41. Conduct an annual planning meeting each year in March to discuss expected water year type, results of monitoring efforts, PG&E maintenance needs that may conflict with recreation flow releases, and other relevant issues.
42. During scheduled recreation river flows, count observed boater use in number of boats per day to determine whether recreation flow release days should be added or subtracted. If the number of boats per day on the first recreation river flow day for a month exceeds 100 boats per day, one day of recreation river flow would be added to the recreation river flow schedule in that month the next year. If the number of boats per day is less than 100 boats per day for both the recreation river flow releases in one month, one day of recreation river flow would be subtracted from the recreation river flow schedule for the that month in the next year.
43. Develop and implement a visitor survey for up to 3 years to determine if visitors would choose to return to recreate on the Belden reach based on their experience related to the number of boats encountered on the river.
44. Apply the basic ramping rates when implementing recreation river flows.
45. Create a calendar that lists the dates of the March pulse flow in the Seneca reach and any scheduled pulse flow or recreation river flow releases in the Belden reach, and make that calendar available on the Internet through a third party or other mechanism.
46. Meet annually with a committee appointed by the Plumas County Board of Supervisors between March 15 and May 15 to inform the committee about the water elevation levels of Lake Almanor predicted to occur between May 1 and September 30. Schedule an additional meeting with the committee if forecasts show that PG&E's obligation to deliver water to the state of

California and the Western Canal Water District pursuant to the January 17, 1986, agreement would require it to deviate from the Lake Almanor water elevation levels previously predicted.

47. Modify the project boundary to include approximately 34 additional acres of the Plumas National Forest at Caribou and Belden dam for the purposes of penstock maintenance and spoil management.
48. Apply to the Commission within 1 year of license issuance to adjust the project boundary to include all recreation improvements covered by the SA at PG&E facilities as well as the following FS facilities located on the Plumas and Lassen National Forests: Canyon dam boat launch and day-use area, Dyer View day-use area, and Almanor boat launch.
49. Apply to the Commission to adjust the project boundary as needed to incorporate the Almanor Family Campground and amphitheater, the Almanor Group Campground, and the Almanor beach, 6 months after the FS has completed construction of all of the recreation improvements it has planned for each of these facilities.
50. File an FS-approved road traffic survey plan for roads used for project purposes located on NFS lands with the Commission within 1 year of license issuance which includes provisions for monitoring traffic every 6 years when monitoring recreation use in accordance with FERC Form 80 requirements.
51. Implement aesthetic improvement measures and develop FS-approved visual management plans within 2 years of license issuance.
52. Implement the Lake Almanor shoreline management plan (SMP) included in the final license application as amended for the project within 30 days after license issuance.
53. Conduct an annual meeting with the FS, CDFG, and Plumas County to coordinate ongoing project-related land management activities.
54. Preserve the historic features and character of the clubhouse, houses, and grounds at Camp Caribou and consult with the FS when planning maintenance and repair activities at this facility.
55. Finalize and implement the Historic Properties Management Plan (HPMP).¹¹

¹¹ In its application, PG&E called this document a “Cultural Resources Management Plan.” To be consistent with current Commission practice, we now refer to this as an HPMP throughout the EIS, regardless of what we or other parties may have called it in the past. We consider both naming conventions to be synonymous.

2.2 MODIFICATIONS TO APPLICANT'S PROPOSAL

2.2.1 Mandatory Conditions

2.2.1.1 Section 18 of the Federal Power Act—Authority to Require Fishways

Section 18 of the FPA, 16 USC §811, states that the Commission shall require construction, maintenance, and operation by a licensee of such fishways as the Secretaries of Commerce and the Interior may prescribe. By letter dated December 1, 2003, Interior stated that it reserved its authority to prescribe the construction, operation, and maintenance of such fishways as appropriate, including measures to determine, ensure, or improve the effectiveness of such fishways. According to Interior's letter, this reservation includes, but is not limited to, authority to prescribe fishways for rainbow trout, steelhead, spring run Chinook salmon, and any other fish to be managed, enhanced, protected, or restored to the Feather River basin during the term of any license.

By letter dated November 26, 2003, NOAA Fisheries provided a fishway prescription, conditioned on the passage of anadromous fishes at one or more unspecified dams below the project area. By letter dated March 14, 2005, NOAA Fisheries provided a modified fishway prescription for the UNFFR, conditioned on the implementation of a successful trap and transfer program for adult anadromous salmonids at CDWR's Lake Oroville Project (FERC Project No. 2100). Additionally, NOAA Fisheries stated that it reserved its authority to prescribe fishways under Section 18 of the FPA.

2.2.1.2 Section 4(e) Conditions

Because the project occupies lands of the Lassen and Plumas National Forests, the FS has authority to impose conditions under Section 4(e) of the FPA. The FS provided 47 final Section 4(e) conditions by letter dated November 4, 2004 (letter from J. Rider, Attorney, USDA Office of the General Counsel, Pacific Region, San Francisco, CA, to M. Salas, Secretary of the Commission). On December 1, 2003, the FS provided 50 preliminary Section 4(e) conditions (letter from J. Gipsman, Attorney, USDA, Office of the General Counsel, Pacific Region, San Francisco, CA, to M. Salas, Secretary of the Commission) that we considered in the draft EIS. Unless otherwise noted, this final EIS addresses the final Section 4(e) conditions.

Condition nos. 1 through 24 are standard conditions that would involve obtaining FS approval on final project design and changes, yearly consultation with the FS to ensure the protection and development of natural resources, restrictions and protective measures that should be in place, and project O&M procedures that would enable continued project operations to be consistent with applicable provisions of the Lassen and Plumas National Forests' Land and Resource Management Plans. Condition nos. 31, 32, 33, 34, 42, and 43 pertain to development of plans for use of FS-managed lands (including spoil pile, habitat, recreation, traffic, visual, and cultural resource

management). Condition nos. 25, 27, 28, and 30, pertain to establishing and publicizing reservoir water levels and flow regimes in project reaches. Condition nos. 41, 44, 45, 46, and 47 pertain to project-specific consultation with the FS regarding FS special-status species and invasive weeds. Condition nos. 26, 29, 31, 32, 35, 36, 37, 38, 39, and 40 pertain to monitoring water quality, water temperature, plants, fish, macroinvertebrates, wildlife, recreational use, and project lands and facilities to enable appropriate corrective actions to be taken and serve as a basis for adaptive management decisions. Many of these conditions are identical to the terms that are specified in the SA. We include the complete FS final Section 4(e) conditions as appendix B of this EIS.

2.2.2 Staff's Alternative

After evaluating PG&E's proposal and recommendations from resource agencies and other interested parties, we considered what, if any, additional PM&E measures would be necessary or appropriate with continued operation of the project. In addition to, or in lieu of, PG&E's proposed measures, we recommend the following additional environmental measures:

1. Develop a plan, including the schedule, for using the Canyon dam outlet upper-level gates to alleviate heavy metal concentrations and odors associated with late-summer and fall releases from Canyon dam.
2. File with the Commission a spoil disposal plan within 6 months of issuance of a new license and at least 60 days prior to any ground-disturbing or soil producing or piling activity.
3. Develop a water level and flow gaging plan.
4. Develop a monitoring program to document water quality trends in Lake Almanor under a new license and project operations.
5. Develop a bacteriological monitoring program for the first 3 years after license issuance, using a methodology appropriate to determine compliance with state water quality standards.
6. Use existing water temperature models to assess the effects of operating the project to meet flow and lake level requirements of a new license, while being consistent with the Rock Creek-Cresta Project ERC and FS determination for modifying the Prattville intake and implementing other temperature control measures.
7. Develop a plan to monitor DO concentrations in Lake Almanor and Butt Valley reservoir.
8. Revise the draft SMP and implement the revised plan.
9. For any recommended new recreational facilities, develop site-specific plans to control erosion and prevent potential adverse effects on water

quality. These plans would be included in the recreation facilities development program of the RRMP.

10. Provide a pulse flow of 700 cfs in the Seneca reach and in the Belden reach in March of water years classified as dry.
11. Develop an aquatic resources monitoring plan for the Seneca and Belden reaches. Periodically monitor fish populations (in a manner consistent with data presented in pre-filing study reports) and benthic macroinvertebrates in the Seneca and Belden reaches, as recommended in the SA. Initiate monitoring during years 4 and 5 of the new license. After this 2-year monitoring period, the frequency of surveys could be reduced to every fifth year to evaluate long-term responses to measures implemented in the new license and any subsequent modifications that are made.
12. Implement one mid-term geomorphological evaluation in project reaches to assess the response of channel processes to the recommended flow schedule.
13. As part of the proposed coarse sediment management plan, develop specific contingency actions for the enhancement of substrate distribution and abundance in bypasses reaches.
14. Delay implementation of recreational flow releases for a period of 6 years to allow the riverine aquatic biota to respond to a new minimum and pulse flow schedule.
15. Develop a woody debris management plan.
16. Develop an adaptive management plan that addresses the results of all monitoring and special studies conducted on water temperature, water quality, flow, macroinvertebrates, gravel, woody debris, fisheries, amphibian populations and habitat, and vegetation.
17. Develop and implement, within 1 year of license issuance, a vegetation and invasive weed management plan that incorporates protection and management of valley elderberry longhorn beetle (VELB) habitat for all project lands.
18. Develop a plan for the protection of threatened, endangered, proposed for listing, and sensitive species.
19. Incorporate the determination of the California red-legged frog (CRLF) habitat into the amphibian monitoring plan.
20. Develop a peregrine falcon monitoring plan within 1 year of license issuance.
21. Develop an interagency bald eagle management plan within 1 year of license issuance.

22. Develop a fire prevention and response plan within 1 year of issuance of a new license.
23. Implement the measures outlined in the Programmatic Agreement (PA).
24. Consult with the FS, Plumas County, and the Maidu community to more fully investigate the possibility of providing seed funds for a curation facility or interpretive center, and provide the results of this consultation in the HPMP.
25. Invite the FS, Plumas County and NPS to attend future Cultural Resources Working Group meetings.
26. Provide Plumas County with copies of all requested cultural resources reports, including the non-confidential volume of the ethnographic study, if Plumas County agrees not to make the reports available to the public, in compliance with Section 304 of the NHPA.
27. Include, as part of the HPMP: (1) the details of PG&E's employee and public education and interpretive program; (2) site-specific treatment measures for historic archaeological sites and standing structures that the Commission, in consultation with the California State Historic Preservation Officer (SHPO), has determined are eligible for the National Register; and (3) protocols for PG&E to consult and work with the Greenville Rancheria, Susanville Indian Rancheria, and other interested Maidu groups.

2.3 NO-ACTION ALTERNATIVE

Under the no-action alternative, PG&E would continue to operate the project under the terms and conditions of the current license. The environmental measures proposed by PG&E and/or recommended by staff, would not be implemented.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

As part of our independent analysis, we considered several other alternatives to the relicensing proposals: (1) federal government takeover; (2) issuance of a nonpower license; and (3) project retirement. We eliminated them from detailed study, however, because they are not reasonable in the circumstances of this license for the following reasons.

2.4.1 Federal Government Takeover of the Project

We do not consider federal takeover to be a reasonable alternative. Federal takeover of the UNFFR Project would require Congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that a federal takeover should be recommended to Congress. No party

has suggested that federal takeover would be appropriate, and no federal agency has expressed an interest in operating the UNFFR Project.

2.4.2 Issuing a Nonpower License

A nonpower license is a temporary license the Commission would terminate whenever it determines that another governmental agency is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. At this time, no governmental agency has suggested a willingness or ability to takeover the project. No party has sought a nonpower license, and we have no basis for concluding that the UNFFR Project should no longer be used to produce power. Thus, we do not consider a nonpower license to be a reasonable alternative.

2.4.3 Retiring the Project¹²

Retiring the project could be accomplished with or without removing project dams and related project works. Either retirement option would involve denial of the relicensing application and surrender or termination of the existing license with appropriate conditions. At a minimum, project retirement would have the following effects: (1) the energy currently generated by the project (about 1,171.9 gigawatt-hours [GWh] annually) would be lost, and generation at PG&E's downstream Rock Creek-Cresta and Poe projects would be substantially negatively affected; and (2) there would be substantial costs associated with retiring the powerhouses and appurtenant facilities. However, no agency or any other party has advocated the retirement of the project, and the project is a viable operation that supplements PG&E's power generation mix.

In the case of retiring the project with dam removal, adverse effects on the watershed likely to occur within the first 5 to 10 years following project retirement as a result of erosion include suspension of sediments in the project reservoirs, bank failure, development of debris jams and gravel bars, scour, and deposition. Removal of the UNFFR Project dams would not allow for anadromous fish to be restored to the project area unless downstream dams were also removed or passage provided. Removal of the project dams would eliminate the warmwater recreational fisheries found in Lake Almanor and Butt Valley reservoirs and habitat for common carp, which is an important forage species for bald eagle. The loss of open water habitat, with dam removal, would also reduce foraging opportunities for osprey, bald eagle, and other piscivorous birds, and for several species of bats. Project retirement would not affect habitat for the VELB but it would cause temporary noise disturbance to bald eagles during dam removal and

¹² In Scoping Document 2, we indicated that we would assess project retirement to the extent that information was available to address each of the resource issues identified for analysis. Our analysis in this section concludes that retirement of the project is not a viable alternative.

restoration. Adverse socioeconomic impacts on Plumas County and the town of Chester would be tremendous, due to the loss of Lake Almanor.

With dam removal, the areas surrounding Lake Almanor and Butt Valley Reservoir would be converted from lacustrine to riverine environments. The large meadow that existed prior to the creation of Lake Almanor would likely be re-established. The removal of Canyon dam would cause water levels to drop and would likely dewater the developed recreation sites along the shoreline of Lake Almanor and Butt Valley Reservoir with the possible exception of those sites on Lake Almanor near the confluence of the NFFR. Recreational use within the project area would change to that associated with more riverine conditions. Lower water levels would change recreational uses in the Lake Almanor area from flatwater-based opportunities such as motor boating, boat fishing, and flatwater canoeing to more river-based opportunities, such as shore fishing and whitewater boating. Fishing in the Lake Almanor area would change from lake species to more riverine species. The restored NFFR may provide new shoreline angling opportunities.

Retirement of the project with the retention of dams would require a reconfiguration of Canyon dam and or the outlet tower, because of the elevation of the spillway. Failure to do so would result in unacceptable dam safety concerns and result in upstream flooding. With dams in place, all project reservoirs would remain at full pool on a year-round basis, and riparian habitat around the reservoirs would be relatively similar to current conditions.

Under either retirement scenario, the trophy trout fishery in Butt Valley reservoir would likely be lost, because wakasagi from Lake Almanor would no longer be entrained into Butt Valley reservoir. In addition, the limnology of Butt Valley reservoir would be significantly affected by loss of inflow from Lake Almanor through the Prattville intake.

PG&E would no longer require the project lands for project operations, thus ownership of those lands currently owned by PG&E may change. Depending on the subsequent landowner, public access to some parts of the project area and recreational opportunities may be eliminated.

If the project is retired, the protection and enhancement measures that would be specified in the HPMP would not be implemented. Abandonment of the project facilities could lead to loss or deterioration of historically important project elements due to lack of repair, maintenance, and the protection afforded by active use. Consequently, prior to abandonment, PG&E would be required to consult with the SHPO to determine what provisions would be necessary to protect those project elements that contribute to their eligibility for listing in the National Register.

For these reasons, we conclude that project retirement is not a reasonable alternative.