

4 FERC P 61147 (F.E.R.C.), 1978 WL 15720  
\*\*1 Commission Opinions, **Orders** and Notices

Southern California Edison Company

Project No. **67**

**Order** Issuing New License (Major)

August 9, 1978

\***61319** Before Commissioners: Charles B. Curtis, Chairman; Don S. Smith, Georgiana Sheldon, Matthew Holden, Jr. and George R. Hall.

An application was filed on February 12, 1970, and supplemented on June 6 and August 30, 1971, June 19 and September 15, 1972, and January 20, 1975, by Southern California Edison Company (Applicant) of Rosemead, California, for a new Commission<sup>1</sup> license pursuant to Section 15 of the Federal Power Act (Act), 16 U.S.C. § 808, for its constructed **Big Creek** No. **2A** and No. **8** Project, now designated as FERC Project No. **67**. The **Big Creek** No. **2A** and No. **8** Project is located on various streams which are tributaries of the San Joaquin River in Fresno County, California, and occupies, in part, lands of the Sierra National Forest (*see* Appendix A).

#### *Project History and Description*

Development of the hydroelectric potential of the **Big Creek** area was begun by Pacific Light and Power Company and carried forward by its successor, Pacific Light & Power Corporation. In 1917, the latter corporation conveyed all rights and properties to Southern California Edison Company. The initial construction of the **Big Creek** No. **2A** and No. **8** Project was carried out during the period 1920-1929. The original license for the project was issued to Southern California Edison Company on March 3, 1921,<sup>2</sup> and has been operated pursuant to successive annual licenses since that time.

As now constituted, the principal features of the **Big Creek** No. **2A** and No. **8** Project include 14 dams, of which **eight** are small diversion structures less than 10 feet high; 13 water conduits; two powerhouses with a total installed capacity of 154,000 kW; a switchyard; and two 220-kV transmission lines linking the two project powerhouses to a central system switchyard. The project works are described in greater detail in **Ordering** Paragraph (B) of this **order**.

#### *Public Notice*

Public notice of the filing of the application was given as required by the Act, with October 13, 1970, as the last date for filing protests or petitions to intervene. Petitions to intervene were filed by the Sierra Land Use Committee and the California Department of Fish and Game on October 9, 1970, and by the Friant Water Users Association on October 13, 1970. Untimely petitions to intervene were filed by the Cities of Anaheim and Riverside and the County of Fresno, California, on January \***61320** 27 and April 19, 1971, respectively. The Cities of Anaheim and Riverside, the County of Fresno, and the Friant Water Users Association withdrew from participation in the proceeding in 1974, 1975, and 1976, respectively. For reasons discussed below, we believe that the concerns of the remaining intervenors, Sierra Land Use Committee and California Department of Fish and Game, will be accommodated with the operation of Project No. **67** pursuant to this license.

The Commission staff prepared draft and final environmental impact statements on the applications for relicensing of the **Big Creek** No. 3 Project (now designated as FERC Project No. 120) and the **Big Creek** No. **2A** and **8** Project.<sup>3</sup> Notice of the availability of the draft statement was published in the *Federal Register* with June 14, 1976, as the last date for filing protests or petitions to intervene. None were received. Notice of the availability of the final statement was published in the *Federal Register* on October 29, 1976.

**\*\*2** The Secretary solicited comments from various Federal, State, and local agencies on the application for a new license. Most of these comments were addressed in the staff's draft and final environmental impact statements, and will be restated only to the extent necessary to illuminate certain points discussed below.

#### *Nature and Financial Ability of the Applicant*

Southern California Edison Company is a corporation organized under the laws of the State of California, and has its principal place of business at Rosemead, California. The company is authorized to do business in California, Arizona, Nevada, and New Mexico.

Project No. **67** is constructed, and no major changes have been proposed. Applicant utilizes the power from the project to meet its electrical system demands within the central and southern parts of California. Applicant's system is part of the Western Systems Coordinating Council, participating in the California Power Pool Agreement.

#### *Compliance with State Law*

Applicant states that it has complied with the requirements of the laws of the State of California with respect to the appropriation, diversion, and use of water for power purposes and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to effect the purposes of the license.

#### *Comprehensive Development and Federal Takeover*

The water and related land resources of the Upper San Joaquin River Basin are subject to extensive development and management, with features including the U.S. Bureau of Reclamation's Central Valley System and Friant Dam, Pacific Gas and Electric Company's Crane Valley System and Kerckhoff Project, and national forests and national parks.<sup>4</sup> Federal and State agencies and electric utility companies have carried out studies regarding the future development and utilization of the water and related land resources of the basin. These studies involved investigation of hydroelectric power sites, water-oriented recreation, water conservation for irrigation and municipal supply, and uses such as fish and wildlife management, water quality control, and flood control. The studies reveal that sites for further hydroelectric development in the basin are located generally in the drainage area above Mammoth Pool, known as the west side area. Continued operation of Project No. **67** would not be inconsistent with future development of the potential projects, however.

<b>FERC Project No.</b>	<b>Name</b>	<b>License Expiration Date</b>
120	<b>Big Creek</b> No. 3	February 28, 2009
2017	Redinger Lake and Powerhouse No. 4	February 28, 1999
2085	Mammoth Pool Reservoir and Powerhouse	November 30, 2007
2086	Lake Thomas A Edison	August 31, 2003
2174	Portal Forebay and Powerhouse	March 31, 2005
2175	Huntington Lake and Powerhouses <b>Nos.</b> 1 & 2	February 28, 2009

Applicant's entire **Big Creek** System is hydraulically coordinated and electrically interconnected. Water stored in system reservoirs is released for the benefit of irrigation by downstream users, in accordance with an agreement between Applicant and the United States. Spring and summer runoff in excess of the flows that can be utilized for power production is captured and programmed for release during the balance of the year when natural stream flows have dropped to a fraction of the average annual discharge. The system thus provides a measure of good control as well as power and irrigation benefits.

**\*\*3** Project No. **67** is compatible with all other water resource development projects in the San Joaquin River Basin, both existing and proposed. Continued operation of the project would permit utilization of a renewable resource to provide substantial power benefits. In accordance with our responsibility under Section 382(b) of the Energy Policy and Conservation Act of 1975, **42 U.S.C. § 6362(b)**, we note that the project would provide 154,000 kilowatts of capacity capable of an average annual generation of 728,000 MWh. These energy benefits represent the equivalent of about 1,195,000 barrels of oil, or about 336,000 tons of coal, per year.

Section 14 of the Act, **16 U.S.C. § 807**, reserves to the United States the right to take over a non-publicly owned project upon the expiration of the license. There were no recommendations by any Federal agency that Project No. **67** be taken over by the United States. Upon due consideration, we find that continued operation of the project by Applicant best comports with the public interest. Accordingly we will not recommend to Congress on our own motion that the United States take over the project.

We find that, under the terms and conditions of this license, the project is best adapted to comprehensive development of the Upper San Joaquin River Basin.

#### *Safety and Adequacy*

Project No. **67** is situated in a region recognized by the California Department of Mines and **\*61321** Geology to be a zone of moderate earthquake intensity. The closest source of large-magnitude seismic shocks is the Sierra Nevada fault zone, located in the Owens Valley, about 50 miles east of the project.

There have been no major earth tremors within 30 miles of the project since project operations began. The major tremors that have occurred outside of the 30-mile radius have had no apparent effect on the project dams.

The Applicant submitted safety inspection reports for the project pursuant to Part 12 of the Regulations in 1966, 1972, and 1977. The 1977 inspection was made by a Board of Engineering Consultants. The Board found the dams and their foundations to be in good condition and safe under normal loadings, the spillways and outlet works to be in satisfactory operating condition, and surveillance and maintenance of the dams and associated water control facilities to be satisfactory. The Board also found Bear Dam, **Big Creek** Dam No. 5 and Mono Dam to be adequately safe using present day criteria for seismic loading. Our Staff's independent analyses confirm that Bear Dam, **Big Creek** Dam No. 5, and Mono Dam are safe, and that the spillways for all project dams are adequate.

The Board found that the Florence Lake concrete multiple arch dam would be safe under the influence of credible seismic events provided that the ground acceleration occurs perpendicular to the axis of the dam. The Board noted, however, that it had not seen an analysis of the multiple arch dam with seismic loading parallel to the dam axis and, because of the complexity of the three-dimensional model which must be considered, could not express a qualitative judgment on the matter. The Board considered it prudent to investigate the practicability of attempting a three-dimensional finite element stress analysis of the higher arches of the dam for seismic loading, especially since there are no struts between buttresses at this dam. Our staff concludes that all analyses within the proven state-of-the-art have shown Florence Dam to be safe.<sup>5</sup>

**\*\*4** Shaver Lake dam is a concrete gravity dam having a slender cross section and a short base width, the ratio of which the Board considers somewhat less than that considered acceptable for gravity dams in modern day practices. The Board reported the dam and its foundation to be in good condition and that surveillance and maintenance of the dam and associated water

control facilities were satisfactory. The Board considered that, in view of the updated seismic data, the stability of Shaver Dam should be reevaluated, using input data regarding static and dynamic loadings resulting from credible earthquake events.

Applicant submitted on June 15, 1978, the results of its stability analysis of Shaver Dam under normal reservoir Loading and the credible earthquake loading. Applicant concluded that the analysis showed the calculated stresses to be within acceptable limits for the assumed extreme seismic loading. The Board has not reviewed Applicant's stability analysis yet.

Our staff has reviewed Applicant's studies and concurs with the methodology and computed stresses. The dam develops some tensile stress at the heel under normal loads using actual measured uplift forces. The measured uplift forces are low, which can be attributed to efficient operation and maintenance of the drains. An earthquake would cause a tensile stress of 65 psi. If a tensile crack developed at the heel of the dam due to the earthquake loading, it would propagate horizontally across the dam thereby subjecting it to full uplift forces and possibly causing failure. Whether a crack developed or not would depend on the strengths of the concrete and the bond between the foundation and dam. However, the tensile strengths of the concrete and the bond between the foundation and dam are not known. We are therefore requiring through Article 41 that Applicant determine the tensile strengths of the dam foundation contact bond and the concrete at the joints of the dam, and if the concrete tests are unsatisfactory, to file a detailed program and schedule of remedial work to assure the dam's integrity during earthquakes.

Article 42 of this license will provide for continued implementation of the emergency action plan for Project No. 67 which is currently on file with the Commission. The license will also be required to monitor any changes in upstream or downstream conditions that may influence stream flows or affect areas that are susceptible to damage, and to file promptly with the Commission any appropriate changes in the emergency action plan.

#### *Transmission Facilities*

Two 220-kV, 3-phase, single circuit transmission lines emanate from the switchyard at Powerhouse No. 8. One is the intertie between Powerhouse No. 2A and No. 8; the other carries project power to the central switchyard at Powerhouse No. 3 (FERC Project No. 120), where it enters Applicant's interconnected primary transmission system. In addition, small ancillary power lines extend from Powerhouse No. 2A to Shaver Lake and to the top of the Powerhouse No. 8 penstocks. We find that these transmission facilities constitute part of the project as defined in Section 3(11) of the Act.

#### **\*\*5** *Recreation*

Applicant proposes in its Exhibit R (Recreation Plan) to construct additional camping sites, day-use areas, boat ramps, parking areas, and access improvements at several sites. These facilities are designed to further the full public use of project waters and adjacent lands for recreational purposes. Applicant also proposes to establish a special land management zone to provide scenic and environmental protection to existing and proposed recreational developments in the Shaver Lake area.

The Resources Agency of California (RAC) \*61322 commented that the proposed recreational facilities could induce significant wildlife losses. RAC recommended that the Jackass Dike vicinity be considered as an alternative location for the camping area proposed for the Jackass Meadow vicinity around Florence Lake. RAC further recommended that the number of campsites around Florence Lake be significantly reduced and that only a minimum number be built until a genuine need is demonstrated.

RAC also reported that the campground and day-use facility proposed for the eastern shore of Shaver Lake, between Stevenson Creek and North Fork Stevenson Creek, would adversely affect the North Kings deer herd. RAC recommended that this campground development be centered in the area between North Fork Stevenson Creek and Highway 168. RAC reiterated its view that only minimal development should be undertaken now with additional development being keyed to future demonstrated need.

Applicant and Fresno County noted that any increased recreational use at Shaver Lake beyond the capacity of facilities proposed in the Exhibit R could exceed the safe carrying capacity of the area. Inadequate sewage disposal facilities at Shaver Lake were also cited as a potential problem.

The recreational facilities proposed by Applicant clearly would place additional burdens upon the prevailing ecology in the vicinity of the project. It is not clear, however, that the recreational facilities as proposed or in a somewhat different configuration would be incompatible with sound land management practices. We are therefore requiring Applicant to study this issue further. Article 33 requires Applicant to re-evaluate, among other things, the suitable number, size, layout, and location of camping and day-use sites in the vicinity of Shaver and Florence Lakes, the compatibility of the proposed recreational developments with the plans and programs of other entities, and the availability and adequacy of water supplies and sewage disposal facilities. We are requiring Applicant to submit the results of its study, and, within two years from the date of this **order**, to file for our approval any amendments to Exhibits K and R shown to be necessary by that study (see Article 40).

#### *Fish and Wildlife*

Applicant's Exhibit S (Fish and Wildlife Plan) reflects a considerable amount of cooperative study and planning by Applicant, Forest Service, and the California Department of Fish and Game. All have agreed on the measures necessary for improvement of fish and wildlife resources in the vicinity of the project. These measures include stream releases, reservoir cleaning, land and timber management, brush clearing, controlled reservoir operation, and public access.

**\*\*6** We concur with the proposals presented in Applicant's Fish and Wildlife Plan, which we are approving. Article 37 sets forth in detail the continuous stream flows determined to be adequate to protect the downstream fisheries. This article also requires Applicant to maintain certain reservoir levels in **order** to enhance recreation. Article 43 requires Applicant to prepare and implement a plan to provide protection for fish and wildlife during reservoir cleaning operations.

#### *Archeological and Historic Resources*

Applicant reported that there are a number of archeological sites near project facilities. Interior commented that the project area appears to be rich in archeological resources, and recommended that those areas where ground disturbance will take place be intensively surveyed by a qualified archeologist.

Article 36 requires Applicant to consult and cooperate with the California State Historic Preservation Officer, before beginning any construction at the project, to determine which project areas need to be surveyed. The Article also provides procedures to be followed should archeological or historic resources be discovered.

#### *Land Management*

Article 34 affirms Applicant's duty to supervise and control the use and occupancy of project lands and waters in **order** to protect and enhance scenic, recreational, and environmental values.<sup>6</sup> Article 34 prohibits further construction of any facilities on project lands and waters unless specifically authorized by the Commission or this license. But the Article also authorizes the Applicant to allow the use and occupancy of project lands and waters for a number of purposes without further specific Commission approval.<sup>7</sup> To complement this delegation of management authority, we are holding Applicant fully accountable for its proper exercise. Applicant must ensure that these uses and occupancies (a) are consistent with shoreline aesthetic values, (b) are maintained in a good state of repair, and (c) comply with State and local health and safety regulations. The Article expressly notes that, among other control techniques, the Applicant may institute a permit program so that all uses and occupancies of project lands and waters are reviewed and approved initially and periodically. Applicant must also prepare guidelines and procedures for implementing the provisions of Article 34.

#### *Other Environmental Considerations*

Soil erosion and water pollution from domestic, recreation, and other sources could adversely affect project waters. Erosion, eventually resulting in stream sedimentation, continues to be a problem in certain high gradient areas of the project. Water pollution could result from overuse of existing recreational facilities on project and nearby private lands. Applicant and the Forest Service have agreed that Applicant should prepare a soil erosion plan before commencing construction of recreational \*61323 facilities or engaging in maintenance activities that could cause erosion problems. Article 19 will require Applicant to take reasonable measures to prevent soil erosion and any form of water or air pollution.

\*\*7 The U.S. Environmental Protection Agency (EPA) commented that the final environmental impact statement, issued by the Federal Power Commission in October 1976, adequately assesses the environmental impacts of the proposed action and responds to the concerns of EPA.

The Forest Service reported that the project, as proposed to be operated by Applicant, would not conflict with the purposes for which the Sierra National Forest was created. Forest Service also filed a copy of a memorandum of understanding between itself and Applicant dated April 16, 1971, and amended December 22, 1971. This memorandum reflects the agreement and cooperation existing between Applicant and Forest Service in jointly managing and protecting the lands and waters of Project No. 67. The provisions and conditions imposed below by this license appear to be consistent with the memorandum.

The U.S. Department of the Interior (Interior) recommended that the license be renewed subject to the pertinent conditions of the memorandum of understanding between Applicant and the Forest Service. Interior further recommended that the Commission reserve authority to order Applicant to provide facilities or to modify operation of the project to maintain water quality in the San Joaquin River, if recommended by the State of California or the Water Quality Office of EPA.<sup>8</sup> Articles 9 and 12 reserve such authority.

Interior also recommended that Applicant consult with appropriate Federal, State, and local agencies to develop and implement appropriate procedures to protect any threatened or endangered plant species that would be disturbed by project activities. It would appear that at least one threatened species — the tree anemone (*Carpenteria California*) — could be directly affected by construction or other project related activities. Article 35 requires Applicant to take adequate measures to ensure that threatened or endangered plants are protected.

#### *Annual Charges*

The installed capacity of the project is 154,000 kW. For annual charge purposes, this capacity is converted to horsepower by multiplying the kilowatts by  $\frac{4}{3}$ . Article 39 provides for administrative annual charges based on an authorized installed capacity of 205,300 horsepower.

The acreage of United States lands occupied by the project cannot be determined at this time, because Applicant has not included certain recreational areas within the project boundary shown on Exhibits K and R. Article 40 requires Applicant to file revised Exhibits K and R to include these recreational areas. Annual charges for the use of United States lands will be determined when the revised exhibits are filed.

#### *Exhibits*

Applicant's Exhibits J, K, L, M, R and S have been examined and found to conform substantially to our Regulations. Article 40 requires Applicant to revise Exhibit K, drawings 20 - 22, to include proposed recreational facilities within the project boundary. Article 40 also requires Applicant to revise Exhibit R, drawings 3 - 16, to show the project boundary on those exhibits as required by Section 4.41 of the Commission's Regulations. Exhibits K and R are therefore being approved only conditionally. The remainder of the above exhibits are approved and made a part of the license.

**\*\*8 License Term**

The original license for Project No. **67** expired March 2, 1971. We have issued annual licenses for the project since that time. The **Big Creek** System consists of seven projects that are hydraulically coordinated and electrically interconnected. We believe it is appropriate to synchronize the license expiration dates of these projects — to the extent possible — in **order** to maximize the Commission's opportunity for coordinated review of the entire system during the next relicensing period. Accordingly, the new license for Project No. **67** shall be effective on the first day of the month of issuance of this **order** and shall terminate February 28, 2009, 38 years from the expiration date of the original license.

*The Commission **orders**:*

(A) This license is issued to Southern California Edison Company of Rosemead, California, under Section 15(a) of the Federal Power Act, effective on the first day of the month in which it is issued and terminating February 28, 2009, for the continued operation and maintenance of Project No. **67**, **Big Creek** No. **2A** and No. **8**, located in Fresno County, California on the San Joaquin River and affecting lands of the United States within the Sierra National Forest. The license is subject to the terms and conditions of the Act, which is incorporated by reference as part of the license, and subject to the Rules and Regulations the Commission issues or prescribes under the provisions of the Act.

(B) Project No. **67** consists of:

(i) all lands, to the extent of the Licensee's interests in those lands, constituting the project area and enclosed by the project boundary, the project boundary and area being shown and described by certain exhibits which form part of the application for license and are designated and described as:

Exhibit	FERC no. <b>67</b> -	Showing
J	213	<b>Big Creek</b> Powerhouse No. <b>2A</b> & <b>8</b>
K-1	214	220kV Transmission Line
K-2	215	Do.
K-3	216	Gauging Station and Annunciator Line to Powerhouse No. <b>8</b>
K-4	217	Project Area in the Vicinity of <b>Big Creek</b> Powerhouse No. <b>8</b>
K-5	218	Project Area in the Vicinity of <b>Big Creek</b> Powerhouse No. <b>2A</b>
K-6	219	Penstocks and Structures in the Vicinity of <b>Big Creek</b> Powerhouse No. <b>8</b> tw
K-7	220	Conduit from Shaver Lake Reservoir to Powerhouse No. <b>2A</b>
K-8A	297	Conduit from Shaver Lake Reservoir to Powerhouse No. <b>2A</b>
K-A	298	Shaver Lake Reservoir
K-10A	299	Do.
K-11A	300	Conduit from Huntington Lake Reservoir to Shaver Lake Reser-

		voir
K-12	225	Conduit from Huntington Lake Reservoir to Shaver Lake Reser-
		voir
K-13	226	Conduit from Huntington Lake Reservoir to Shaver Lake Reser-
		voir
K-14	227	Ward Tunnel
K-15	228	Do.
K-16	229	Do.
K-17	230	Do.
K-18	331	Mono and Bear <b>Creek</b> Diversions and Conduit to Adit No. 1 of Ward Tunnel
K-19A	301	Mono and Bear <b>Creek</b> Diversion and Conduit to Adit No. 1 of Ward Tunnel
K-20A	302	Ward Tunnel
K-21A	303	Roads and Conduit
K-22A	304	Crater <b>Creek</b> Ditch and Natural Channel
K-23A	305	Florence Lake Reservoir
K-24	237	Do.
K-25A	306	Do.

## (ii) project works consisting of:

(1) The Tombstone **Creek** Diversion Dam, a 26.4-foot long, 5-foot high masonry structure with crest at elevation 7,673 feet;<sup>9</sup> (2) the Tombstone **Creek** Conduit, a combination of steel pipe and natural channel approximately 3,299 feet long conveying water to Florence Lake; (3) the concrete Crater **Creek** Diversion Dam which is 21 feet long and has its crest at elevation 8,764.6 feet; (4) the Crater **Creek** conduit, a 7,260-foot long combination of ditch and natural channel that diverts water from Crater **Creek** into Florence Lake Reservoir; (5) the North Slide **Creek** Diversion Dam, a masonry structure about 19 feet long and 5 feet high, with crest at elevation 7,501.5 feet; (6) South Slide **Creek** Diversion Dam, a masonry structure 22 feet long and 5 feet high with crest elevation 7,501.5 feet (7) the North and South Slide **Creeks** Conduit, a 12-inch diameter steel pipe between North and South Slide **Creek** diversions connecting to a wye branch, and thence 1,028 feet to a point where it discharges into Hooper **Creek** Conduit; (8) Bear **Creek** Diversion Dam, a concrete structure 293 feet long with a 55-foot-high spillway crest at elevation 7,350; (9) the concrete Hooper **Creek** Diversion Dam, 158 feet long and 30 feet high, with crest at elevation 7,505 feet; (10) Hooper **Creek** Conduit, a 34-inch diameter, 13,097-foot-long steel pipe diverting water from Hooper **Creek** to Florence Lake Reservoir; (11) the reinforced concrete multiple-arch Florence Lake Dam across the South Fork of the San

Joaquin River, with a crest length of 3,156 feet and a height of 154 feet; (12) Florence Lake Reservoir with 64,574 acre feet of gross storage capacity and a surface area of 962 acres at maximum elevation 7,329.1 feet; (13) the concrete Chinquapin **Creek** Diversion Dam, approximately 23 feet long, **8** feet high, and with a crest elevation of 7,273 feet, that diverts water into the Ward Tunnel; (14) the 156-foot-long, 64-foot high concrete Mono **Creek** Diversion Dam with a spillway crest at elevation 7,350 feet; (15) the Mono-Bear Conduit, comprising an unlined tunnel and 92-inch diameter steel pipe having a combined length of 8,361 feet, through which water is diverted from Mono and Bear **Creeks** to Ward Tunnel Adit No. 1; (16) the very small Camp 62 **Creek** concrete dam with a crest elevation of 7,257 feet; (17) the rock and earth fill Bolsillo **Creek** Diversion Dam, 54 feet long and 6 feet high with a spillway crest at elevation 7,535 feet, which diverts water into the Ward Tunnel; (18) the Ward Tunnel, 67,619 feet long, conveying water **\*61325** from Florence Lake Reservoir to Huntington Lake Reservoir (formed by Huntington Lake Dam Project No. 2175); (19) the Huntington-Shaver Conduit (Tunnel No. 7) comprising a tunnel 42,287 feet long diverting water from Huntington Lake Reservoir to Shaver Lake Reservoir via the North Fork of Stevenson **Creek**; (20) the concrete Pitman **Creek** Diversion Dam, approximately 68 feet long with a spillway crest at elevation 6,998 feet, which diverts water into Tunnel No. 7; (21) a natural channel, North Fork of Stevenson **Creek**, extending from Tunnel No. 7 conduit portal for approximately 13,300 feet to a point of discharge into Shaver Lake Reservoir; (22) the Shaver Lake Dam, 184 feet high and 2,169 feet long; (23) the Shaver Lake Reservoir with a gross storage capacity of 135,568 acre-feet, and a surface area of 2,187 acres at maximum elevation 5,371.13 feet; (24) Tunnel No. 5 and a steel penstock having a combined length of 19,741 feet which divert water from Shaver Lake Reservoir to **Big Creek** Powerhouse **2A**; (25) the **Big Creek** Powerhouse **2A** containing two 40,000 kW generating units discharging into the pool of Dam No. 5; (26) the 224-foot long, 60-foot high Dam No. 5 across **Big Creek**, having a spillway with crest at elevation 2,939 feet; (27) the 20-foot by 20-foot Tunnel No. **8** extending from the intake structure of Dam No. 5 for approximately 5,570 feet to a surge chamber 35 feet in diameter; (28) two penstocks 35 feet in diameter extending from the surge chamber approximately 2,560 feet to **Big Creek** Powerhouse No. **8**; (29) **Big Creek** Powerhouse No. **8** containing two generating units rated 27,000 kW and 31,500 kW, respectively; (30) four 30,000 kVa outdoor transformers adjacent to **Big Creek** Powerhouse No. **2A**, and four 20,000 kVa outdoor type transformers located in the transformer building adjacent to Powerhouse No. **8**; (31) a switchyard near **Big Creek** Powerhouse No. **8** to a point near Powerhouse No. 2, and a 220-kV single circuit line 1.7 miles long from **Big Creek** Powerhouse No. **8** to the switchyard at **Big Creek** Powerhouse No. **2A**; (33) recreational facilities, existing and proposed comprising:

**\*\*9** (a) At Shaver Lake — The 100 unit Camp Edison, 100 unit Dora Belle Campground, Shaver Lake Lodge Marina, Fresno Fishing Club, Camp Chawanakee, Gold Arrow Camp, 175 Campground units on the north shore, 100 day-use units on the north shore, and 425 day-use units on the east shore;

(b) At Florence Lake — Two campgrounds near the dam and one campground at the upper end of the lake, 100 camping units at Jackass Meadow, a 25 unit day-use area with a boat launching facility and parking near the dam, and 15 boat camping units;

(c) At the Mono **Creek** Diversion area, 16 overnight camping units;

(d) At the Bear **Creek** Diversion area, 5 overnight camping units; and

(e) At the Ward Tunnel Outlet area, a visitor information station and a viewing and rest area; and

(34) All appurtenant facilities which are generally shown and described by the previously mentioned exhibits and specifically described by the following exhibits:

**Exhibit L**

Sheet No.	FERC No. <b>-67</b>	Showing
L-1	239	<b>Big Creek</b> Powerhouse No. <b>8</b>

L-2	240	Do.
L-3	241	Do.
L-4	242	<b>Big Creek</b> Powerhouse No. <b>8</b> Penstocks
L-5	243	<b>Big Creek</b> Powerhouse No. <b>8</b> Tunnel
L-6	244	Dam No. 5
L-7	245	<b>Big Creek</b> Powerhouse No. <b>2A</b>
L- <b>8</b>	246	Do.
L-9	247	<b>Big Creek</b> Powerhouse No. <b>2A</b> Switchrack
L-10	248	<b>Big Creek</b> Powerhouse No. <b>2A</b> Penstock
L-11	249	<b>Big Creek</b> Powerhouse No. <b>2A</b> Penstock
L-12	250	<b>Big Creek</b> Powerhouse No. <b>2A</b> Penstock
L-13	251	<b>Big Creek</b> Powerhouse No. <b>2A</b> Tunnel
L-14	252	Shaver Lake Dam
L-15	253	Do.
L-16	254	Do.
L-17	255	Huntington-Shaver Conduit
L-18	256	Do.
L-19	257	Bolsillo <b>Creek</b> Intake Conduit
L-20	258	Mono <b>Creek</b> Diversion Dam
L-21	259	Bear <b>Creek</b> Diversion Dam
L-22	260	Mono Bear Conduit
L-23	261	\$ Do.
L-24	262	Ward Tunnel
L-25	263	Florence Lake Dam
L-26	264	Do.
L-27	265	Do.
L-28	266	Do.
L-29	267	Do.
L-30	268	Do.

L-31	269	Hooper <b>Creek</b> Diversion Dam
L-32	270	Hooper <b>Creek</b> Conduit
L-33	271	Hooper and Slide <b>Creek</b> Conduits
L-34	272	North and South Slide <b>Creeks</b> and Tombstone <b>Creek</b> Diversion  Dams
L-35	273	Hooper <b>Creek</b> Pipe Diversion
L-36	274	Do.
L-37	275	Do.
L-38	276	Do.
L-39	277	Do.
L-40	278	Do.
L-41	279	North and South Slide <b>Creeks</b> Pipe Diversion
L-42	280	Hooper <b>Creek</b> Pipe Diversion
L-43	281	Crater <b>Creek</b> Diversion Dam

\***61326** *Exhibit M*: Consisting of 7 typewritten pages entitled ‘General Description of Electrical and Transmission Equipment’, filed with the Commission on February 12, 1970.

*Exhibit R*: Filed on June 10, 1971, and consisting of 27 pages of text and the following drawings:

Sheet No.	FERC No. <b>-67-</b>	Showing
-3	309	Florence Lake Vicinity Map
-4	310	Shaver Lake Vicinity Map
5	311	Shaver Lake Lodge
-6	312	Marina and Fresno County Boat Ramp
-7	313	Camp Edison — Shaver Lake
<b>-8</b>	314	Proposed North Shore Campground and Day-Use Areas (Unit  I)
-9	315	Proposed North Shore Campground Day-Use Areas (Unit II)
-10	316	Proposed East Shore Day-Use Area

-11	317	Proposed Jackass Meadow Campground
-12	318	Proposed Florence Lake Day-Use Area and Boat Launching Ramp
-13	319	Proposed Florence Lake Boat Ramp
-14	320	Proposed Mono <b>Creek</b> Campground
-15	321	Proposed Bear <b>Creek</b> Campground
-16	322	Proposed Overlook and Visitor Information Station Area

*Exhibit S:* Filed on June 10, 1971, consisting of 36 pages of text titled ‘Fish and Wildlife Resources.’

(iii) All structures, fixtures, equipment, facilities, or property which may be employed in connection with the project, whether located on or off the project area, as approved by the Commission, and all riparian or other rights necessary or appropriate for the maintenance or operation of the project.

(C) Exhibits J, K, L, M, R and S as designated and described in paragraph (B) are approved and made part of the license, except that approval of Exhibits K and R is not to be interpreted as final approval of the proposed recreational facilities not of the omission of certain recreational areas that should be within the project boundary on Exhibit K nor the omission of the project boundary on Exhibit R.

**\*61327** (D) This license is also subject to the terms and conditions set forth in FERC Form L-1 (revised October 1975, *See* 54 **FPC** 1799) entitled ‘Terms and Conditions of License for Constructed Major Project Affecting Lands of the United States.’<sup>10</sup> These terms, designated as Articles 1 through 32, are made a part of the license. This license is also subject to the following special conditions set forth as additional articles:

*Article 33.* In consultation with the U.S. Forest Service, the California Department of Fish and Game, and other appropriate Federal, State, and local agencies having jurisdiction over lands adjacent to Florence and Shaver Lakes, the Licensee shall prepare a study to assess further the proposed recreational developments at Florence and Shaver Lakes. This study shall include: (1) a determination of the suitable number, size, layout, and location of camping and day-use sites proposed for the Jackass Meadow vicinity of Florence Lake and the eastern shore of Shaver Lake; (2) a determination of the impact, if any, those facilities would have on wildlife resources; and (3) a determination of whether the recreational facilities, as proposed or modified, are compatible with the plans and programs of other entities, with emphasis on the carrying capacity of project resources and the adequacy of water supply and sewage disposal facilities. Within two years from the issuance of this **order**, Licensee shall submit the results of the above study, and shall file for Commission approval amendments to Exhibits K and R, if needed, showing any changes in the approved Exhibit R as a result of the study and any additional lands that would be included in the project boundary. Licensee shall not commence construction of the proposed recreational facilities being studied under this Article until the Commission has granted final approval of that part of the Exhibit R pertaining to those facilities.

**\*\*10** *Article 34.* In the interests of protecting and enhancing the scenic, recreational, and other environmental values of the project, Licensee: (1) shall supervise and control the use and occupancy of project lands and waters; (2) shall prohibit, without further Commission approval, the further use and occupancy of project lands and waters other than as specifically authorized by this license; (3) may authorize, without further Commission approval, the use and occupancy of project lands and waters for landscape plantings and the construction, operation, and maintenance of access roads, power and telephone distribution lines, piers, landings, boat docks, or similar structures and facilities, and embankments, bulkheads, retaining walls, or other similar structures for erosion control to protect the existing shoreline; (4) shall require, where feasible and desirable the multiple use

and occupancy of facilities for access to project lands and waters; and (5) shall ensure to the satisfaction of the Commission's authorized representative that all authorized uses and occupancies of project lands and waters: (a) are consistent with shoreline aesthetic values, (b) are maintained in a good state of repair, and (c) comply with State and local health and safety regulations. Under item (3) of this Article, Licensee may, among other things, institute a program for issuing permits to a reasonable extent for the authorized types of use and occupancy of project lands and waters. Under appropriate circumstances, permits may be subject to the payment of a fee in a reasonable amount. Before authorizing construction of bulkheads or retaining walls Licensee shall: (a) inspect the site of the proposed construction, (b) determine that the proposed construction is needed, and (c) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site. If an authorized use or occupancy fails to comply with the conditions of this Article, or with any reasonable conditions imposed by the Licensee for the protection of the environmental quality of project lands and waters, the Licensee shall take appropriate action to correct the violations, including, if necessary, cancellation of the authorization and removal of any noncomplying structures or facilities. The Licensee's consent to an authorized use or occupancy of project lands and waters shall not, without its express agreement, place upon the Licensee any obligation to construct or maintain any associated facilities. Within one year, Licensee shall furnish a copy of its guidelines and procedures used to implement the provisions of this Article to the Commission's authorized representative and its Director, Office of Electric Power Regulation. Whenever the Licensee makes any modifications to those guidelines and procedures, it shall promptly furnish a copy to each of those persons. The Commission reserves the right to require modifications to these guidelines and procedures.

*Article 35.* Prior to commencement of construction of the recreational facilities at the project, the Licensee shall provide for a botanical survey of project lands conducted by professional botanists to determine the presence of any endangered and threatened plant species. If it is determined that any such plants would be affected by the construction, operation, or maintenance of project works, including recreational facilities, appropriate measures shall be taken to protect the endangered or threatened plant species. Those measures may include, but need not be limited to, altering project construction activities or use patterns, or transplanting the plant species under the supervision of a professional botanist. The survey and all protective measures shall be made in cooperation with appropriate State and Federal agencies. Within two years of the issuance of this **order**, Licensee shall file with the Commission the results of the survey and any measures taken or proposed to protect endangered or threatened plant species at the project.

**\*\*11 Article 36.** Prior to the commencement of any **\*61328** construction or development of any project works or other facilities at the project, the Licensee shall consult and cooperate with the State Historic Preservation Officer (SHPO) to determine the need for, and extent of, any archeological or historic resource surveys and any mitigative measures that may be necessary. The Licensee shall provide funds in a reasonable amount for such activity. If any previously unrecorded archeological or historic sites are discovered during the course of construction, construction activity in the vicinity shall be halted, a qualified archeologist shall be consulted to determine the significance of the sites, and the Licensee shall consult with the SHPO to develop a mitigation plan for the protection of significant archeological or historic resources. If the Licensee and the SHPO cannot agree on the amount of money to be expended on archeological or historic work related to the project, the Commission reserves the right to require the Licensee to conduct, at its own expense, any such work found necessary.

*Article 37.* Subject to further **order** by the Commission on its own motion or at the request of others, for the purpose of protecting fish and wildlife resources and providing public recreation needs, the Licensee shall:

(a) Maintain a minimum reservoir elevation of 7,276.6 feet at Florence Lake during the period July 1 through August 31, and a minimum reservoir elevation of 7,232.6 feet during the remainder of the year. Minimum reservoir elevation requirements shall not be applicable when lesser water storage is necessary to permit emergency repairs to the dam or associated equipment, or to permit the operation of generating facilities in cases of unscheduled outages of other system resources.

(b) Limit controlled releases of water from Florence Lake to 4,800 cubic feet per second or less, except under emergency conditions when greater releases may be necessary to prevent overtopping of Florence Lake Dam.

(c) Maintain a minimum reservoir elevation of 5,268.73 feet at Shaver Lake from September 1 to June 15 and, during the remainder of the year, a reservoir elevation dependent on the April 1 forecast of the U.S. Bureau of Reclamation of the April through July natural runoff of the San Joaquin River at Friant Dam. Forecast runoff conditions, and resulting reservoir elevations for the period June 15 through September 1, shall be:

<b>Forecast Runoff (Acre-Feet)</b>	<b>Minimum Reservoir Elevation (Feet)</b>
900,000 or more	5,348.56
700,000-900,000	5,330.37
550,000-700,000	5,306.97
Less than 550,000	5,268.73

Minimum reservoir elevations shall not be applicable when lesser water storage is necessary to permit emergency repairs to the dam or associated equipment, or to permit the operation of generating facilities during unscheduled outages of other system resources.

(d) Provide for a minimum release of water from its dams on the upper San Joaquin River in the following amounts:

<b>Stream</b>	<b>Releases</b>				
	<i>(cubic feet per second)</i>				
	<b>May-1 Sept. 30</b>	<b>Oct. 1- Oct. 31</b>	<b>Nov 1- April 30</b>	<b>April 1- Nov.15</b>	<b>Nov. 16- March 31</b>
Pitman <b>Creek</b>				0.3	0.3
Stevenson <b>Creek</b>				3.0	2.0
<b>Big Creek</b> , Dam					
No. 5					
Normal				3.0	2.0
Dry				2.0	1.0
South Fork San Joaquin River					
Normal	27.0	17.0	15.0		
Dry	20.0	13.0	11.0	-	-
Mono <b>Creek</b>					

(Diversion Dam)

Normal	13.0	9.0	7.5
Dry	9.0	6.0	5.0
Bear <b>Creek</b>			
Normal	3.0	2.0	2.0
Dry	2.0	1.0	1.0
Chinquapin <b>Creek</b>	1.0	0.5	0.5
Camp 62 <b>Creek</b>	0.3	0.3	0.3
Bolsillo <b>Creek</b>	0.4	0.4	0.4

Note: (i) *Normal* shall be considered a schedule of releases for the period May 1-April 30 whenever the April 1 forecast of the U.S. Bureau of Reclamation of the April-July natural runoff of the San Joaquin River at Friant Dam exceeds 900,000 acre-feet. *Dry* shall be considered a schedule of releases for the period of May 1-April 30 whenever the April 1 forecast of the U.S. Bureau of Reclamation of the April-July natural runoff of the San Joaquin River at Friant Dam is 900,000 acre-feet or less.

**\*\*12** (ii) South Fork San Joaquin River releases include up to 4 cfs for Hooper **Creek**, 0.2 cfs for North Slide **Creek**, and 0.2 cfs. for South Slide **Creek**, and the natural flow of Tombstone **Creek**.

**\*61329** Whenever the natural stream inflow is less than the designated release, a discharge equal to the inflow shall be released. During flood periods, Licensee shall provide stream releases from the project's reservoirs no greater than natural inflow.

*Article 38.* Pursuant to Section 10(d) of the Act, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One-half of the project surplus earnings, if any, accumulated under the license, in excess of the specified rate of return per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year: *Provided*, That, if and to the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year under the license, the amount of such deficiency shall be deducted from the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any, cumulatively computed, shall be set aside in the project amortization reserve account and the amounts thus established in the project amortization reserve account shall be maintained there in until further **order** of the Commission.

The annual specified reasonable rate of return shall be the sum of the weighted cost components of long-term debt, preferred stock, and the cost of common equity, as defined herein. The weighted cost component for each element of the reasonable rate of return is the product of its capital ratios and cost rate. The current capital ratios for each of the above elements of the rate of return shall be calculated annually based on an average of 13 monthly balances of amounts properly includable in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rates for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

*Article 39.* The Licensee shall pay the United States the following annual charge, effective the first day of the month in which the license is issued:

(a) For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge as determined by the Commission in accordance with the provisions of its Regulations, in effect from time to time. The authorized installed capacity for such purposes is 205,300 horsepower.

**\*\*13** (b) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of its lands, exclusive of transmission line rights-of-way, an amount to be determined later;

(c) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of its lands for transmission line rights-of-way, an amount to be determined later.

*Article 40.* The Licensee within two years of the date of issuance of this **order** shall file for Commission approval amended Exhibit R drawings, Sheets 3 through 16 (FERC Nos. **67**-309 through 322), Exhibit K drawings necessary to delineate the project boundary and to show that all existing and proposed project recreational facilities are included within the project boundary, and any amendments to the Exhibit R shown to be necessary by the study required by Article 33. Licensee shall also file a revised construction schedule for recreational facilities proposed in the Exhibit R.

*Article 41.* Within three months from the date of issuance of this license, the Licensee shall conduct a testing program which shall include core drilling of the concrete in Shaver Dam to determine the tensile strength and quality of the concrete, with particular attention to construction joints and the bond at the foundation. Licensee shall prepare and submit a report on the drilling and testing program within six months of issuance of this license. If the test results show unacceptable concrete strength when compared with the calculated tensile stresses, the Licensee shall submit with its report a detailed program and schedule of remedial work to assure the integrity and safety of the dam, for approval by the Director, Office of Electric Power Regulation.

*Article 42.* Licensee shall implement, and modify when appropriate, the emergency action plan on file with the Commission designed to provide an early warning to upstream and downstream inhabitants and property owners if there should be an impending or actual sudden release of water caused by an accident to, or failure of, project works. That plan shall include: not be limited, to instructions to be provided on a continuing basis to operators and attendants for actions they are to take in the **\*61330** event of an emergency; detailed and documented plans for notifying law enforcement agents, appropriate Federal, State, and local agencies, operators of water-related facilities, and those residents and owners of properties that could be endangered; actions that would be taken to reduce the inflow to the reservoir, if possible, by limiting the outflow from upstream dams or control structures; and actions to reduce downstream flows by controlling the outflow from dams located on tributaries to the stream on which the project is located. The Licensee shall maintain on file with the Commission a summary of the study used as a basis for determining the areas that may be affected by an emergency, including criteria and assumptions used. Licensee shall monitor any changes in upstream or downstream conditions which may influence possible flows or affect areas susceptible to damage, and shall promptly make and file with the Commission appropriate changes in the Emergency action plan. The Commission reserves the right to require modifications to the plan.

**\*\*14** *Article 43.* Reservoir cleaning of silt and other deposits shall be done with due recognition given to the protection of fish, wildlife, recreational facilities, and the diversion and generating facilities of the project. Licensee shall prepare a plan describing proposed methods, the estimated frequency, time of year, flow conditions, and related special problems for each of the following dams: Hooper **Creek** Diversion, Bear **Creek** Diversion, Mono **Creek** Diversion, and Dam No. 5. Advance written approval of the plan by the designated representatives of Forest Service, U.S. Fish and Wildlife Service, and California Department of Fish and Game is required. Three days before starting previously approved cleaning operations, Licensee shall notify the designated representatives of The Forest Service and the California Department of Fish and Game. In cases of emergency, however, Licensee may start cleaning or take other measures as required and shall immediately notify the designated representatives of the Forest Service and the California Department of Fish and Game.

Article 44. The Licensee shall, to the satisfaction of the Commission's authorized representative, install and operate any signs, lights, sirens, or other safety devices that may reasonably be needed to warn the public of fluctuations in flow from the project and protect the public in its recreational use of project lands and waters.

(E) This **order** shall become final 30 days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313(a) of the Act, and failure to file such an application shall constitute acceptance of this license. In acknowledgment of the acceptance of this license, it shall be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this **order**.

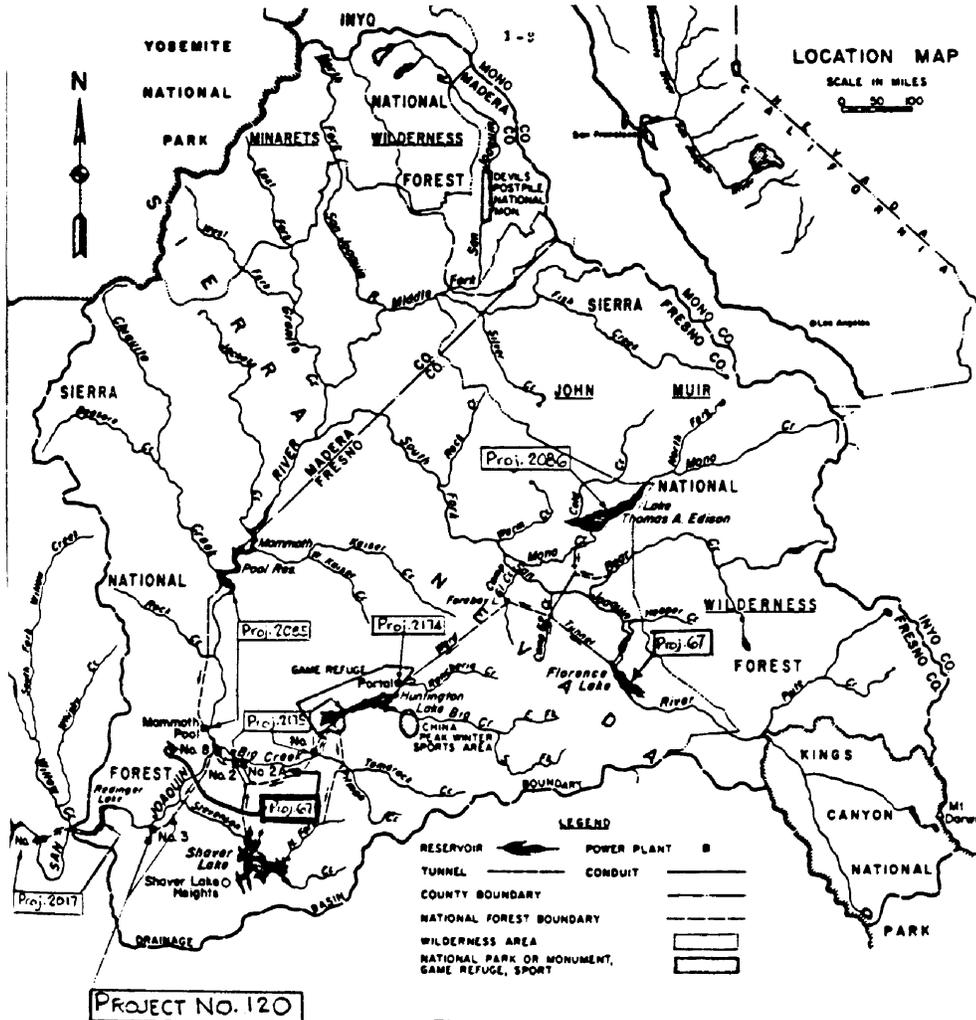


Figure 1 - 1

EXISTING DEVELOPMENT

BIG CREEK HYDRO COMPLEX

Source: Applicant  
SCALE IN MILES



APPENDIX A

FERC Project No.	Name	License Expiration Date
120	Big Creek No. 3	February 28, 2009

2017	Redinger Lake and Powerhouse No. 4	February 28, 1999
2085	Mammoth Pool Reservoir and Powerhouse	November 30, 2007
2086	Lake Thomas A Edison	August 31, 2003
2174	Portal Forebay and Powerhouse	March 31, 2005
2175	Huntington Lake and Powerhouses <b>Nos.</b> 1 & 2	February 28, 2009

## Federal Energy Regulatory Commission

## Footnotes

- 1 This proceeding was commenced before the Federal Power Commission (**FPC**). By regulation of October 1, 1977, entitled ‘Transfer of proceedings to the Secretary of Energy and the FERC’ (10 CFR 1000.1), it was continued before the Federal Energy Regulatory Commission (FERC). The ‘Commission’, when used in the context of action before October 1, 1977, refers to the **FPC**; otherwise, it refers to the FERC.
- 2 First Annual Report of the Federal Power Commission (1921), p. 197.
- 3 For the **Big Creek** No. 3 Project on September 7, 1977. See **Order** Issuing New License (Major), [Southern California Edison Company, Project No. 120, 59 FPC 1810 \(1977\)](#).
- 4 Besides the **Big Creek** No. **2A** and No. **8** Project, FERC No. **67**. Applicant's **Big Creek** System consists of the following six licensed projects;
- 5 Our staff concurs with the Board of Consultants that the Applicant should attempt this study which goes beyond conventional analyses. Because of the complexity of the three-dimensional model as applied to a multiple arch dam and the limited state-of-the-art, the reliability of the results of the study will need evaluation. Under Part 12 of our Regulations, Applicant is proceeding with the study on a step-by-step basis, and will expand the scope of the program at any point that the analysis suggest that seismic loading parallel to the axis of the dam may pose a threat to its integrity.
- 6 See also Article 5.
- 7 These uses and occupancies include landscape plantings and the construction, operation, and maintenance of access roads, power and telephone distribution lines, piers, landings, boat docks, or similar structures and facilities, and embankments, bulkheads, retaining walls, or other similar structures for erosion control to protect the existing shoreline.
- 8 Applicant submitted a water quality certificate issued by the State of California Water Resources Control Board on September **8**, 1972. A copy of the certificate was sent to EPA on October 18, 1972.
- 9 All elevations are expressed in USGS datum.
- 10 The terms ‘Commission’ and ‘Federal Power Commission’ in that form are deemed references to the FERC.

4 FERC P 61147 (F.E.R.C.), 1978 WL 15720