60 FERC P 61016 (F.E.R.C.), 1992 WL 404931

FEDERAL ENERGY REGULATORY COMMISSION
**1 Commission Opinions, Orders and Notices

Joseph M. Keating

Project No. 7267-004
Order Issuing License (Minor Project)
(Issued July 2, 1992)

*61061 Before Commissioners: Martin L. Allday, Chairman; Charles A. Trabandt, Elizabeth Anne Moler, Jerry J. Langdon and Branko Terzic.

Joseph M. Keating filed a license application under Part I of the Federal Power Act (FPA) to construct, operate, and maintain the Tungstar Project No. 7267, to be located on Morgan Creek and Pine Creek in Inyo County, California. The project would occupy lands of the United States within the Inyo National Forest.

Notice of the application has been published. The State of California Water Resources Control Board (State Board) filed a motion to intervene. Comments of the State Board and of other interested agencies have been fully considered in determining whether, or under what conditions, to issue this license.

Project Description

U.S. Tungsten Corporation owns a tungsten mining facility which is located on Morgan Creek approximately 800 feet upstream of its confluence with Pine Creek. Mine water, which emanates from fissures formed and encountered during tunneling and mining operations, is passed through U.S. Tungsten's water treatment facility, and from there is discharged into Morgan Creek. [1] Average monthly flows in Morgan Creek above the tungsten mine range from a low of 0.35 cubic feet per second (cfs) to a high during spring snowmelt of 17.5 cfs. As shown in the table below, average monthly flows in Morgan Creek below the point where the mine water enters range from 11 cfs to 30.6 cfs. The mine water discharge contributes about 60 percent of the streamflow of Pine Creek for the first two miles below its confluence with Morgan Creek. [2]

The proposed Tungstar Project will operate run-of-river and include a 4–foot–high, 10–foot–long diversion dam and an intake structure on Morgan Creek. The intake will be adjacent to U.S. Tungsten's mine, and will use the water exiting the mine water treatment facility. The project will divert additional flow from Morgan Creek during spring snowmelt (May through July). The water will be carried through a 3,500–foot–long penstock to the project's powerhouse, which will have one turbine-generator unit with a rated capacity of 990 kilowatts (kW).

From the powerhouse tailrace, the water will enter a 4,000–foot–long, man-made, meandering channel where suspended mine water flocculants will settle out before mine water flows are returned to Pine Creek 3,900 feet below its confluence with Morgan Creek.

Section 4(e) of the FPA

Section 4(e) of the FPA, 16 U.S.C. § 797(e), requires that Commission licenses for projects located within United States reservations must include all conditions that the Secretary of the department under whose supervision a reservation falls shall deem necessary for the adequate protection and utilization of such reservation. A portion of the Tungstar Project will be located in the Inyo National Forest, which is *61062 under the United States Forest Service's supervision.

**2 By letter dated February 26, 1988, the Forest Service submitted its comments on the proposed project and its conditions for inclusion in any license.[3] The conditions included minimum flow requirements for the Morgan Creek and Pine Creek bypass reaches, which are higher than those originally proposed by Keating. By letter dated May 6, 1988, Keating amended his license application to incorporate the Forest Service's recommendations with respect to minimum flows.[4]

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j)(1) of the FPA, 16 U.S.C. § 803(j)(1), requires the Commission to base fish and wildlife license conditions on recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act for the protection, mitigation, and enhancement of fish and wildlife.

Whenever the Commission believes that a fish and wildlife agency's recommendation is inconsistent with the purposes and requirements of the FPA or other applicable law, section 10(j)(2) of the FPA requires that the Commission and the agencies attempt to resolve any such inconsistency. If, after such attempt, the Commission does not adopt in whole or in part a recommendation of any such agency, the Commission shall publish a finding that adoption of the recommendation is inconsistent with the purposes and requirements of the FPA or other applicable laws, together with a finding that the conditions selected by the Commission comply with the requirements of section 10(j)(1), i.e., will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife affected by the project.

A. Minimum Flows

The proposed project's bypass reach consists of an 800–foot–long stretch of Morgan Creek and a 3,900–foot–long stretch of Pine Creek below its confluence with Morgan Creek. As shown in the table below, Pine Creek flows in the bypass reach consist of Pine Creek flows from above the Morgan Creek confluence plus Morgan Creek flows. In determining appropriate minimum flows for the Tungstar Project, we examined the needs of Morgan Creek below the diversion point and of Pine Creek below its confluence with Morgan Creek.

Average Preproject Flows (cfs)

	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Morgan Creek	11.7	11.6	11.1	11.0	17.3	30.6	26.2	15.6	13.4	12.9	12.8	12.3
Pine Creek above Morgan Creek	3.7	3.7	4.0	5.2	22.8	48.8	35.5	11.7	5.4	4.2	3.9	3.9
Pine Creek below Morgan Creek	15.4	15.4	15.1	16.2	40.1	79.4	61.7	27.3	18.8	17.1	16.7	16.2

1. Morgan Creek

For Morgan Creek below the proposed diversion, the Tungstar Project, as amended to incorporate the Forest Service conditions on minimum flows, would maintain the following minimum flows: 1.5 cfs in January through March; 1.0 cfs in April through July; and .75 cfs in August through December.

**3 The California Department of Fish and Game (Cal Fish and Game) recommended minimum flows in Morgan Creek of 5 cfs or preproject flows, whichever is less, for the months of May through July, and made no recommendations with respect to Morgan Creek flows for the remaining months. Cal Fish and Game did not provide any information in support of its recommended flows.

As explained in the Environmental Assessment (EA) attached to this order, an electrofishing survey done by the license applicant [5] indicates that fish populations in Morgan Creek are negligible. The survey found only one rainbow/golden trout in the creek immediately above the Pine Creek confluence. The lack of fish in Morgan Creek is likely due to the limited nesting and feeding opportunities caused by the creek's high gradient, turbulent flows and its boulder-strewn, bedrock substrate. Minimum flows in Morgan Creek are therefore not needed to create or maintain fish habitat. Rather, their primary importance would be as a supplement to Pine Creek's flows in maintaining fish habitat in Pine Creek. [6]

Moreover, since it appears that riparian vegetation in the project area is less dependent on streamflows than on the numerous surface ***61063** springs in the area, it would be minimally affected by project-related reductions in streamflow. [7] From a water-quality standpoint, diverting the mine water from Morgan Creek may at times even improve Morgan Creek's water quality. When the tungsten mine is operating, [8] the treated mine water that is discharged into Morgan Creek can cause the creek to have a milky appearance. [9] Diverting this water into the settling pond at the head of the proposed meandering channel would allow flocculents to settle out and the water to be reclarified before entering Pine Creek. [10]

For these reasons, we conclude that the minimum flows required by the Forest Service and proposed by Keating will be more than adequate to protect the aquatic resources of Morgan Creek.

2. Pine Creek

For the Pine Creek bypass reach, Keating and the FS propose minimum flows of 6.0 cfs in October through April, [11] 23.8 cfs in May, 49.8 cfs in June, 36.5 cfs in July, 12.4 cfs in August, and 6.1 cfs in September. With these instream flows, the project would produce about 4,000,000 kilowatt hours (kWh) of electrical energy annually. [12]

For May through July in the Pine Creek bypass reach, Cal Fish and Game recommended minimum flows of 45 cfs or pre project flows, whichever is less. For the remaining months of the year, Cal Fish and Game recommended minimum flows of 25 cfs or pre project flows, whichever is less. Cal Fish and Game's recommended flows for Pine Creek would result in no diversion of water for power purposes except during June, July, and August, and would result in an annual production of about 1,500,000 kWh.

Keating's fish survey indicates that Pine Creek in the vicinity of the proposed project contains a trout population consisting of rainbow trout and rainbow/golden trout hybrids. The fish range in size from fry to adults greater than ten inches.

****4** Keating prepared an instream flow study (IFIM) to determine the relationship of flow to the maintenance of fish habitat in Pine Creek. [13] We considered the results of the IFIM, along with the results of the electrofishing survey, in determining appropriate minimum flows.

The results of the IFIM indicate that Cal Fish and Game's recommended flows would provide nearly 100 percent of the rainbow trout habitat available at the average annual flow in Pine Creek below Morgan Creek (28.8 cfs) for all lifestages year round. Flows of 6.1 and 6 cfs (Keating's proposed minimum flows for September through April) would provide about 39 percent of available habitat for adults, 35 percent of the available habitat for juveniles, and 71 percent of the available habitat for fry. During June and July, Keating's proposed flows would provide 100 percent of the available habitat for all lifestages of trout. [14]

Cal Fish and Game states that its recommendation is based on the results of the IFIM, but does not explain the necessity of providing nearly 100 percent of the fish habitat estimated to occur naturally. The agency also contends that Morgan Creek flows, which are warmer than Pine Creek flows, are indispensable in maintaining pre project conditions, especially in winter months. Cal Fish and Game notes, for example, that the applicant's fish survey found that adult trout in Pine Creek below Morgan Creek are larger than those found in Pine Creek above Morgan Creek. [15] Cal Fish and Game contends that this fact suggests that temperature may have some effect on growth rates, but that further sampling is needed to make such a determination.

The electrofishing survey was conducted in two reaches of Pine Creek, one above and the other below Morgan Creek. As explained in the EA, the survey found that various age classes of trout inhabit both reaches of Pine Creek in almost equal numbers. [16] This implies that adequate adult, juvenile, and fry habitat and population ***61064** exist in both reaches of Pine Creek. Thus, it appears that flows from Morgan Creek provide little enhancement and are not essential to Pine Creek's fishery below Morgan Creek, and that Pine Creek's flows, without Morgan Creek's, would be adequate to maintain the existing fishery of Pine Creek. For these reasons, we conclude that the minimum flows required by the Forest Service and proposed by Keating will provide adequate habitat for all life stages of trout and will be more than adequate to ensure the protection of the existing fishery in Pine Creek.

In addition, as an enhancement measure, the meandering channel proposed by Keating and required by the Forest Service will be designed to support all life stages of native trout now present in Pine Creek. The channel will have a design capacity of 12 cfs. [17] Keating will stock the channel with native rainbow/golden trout taken from Pine Creek. An instream flow analysis of the trout habitat that would be produced in the proposed channel indicates that the habitat that will be available in the channel plus the habitat remaining in Pine Creek at flows of 6 cfs will actually be greater than the trout habitat available under present conditions in Pine Creek. [18]

3. Economic Evaluation of Proposals

****5** A proposed project is economically beneficial so long as its projected levelized cost is less than its long-term levelized cost of alternative energy to any utility in the region that can be served by the project.

The proposed project with the Forest Service minimum flows would have a levelized cost of energy of approximately 79.5 mills per kWh. The Commission estimates that the levelized power value in the region would be 93 mills per kWh. [19] Given these figures, the Tungstar Project would be economically beneficial with a levelized net annual benefit of $54,000 or 13.5 mills per kWh and a 100–percent equity rate of return (ROR) of 11 percent, which is fairly attractive.

The project with Cal Fish and Game's recommended minimum flows would not be economically beneficial, with a levelized net annual benefit of a negative $90,440 or negative 59.5 mills per kWh. The rate of return would be about 2 percent, which is unfinanceable.

C. Section 10(j) Negotiations

By letter dated October 16, 1991, Commission staff notified Cal Fish and Game pursuant to section 10(j)(2) of the FPA that it had determined that Cal Fish and Game's minimum flow recommendations for Morgan and Pine Creeks were inconsistent with the requirements of the FPA. Specifically, Cal Fish and Game had failed to provide evidence to support the need for such high minimum flows. Staff further explained that Cal Fish and Game's recommended flows would make the project financially infeasible, thus eliminating the project's expected environmental benefits. The letter asked Cal Fish and Game either to submit evidence that its proposed flows would result in significantly increased fish populations or to consider other options that would adequately protect fishery resources and be consistent with other project purposes.

By letter dated November 26, 1991, Cal Fish and Game responded, expressing its continued disagreement with the minimum flow required by the Forest Service and adopted in the EA. Cal Fish and Game argues that staff erred when it gave the results of one electrofishing survey preference over the results of the IFIM, a standard methodology. The single sample that shows approximately equal numbers of trout in Pine Creek above and below Morgan Creek cannot, Cal Fish and Game contends, be used to conclude, as the EA does, that adequate adult, juvenile, and fry habitat and population exist in both reaches of Pine Creek, with or without Morgan Creek inflow. [20]

On January 7, 1992, representatives of Cal Fish and Game, Keating, and Commission staff had a telephone conference in a further attempt to resolve the minimum flow issue. Cal Fish and Game would not change its position, maintaining that a reduction in habitat by about 60 percent for some life stages of trout will result in a significant adverse impact on Pine Creek's fishery.

Pursuant to the January 7 telephone conference, Cal Fish and Game, on January 13, 1992, submitted results of an electrofishing survey it had conducted in 1988 in stretches of Pine Creek above and below Morgan Creek. The survey results, Cal Fish and Game contends, show a significantly greater standing crop and number of trout in Pine Creek below Morgan Creek. A review of the data indicates, however, that the difference in the number of trout ***61065** above and below Morgan Creek is not significant. [21] Cal Fish and Game's survey therefore provides additional support for our position, not Cal Fish and Game's.

D. Section 10(j)(2) Findings

****6** Cal Fish and Game's recommended flows would provide nearly 100 percent of the rainbow trout habitat available at the average annual flow in Pine Creek below Morgan Creek for all lifestages year round, but would render the project financially unattractive. The flows proposed by Keating and recommended by the Forest Service and the EA will provide adequate habitat for all stages of rainbow/golden trout, without rendering the project financially unattractive. [22] Construction and operation of the project will result in energy and recreational benefits. We therefore find, pursuant to section 10(j)(2)(A) of the FPA, that the Cal Fish and Game recommendations for minimum flows are inconsistent with the purposes and requirements of the FPA, in that they are contrary to our balancing of the beneficial public purposes specified in sections 4(e) and 10(a)(1) of the FPA.

Pursuant to section 10(j)(2)(B), we find, for the reasons discussed above, that the minimum flows proposed in Keating's amended license application will adequately protect, mitigate damages to, and enhance fish and wildlife affected by the development, operation, and management of the project.

Water Quality Certification

On June 23, 1986, Keating filed a request with the State Board for water quality certification under section 401(a)(1) of the Clean Water Act (CWA) [23] for the proposed Tungstar Project. On April 30, 1987, the State Board denied Keating's application, stating that the project has the potential to impair water quality and beneficial uses, and that the State Board cannot act on Keating's certification request until a final environmental document for the project, under the California Environmental Quality Act, is prepared and adopted.

However, on October 31, 1986, the State Board issued blanket water quality certification for discharges associated with activities authorized by the United States Army Corps of Engineers' (Corps) nationwide dredge and fill permit program under section 404 of the CWA. [24] The Tungstar Project qualified for the blanket certification.

On December 12, 1988, the State Board informed the Commission that it regarded the October 31, 1986 blanket certification as having been revoked by its April 30, 1987 denial of Keating's request for individual certification.

Pursuant to section 401(a)(3) of the CWA, and in light of the issuance to the Tungstar Project of a section 404 permit [25] based on the October 31, 1986 blanket certification, the State Board may revoke the blanket certification as to this project only if, within 60 days after receiving notice of the license application, it notifies the Commission that there is no longer reasonable assurance that the project would comply with the applicable water quality standards because of changes, since the issuance of the blanket certification, in: (1) construction or operation of the proposed project; (2) characteristics of the waters into which the project would discharge; (3) water quality criteria applicable to such waters; or (4) applicable effluent limitations or other requirements. [26]

****7** The 60–day time limit for state objection under section 401(a)(3) began on March 5, 1987, the day the Commission issued notice of the Tungstar Project license application. The State Board did not revoke the blanket certification within the 60–day period, or based on any change in circumstances specified in section 401(a)(3) of the CWA. Therefore, the State Board's revocation of Keating's blanket certification is of no effect.

Comprehensive Plans

Section 10(a)(2)(A) of the FPA, 16 U.S.C. § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.[27] Under section 10(a)(2)(A), federal and state agencies filed 29 plans that address various resources in California. Of these, we have identified ***61066** and reviewed six plans that are relevant to this project.[28] No conflicts were found.

Summary of Findings

Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA, which is attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The project dam would impound about 0.36 acre-feet of water; its failure would not cause any danger to downstream life or property. The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if constructed, operated, and maintained in accordance with the requirements of this license.

The Commission concludes that the project would not conflict with any planned or authorized development, and would be best adapted to the comprehensive development of the waterway for beneficial public uses, as required by section 10(a)(1) of the FPA, 16 U.S.C. § 803(a)(1).

The Commission orders:

(A) This license is issued to Joseph M. Keating (licensee) for a period of 50 years, effective the first day of the month in which this order is issued, to construct, operate, and maintain the Tungstar Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by exhibit G:

Exhibit G-	FERC No. 7267-	Showing
1	10	Project Location
2	11	Project Features
3	12	Project Boundary
4	13	Project Boundary
5	14	Project Boundary

6	16	Return Channel

(2) Project works consisting of: (a) an intake structure and a 4–foot–high, 10–foot–long, stoplog dam on Morgan Creek; (b) a 3,500–foot–long, 36–inch–diameter steel penstock; (c) a powerhouse with one turbine-generator unit rated at 990 kW; (d) a 4,000–foot–long meandering channel discharging on Pine Creek; and (e) a 550–foot–long, 12–kV transmission line interconnecting with an existing Southern California Edison Company transmission line.

****8** The project works generally described above are more specifically described in exhibit A of license application and parts (a) and (b) of the additional information filed March 17, 1987, and shown by the following exhibits:

Exhibit F-	FERC No. 7267-	Showing
1	1	Diversion & Intake Structure
2	2	Diversion & Intake Structure
3	3	Diversion & Intake Structure
4	4	Powerhouse Elevations
5	5	Powerhouse Plan View
6	6	Powerhouse Sections
7	7	Bridge Crossing
8	8	Penstock Details
9	9	Channel Sections

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Those sections of exhibits A, F, and G described above are approved and made part of the license.

(D) This license is subject to the articles set forth in Form L–2 (October 1975) [54 FPC 1808], entitled "Terms and Conditions of License for Unconstructed Major Project Affecting Lands of the United States,"[29] except article 20, and the following additional articles (articles 101 through 114 were prescribed by the Forest Service under section 4(e) of the FPA).

Article 101. Within 6 months following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature, the licensee shall obtain from the Forest Service a Special–Use Permit (SUP) for the occupancy and use of National Forest System lands, and that authorization shall be filed with the Director, Office of Hydropower Licensing (OHL).

The licensee may commence land-disturbing activities authorized by the license and special- ***61067** use authorization 60 days following the filing date of such authorization, unless the Director, OHL, prescribes a different commencement schedule.

Notwithstanding the authorizations granted under the Federal Power Act, National Forest System lands within the project boundaries shall be managed by the Forest Service under the laws, rules, and regulations applicable to the National Forest System. The terms and conditions of the Forest Service SUP are enforceable by the Forest Service under the laws, rules,

and regulations applicable to the National Forest System. The violation of such terms and conditions also shall be subject to applicable sanctions and enforcement procedures of the Commission at the request of the Forest Service. In the event there is a conflict between any provisions of the license and Forest Service SUP, the SUP shall prevail on matters which the Forest Service deems to affect the National Forest System resources.

Article 102. Before any construction of the project occurs on National Forest System land, the licensee shall obtain the prior written approval of the Forest Service for all final design plans for project components which the Forest Service deems as affecting or potentially affecting National Forest System resources. The licensee shall follow the schedules and procedures for design review and approval specified in the Forest Service SUP. As part of such prior written approval, the Forest Service may require adjustments in final plans and facility locations to preclude or mitigate impacts and to assure that the project is compatible with on-the-ground conditions. Should such necessary adjustments be deemed by the Forest Service, the Commission, or the licensee to be a substantial change, the licensee shall follow the procedures of article 2 of the license. Any changes to the license made for any reason pursuant to article 2 or article 3 shall be made subject to any new terms and conditions of the Secretary of Agriculture made pursuant to section 4(e) of the Federal Power Act.

****9** Article 103. Notwithstanding any license authorization to make changes to the project, the licensee shall get written approval from the Forest Service prior to making any changes in the location of any constructed project features or facilities, or in the uses of project lands and waters, or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and at least 60 days prior to initiating any such changes or departure, the licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes. The licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This article does not relieve the licensee from the amendment or other requirements of article 2 or article 3 of this license.

Article 104. Each year during the 60 days preceding the anniversary date of the license, the licensee shall consult with the Forest Service with regard to measures needed to ensure protection and development of the natural resource values of the project area. Within 60 days following such consultation, the licensee shall file with the Commission evidence of the consultation with any recommendations made by the Forest Service. The Commission reserves the right, after notice and opportunity for hearing, to require changes in the project and its operation that may be necessary to accomplish natural resource protection.

Article 105. During the construction and operation of the facilities authorized by this license, the licensee shall maintain each year, immediately below the point of diversion in Morgan Creek, the following continuous, minimum flows as measured immediately below the point of proposed diversion:

Month	**Morgan Creek Point of Diversion**
Oct.....	0.75 cfs
Nov.....	0.75 cfs
Dec.....	0.75 cfs
Jan.....	1.50 cfs
Feb.....	1.50 cfs
Mar.....	1.50 cfs
Apr.....	1.00 cfs
May.....	1.00 cfs

Jun.....	1.00 cfs
Jul.....	1.00 cfs
Aug.....	0.75 cfs
Sep.....	0.75 cfs

During the operation of the facilities authorized by this license, the licensee shall maintain each year, immediately below the confluence of Morgan Creek and Pine Creek, the following continuous, minimum flows in Pine Creek by supplementing the Pine Creek flows with Morgan Creek water when necessary.

Month	**Pine Creek Confluence Morgan Creek**
Oct.....	6.0 cfs [a1]
Nov.....	6.0 cfs [a1]
Dec.....	6.0 cfs [a1]
Jan.....	6.0 cfs [a1]
Feb.....	6.0 cfs [a1]
Mar.....	6.0 cfs [a1]
Apr.....	6.0 cfs [a1]
May.....	23.8 cfs [aa1]
Jun.....	49.8 cfs [aa1]
Jul.....	36.5 cfs [aa1]
Aug.....	12.4 cfs [aa1]
Sep.....	6.1 cfs [a1]

****10 *61068** The licensee may temporarily modify minimum flows if required by operating emergencies beyond the control of the licensee. The licensee may also modify minimum flows for periods upon written consent of the Forest Service.

Article 106. The licensee shall construct, operate, and maintain a guaranteed priority stream flow device as part of the diversion/ intake structure. Required stream maintenance flows listed in article 105 shall be automatically released through this device, before any flow can be diverted into the conduit. The licensee shall install a water measurement control section with a continuously recording stream gage, downstream of the point of release of the bypass flow, that will accurately measure the bypass flow. The licensee shall install a water measurement control section with a continuously recording stream gage, downstream of the point of confluence of the two streams, that will accurately measure the bypass and natural flows. The licensee shall provide a stage-discharge chart to the Forest Service prior to commencement of operation of the project. Forest Service approval must be obtained for the design of the bypass mechanism and the design and location of the measuring control section and stream gage prior to construction. The licensee shall file a report of the streamflow at the gaging station by December 31 of

each year for the preceding water year (October 1 through September 30). The report must be filed with the Forest Supervisor, Inyo National Forest.

Article 107. Within one (1) year from the issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee shall file with the Director, OHL, a fish and wildlife habitat mitigation plan approved by the Forest Service. This plan must identify requirements of construction of the meandering channel and mitigation measures to meet Forest Service fish and wildlife habitat objectives and standards. The plan also must include dates for accomplishing these objectives and standards and must identify needs for the timing of any additional studies necessary.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date and written approval by the Forest Service is obtained, unless the Director, OHL, prescribes a different commencement schedule.

Article 108. Within one (1) year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee shall file with the Director, OHL, a plan approved by the Forest Service for accommodation of project-induced recreation. Mitigation and objectives are defined in the Forest Service Environmental Assessment (EA) dated February 26, 1988, and will be followed.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date of this plan and written approval by the Forest Service is received, unless the Director, OHL, prescribes a different commencement schedule.

****11** Article 109. Within one (1) year following the date of issuance of this license and prior to the engaging in any activities which the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee, after consultation with the Forest Service, shall complete a water quality study to assess the impact of the project on the water quality of the meandering channel and Pine Creek and file the study, along with comments from the Forest Service, with the Director, OHL. The Director may approve the study or require its modification. If the results of the approved study indicate to the Forest Service that changes in project structures or operations are necessary to maintain water quality standards of the State of California, the licensee may be required by the Forest Service to file with the Commission a mitigation schedule, approved by the Forest Service, for implementing the specific changes in project structures or operations.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, OHL, prescribes a different commencement schedule.

Article 110. Within one (1) year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee shall file with the Director, OHL, a plan approved in writing by the Forest Service for the control of erosion, stream sedimentation, dust, soil mass movement; and fish population alterations, monitoring and success of the project. Mitigation measures, objectives and monitoring ***61069** stated in the Forest Service EA will be goals for this project.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, OHL, prescribes a different commencement schedule.

Article 111. Within one (1) year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee shall file with the Director, OHL, a plan, approved by the Forest Service, for the treatment and disposal of solid waste and waste water generated during construction and operation of the project. At a minimum, the plan must address the estimated quantity of solid waste and waste

water generated each day; the location of disposal sites and methods of treatment; implementation schedule; areas available for disposal of wastes; design of facilities; comparison between on- and off-site disposal; and maintenance programs.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, OHL, prescribes a different commencement schedule.

Article 112. Within one (1) year following the date of issuance of this license and at least 60 days before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee shall file with the Director, OHL, a plan approved by the Forest Service for oil and hazardous substances storage and spill prevention and cleanup. At a minimum, the plan must require the licensee to: (1) maintain in the project area a cache of spill cleanup equipment suitable to contain any spill from the project; (2) periodically inform the Forest Service of the location of the spill-cleanup equipment located on National Forest System lands, and of the location, type, and quantity of oil and hazardous substances stored in the project area; and (3) inform the Forest Service immediately of the nature, time, date, location, and action taken for any spill.

****12** The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, OHL, prescribes a different commencement schedule.

Article 113. Within one (1) year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee shall file with the Director, OHL, a plan approved by the Forest Service for the storage and/or disposal of excess construction tunnel spoils and slide material.

At a minimum, the plan must address contouring of any storage piles to conform to adjacent land forms and slopes, stabilization and rehabilitation of all spoil sites and borrow pits, and prevention of water contamination by leachate and runoff. The plan also must include an implementation schedule and maintenance program.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, OHL, prescribes a different commencement schedule.

Article 114. Within one (1) year following the date of issuance of this license and before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System land, the licensee shall file with the Director, OHL, a plan approved by the Forest Service for the design and construction of the project facilities in order to preserve or enhance its visual character. The plan must consider facility configurations and alignments, building materials, color, conservation of vegetation, landscaping, and screening. Project facilities of concern to this plan include, among other things, clearings, diversion structures, penstocks, pipes, ditches, powerhouses, other buildings, transmission lines and corridors, and access roads.

The licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, OHL, prescribes a different commencement schedule.

Article 201. The licensee shall pay the United States the following annual charges as determined by the Commission, effective the first day of the month in which this license is issued, for the purposes of:
a. Reimbursing the United States for the cost of administration of Part I of the FPA. The authorized installed capacity for that purpose is 1,320 horsepower.

b. Recompensing the Unites States for the use, occupancy, and enjoyment of 3.25 acres of its lands, other than for transmission line right-of-way.

Article 202. The licensee shall clear and keep clear to an adequate width all lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which result

from maintenance, operation, or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of lands and disposal of unnecessary material shall be done with due diligence to the satisfaction ***61070** of the authorized representative of the Commission and in accordance with appropriate federal, state, and local statutes and regulations.

****13** Article 203. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any noncomplying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) noncommercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction; (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site; and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

****14** (c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) nonproject overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69 kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed. If no conveyance was made during the prior calendar year, the licensee shall so inform the Commission and the Regional Director in writing no later than January 31 of each year.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that

discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) nonproject overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and ***61071** are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved exhibit R or approved report on recreational resources of an exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d) (7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, OHL, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

****15** (e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

Article 204. Pursuant to section 10(d) of the FPA, after the first 20 years of operation of the project under license, 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. The licensee shall set aside in a project amortization reserve

account at the end of each fiscal year one half of the project surplus earnings, if any, accumulated after the first 20 years of operation under the license, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year after the first 20 years of operation under the license, the licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall maintain the amounts established in the project amortization reserved account until further order of the Commission.

****16** The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly includible in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. ***61072** The cost rate 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 301. The licensee shall commence construction of the project works within two years from the issuance date of the license and shall complete construction of the project within four years from the issuance date of the license.

Article 302. The licensee shall, at least 60 days prior to the start of construction, submit one copy to the Commission's Regional Director and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections) of the final contract drawings and specifications, along with an accompanying supporting design report for pertinent features of the project, such as water retention structures, powerhouse, and water conveyance structures. The supporting design report should be consistent with the Commission's Engineering Guidelines. The Commission may require changes in the plans and specifications to assure a safe and adequate project. If the licensee plans substantial changes to location, size, type, or purpose of the water retention structures, powerhouse, or water conveyance structures, the plans and specifications must be accompanied by revised exhibit F and G drawings, as necessary.

Article 303. Within 90 days after constructing the project, the licensee must file for Commission approval revised exhibits A, F, and G to describe and show the project as built.

Article 401. The plan required in article 108 shall provide for, but not be limited to: (a) trailhead parking on the Tungstar Mill Site 2 and 3; (b) trail construction from the new parking area to the existing Gable Creek and Pine Creek trails, and to the Pack Station; (c) interpretive signs of the Tungstar Mine, the Hydroelectric plant, and fish and aquatic habitat needs, and (d) access to the meandering channel. The plan shall include detailed design drawings of the recreational facilities, a construction schedule, and provisions for periodic review and revisions.

The licensee shall prepare the plan after consultation with the FS. The licensee shall include with the plan: (a) documentation of consultation; (b) copies of comments and recommendations of the completed plan after it has been prepared and provided to the FS; and (c) specific descriptions of how the FS's comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the FS to comment and to make recommendations prior to filing the plan with the Commission. If the licensee does not adopt the recommendations, the filing shall include the licensee's reasons, based on project-specific information.

****17** The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee shall implement the plan, including any changes required by the Commission.

Article 402. The licensee, before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this license, shall consult with the California State Historic Preservation Officer (SHPO) and the Forest Service.

If the licensee discovers any previously unidentified archeological or historic sites during the course of constructing or developing project works or other facilities at the project, the licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the sites, and shall consult with the SHPO and the Forest Service.

In either instance, the licensee shall file for Commission approval a cultural resource management plan prepared by a qualified cultural resource specialist after having consulted with the SHPO and the Forest Service. The plan shall include the following: (1) a description of each discovered site, indicating whether it is listed on or eligible to be listed on the National Register of Historic Places; (2) a description of the potential effect on each discovered site; (3) proposed measures for avoiding or mitigating effects; (4) documentation of the nature and extent of consultation; and (5) a schedule for mitigating effects and conducting additional studies. The Commission may require changes to the plan.

The licensee shall not begin land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a site discovered during construction until informed by the Commission that the requirements of this article have been fulfilled.

Article 403. The plan for fish and wildlife habitat mitigation required by article 107 shall include a detailed final plan for establishing and maintaining a riparian vegetative community of six acres in conjunction with the project's meandering channel. At least 90 days before the start of any land-disturbing or land-clearing activities, the licensee shall file with ***61073** the Commission for approval a plan for establishing riparian vegetation.

The plan shall include, but not be limited to, the following: (1) maps showing the location of all areas on which riparian vegetation will be established, site boundaries, size of the site and physical and habitat features; (2) a description of species to be planted, planting densities, planting methods, fertilization and irrigation requirements, and planting schedules; (3) a description of the soil and substrate conditions at the sites; (4) a monitoring program that includes goals and criteria for successful establishment of riparian vegetation, sampling procedures, and reporting requirements; (5) procedures to implement if monitoring reveals that establishment of riparian vegetation is not successful; (6) an implementation schedule that provides for establishing riparian vegetation as soon as practical; and (7) a description of the program for the long-term ownership, management, and maintenance of the riparian habitat associated with the meandering channel.

****18** The licensee shall prepare the plan after consultation with the Forest Service, the U.S. Fish and Wildlife Service (FWS), and the California Department of Fish and Game (Cal Fish and Game). The licensee shall include with the plan documentation of consultation with the agencies before preparing the plan, copies of agency comments or recommendations on the completed plan, and specific descriptions of how all the agency comments were accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reason, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the licensee is notified by the Commission that the plan is acceptable. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 404. The licensee shall design and construct the transmission line in accordance with guidelines set forth in “Suggested Practices for Raptor Protection on Power Lines, the State of the Art in 1981,” Raptor Research Foundation, Inc.

The licensee shall consult with the FWS, Cal Fish and Game, and the Inyo National Forest Supervisor in adopting these guidelines and shall develop and implement a design that will provide adequate separation of energized conductors, groundwires, and other metal hardware, adequate insulation, and other measures necessary to protect raptors from electrocution hazard.

The licensee shall file for Commission approval as-built drawings of the transmission line, along with the as-built drawings required by article 303.

Article 405. The licensee, after consultation with the Forest Service and Cal Fish and Game, and within 90 days from the date of issuance of this license, shall file for Commission approval a plan to install, operate, and maintain streamflow gages in Morgan Creek and Pine Creek to monitor the minimum flows required in article 105.

The licensee shall include with the plan documentation of consultation and copies of comments and recommendations on the completed plan, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

A copy of the plan shall be sent to the Commission's Regional Office. The Commission reserves the right to require changes in the plan. Project operation shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

****19** Article 406. The licensee shall implement the June 10, 1987 “Design Plan For A Meandering Channel,” pages 1 through 5 and figures 1 through 5, in appendix C of the licensee's September 16, 1987 filing. This plan provides for the construction of pool, run/glide, and riffle habitats, a minimum flow of 12 cfs, stocking with rainbow/golden trout, and channel maintenance, and describes construction techniques.

At least 90 days before the start of any land-disturbing or land-clearing activities, the licensee shall file with the Commission for approval a supplement to the design plan. This supplement shall include but not be limited to: (1) a schedule for construction and maintenance; (2) drawings of the water flow control facilities with a back-up system; (3) a monitoring program with schedule to evaluate the success of the channel in maintaining a trout fishery; (4) procedures and measure to be implemented if the channel is not maintaining a trout fishery, (5) a monitoring program with schedule for determining the recreational use of the channel; and (6) procedures for disposal of sediment that accumulates in the settling pond at the head of the meandering channel.

The licensee shall prepare the supplement to the design plan after consultation with the ***61074** Forest Service, Cal Fish and Game, and FWS. The licensee shall include with the supplement to the design plan documentation of consultation and copies of comments and recommendations on the completed supplement to the design plan, and specific descriptions of how the agencies' comments are accommodated by the supplement to the design plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the supplement to the design plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the supplement to the design plan. No land-disturbing or land-clearing activities shall begin until the licensee is notified by the Commission that the supplement to the design plan is approved. Upon Commission approval, the licensee shall implement the supplement to the design plan, including any changes required by the Commission.

The licensee shall file for Commission approval as-built drawings of the meandering channel, along with the as-built drawings required by article 303.

(E) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to the Commission filing. Proof of service on these entities must accompany the filing with the Commission.

(F) This order is final unless a request for rehearing is filed within 30 days of the date of issuance of this order pursuant to section 313 of the FPA.

Environmental Assessment

Federal Energy Regulatory Commission

Office of Hydropower Licensing

Division of Project Review

Date: October 15, 1991

Project name: Tungstar Project

FERC Project No. 7267 – 004

A. Application

**20 1. Application type: Minor license

2. Date filed with the Commission: September 30, 1986

3. Applicant: Joseph Martin Keating (Keating)

4. Water body: Morgan Creek and Pine Creek; River basin: Owens

5. Nearest city or town: Rovana; (See figure 1.) [omitted in printing.]

6. County: Inyo; State: California

B. Summary

Keating proposes to construct and operate a hydroelectric project on the Pine and Morgan Creeks, 17 miles west of the Town of Bishop, in Inyo County, California. As proposed, the project would generate about 4.0 gigawatthours (GWh) annually, and it would have a levelized net economic benefit of about $89,000 annually.

In addition to Keating's proposal for a minor license, we consider one alternative action: To deny the license (no action). Under the no action alternative, no license would be issued. There would be no change to the existing environment.

Based on our review of the project and the alternatives under sections 4(e) and 10(j) of the Federal Power Act (Act) we conclude that licensing the project, with the proposed environmental measures, would best adapt the project to a comprehensive plan for the Pine Creek Basin.

Project operation with proposed measures would protect and enhance the existing environmental resources of the project area. These measures include:
(1) a plan to construct an artificial meandering channel which would provide public fishing access, enhance recreational opportunities, and create fish habitat;

(2) minimum flow in the bypass reach which would protect rainbow/golden trout habitat:

(3) a wetland mitigation plan which would replace wetland habitat lost as a result of project construction and operation;

(4) raptor proofing the transmission line which would protect raptors from electrocution;

(5) a visual resource plan which would avoid disturbance to the quality of the visual resources of the area.

On the basis of staff's independent environmental analysis, issuance of a license for the project would not constitute a major federal action significantly affecting the quality of the human environment.

C. Purpose and Need for Action

1. Purpose: The proposed project would provide an estimated average of 4.0 GWh of electrical energy per year, which the applicant would sell to Southern California Edison (SCE) or to another utility in the region.

2. Need for power: California Energy Commission's 1990 Final Electric Report (report—dated October 1990) shows an oversupply of capacity in California well into the 1990's.

The report says: “on a statewide basis, dependable capacity and resources can be stretched to 2001 before new capacity becomes ***61075** absolutely necessary. Excluding older fossil plants, the statewide deficit for new resources would occur in 1997.” The report also shows some areas may need new capacity as early as 1994.

The power from the project would be useful in meeting a small part of the need for power in the Western Systems Coordinating Council the Western Systems Coordinating Council (WSCC) projects for the Southern California area of the WSCC region.

****21** From the time the project goes into commercial operation, it would be available to displace fossil-fueled electric power generation in the WSCC region thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by burning fossil fuels.

D. Proposed Project and Alternatives

1. Description of the proposed action: (See figure 2.) [omitted in printing.]

The applicant would construct a hydropower facility on Morgan Creek and Pine Creek adjacent to Stratcor Corporation's (Stratcor) Pine Creek Tungsten Mine, approximately 6.5 miles southwest of Rovana, California. The project would use all the discharge water exiting from Stratcor's mine water treatment facility and existing powerplant tailrace located adjacent to Morgan Creek. The project would also divert additional flow from Morgan Creek during spring snowmelt, if available, up to the proposed plant's hydraulic capacity of 30 cubic feet per second (cfs).

The proposed automatic run-of-river project would consist of: (1) a 4–foot–high, 10–foot–long diversion dam near the terminus of Stratcor's existing powerhouse tailrace; (2) a 36–inch–diameter, 3,500–foot–long penstock; (3) a 25–foot by 35–foot concrete and block powerhouse located on privately owned land south of Pine Creek; (4) one multiple jet impulse turbine with total installed capacity of 990 kilowatts operating under a head of 470 feet; and (5) a 12–kilovolt (kV), 550–foot–long transmission line interconnecting with an existing transmission line owned and operated by SCE. In addition, the project's tailrace would discharge water into a 4,000–foot–long, man-made, meandering channel in order to facilitate the settling of suspended mine water flocculants and to create aquatic habitat before returning flows to Pine Creek.

a. Applicant's proposed mitigative measures:

i. Construction:

The applicant proposes to bury the penstock except for a 250–foot section that would be painted to blend with the surroundings. The powerhouse would be partially buried and constructed of textured masonry block painted an earthen color. The powerhouse roof would be metal, painted to blend with the surrounding environment. The powerhouse would be shielded from view by a vegetated earthen berm.

To minimize erosion and sedimentation as the result of construction activities, the applicant proposes to: (1) deposit construction spoil materials where they would not be eroded and carried to the stream by surface runoff during high stream flows; (2) surface roads with sufficient rock to maintain stability and use cross-drains; (3) revegetate disturbed areas; (4) construct barriers to prevent sediment from reaching streams; (5) construct and protect cut and fill slopes before the rainy season; and (6) stockpile topsoil during construction, and redistribute and reseed following construction.

The applicant proposes to locate project facilities so that impacts to riparian vegetation are minimized and to revegetate disturbed areas with native or naturalized herbaceous species. The proposed transmission line would be designed and constructed according to Raptor Research Foundation guidelines for the protection of raptors.

ii. Operation:

****22** For hydropower generation the applicant proposes to use mine water and existing power plant discharge water, which is currently being released into Morgan Creek. In addition, the applicant proposes to develop a settling pond and a low gradient meandering channel downstream of the powerhouse to permit any mine water contamination to settle out before being returned to Pine Creek. The applicant would also develop a riparian community along the proposed meandering channel, provide stable fish habitat, and provide recreational access.

The applicant proposes to install an automatic device to shut-off the flow of water if the pipeline ruptures; to provide a scheduled minimum flow in Morgan Creek and Pine Creek year round; to operate the project in the run-of-the-river mode; and to raptor proof the transmission line in order to eliminate potential electrocution hazards to hawks, owls, and eagles.

b. Federal land management agency conditions:

i. Federal lands affected.

Yes; Forest Service (FS); acreage= 3.25; (agency)

Conditions provided by letter dated: 02/26/88 (attachment A).

ii. The FS provided conditions by letter dated February 26, 1988 (attachment A). In summary, these condition require the licensee to:

(1) file with the Director of the Office of Hydropower Licensing (Director) a special use authorization, enforceable by the FS;

(2) obtain prior written approval of the FS for all final design plans for project components affecting FS resources;

***61076** (3) obtain written approval from the FS prior to making any changes in the location of any project feature or facility, or in the uses of project lands and waters;

(4) consult annually with the FS concerning measures needed to ensure the protection and development of the natural resource values of the project area;

(5) release the minimum flows shown in table 1 into Morgan and Pine Creeks;
Table 1. Minimum flows required by the Forest Service for Morgan and Pine Creeks (in cfs).

Month	Morgan Creek	Pine Creek
October.....	0.75	6.0
November.....	0.75	6.0
December.....	0.75	6.0
January.....	1.50	6.0
February.....	1.50	6.0
March.....	1.50	6.0
April.....	1.00	6.0
May.....	1.00	23.8
June.....	1.00	49.8
July.....	1.00	36.5
August.....	0.75	12.4
September.....	0.75	6.1

(6) construct, operate, and maintain a device to guarantee the release of the required minimum flows and install the necessary streamflow gages to measure the required minimum flows;

(7) file with the Director a fish and wildlife mitigative plan approved by the FS identifying requirements for construction the meandering channel and other mitigative measures;

(8) file with the Director a plan approved by the FS for accommodating project-induced recreation;

(9) file with the Director the results of a study to assess the impact of the project on the water quality of the meandering channel and Pine Creek;

(10) file with the Director a plan approved by the FS for controlling erosion, sedimentation, dust, and soil mass movement and monitoring fish populations;

****23** (11) file with the Director a plan approved by the FS for the treatment and disposal of solid waste and waste water caused by construction and operation of the project;

(12) file with the Director a plan approved by the FS for the storage, spill prevention, and cleanup of oil and hazardous substances;

(13) file with the Director a plan approved by the FS for the storage and disposal of construction spoil;

(14) file with the Director a plan approved by the FS for the design and construction of the project facilities in order to preserve or enhance its visual character; and

(15) abide by the terms of any agreement with the FS.

2. Alternatives to the proposed project:

a. No reasonable action alternatives have been found.

b. Alternative of no action:

No action, denial of the license, would preclude the applicant from constructing the proposed project. No action would involve no alterations to the existing environment and would preclude the applicant from producing electrical power at the site.

E. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act):
a. U.S. Fish & Wildlife Service (FWS): Yes.

b. State(s): CA Dept. of Fish and Game (CDFG) Yes.

c. National Marine Fisheries Service (NMFS): No.

2. Section 7 consultation (Endangered Species Act):
a. Listed species: None.

b. Consultation: Not required.

Remarks:

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 06/23/86.

Remarks: On October 31, 1986, the State Water Resources Control Board (State Board) granted a blanket 401 certification for 26 Corps of Engineers nationwide 404 permits, including Project No. 7267. On April 30, 1987, the California Regional Water Quality Control Board (Regional Board) denied the request for case specific 401 certification until completion of a final environmental document for the project, in compliance with the California Environmental Quality Act. On December 9, 1988, the State Board ruled that the Regional Board's case specific denial of 401 certification for Project No. 7267 makes the State Board's blanket certification “ineffective.” On December 18, 1989, FERC dismissed the license application and stated that the State Courts must determine if the State Board's revocation is valid. On March 8, 1991, the U.S. Court of Appeals ruled that FERC must reinstate the application and determine if the State Board's revocation is valid. The Commission is evaluating the issue and will issue a final determination in the future.

4. Cultural resource consultation (Historic Preservation Act):
a. State Historic Preservation Officer (SHPO): Yes.

b. National Park Service (NPS): Yes.

***61077** c. National Register status: None.

d. Council: Not required.

e. Further consultation: Not required.

Remarks: The SHPO (Ms. Kathryn Gualtieri, California Department of Parks and Recreation) and the Regional Forester (Mr. Paul Barker, Forest Service, Pacific Southwest Region) concur with FERC staff by letters dated October 6, 1986 and February 26, 1988, respectively that no archeological or historic sites listed or eligible for inclusion in the National Register of Historic Places would be affected by the project.

****24** 5. Recreational consultation (Federal Power Act):
a. U.S. Owners: Yes.

b. NPS: Yes.

c. State(s): Yes.

Remarks: None

6. Wild and scenic rivers (Wild and Scenic Rivers Act):

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

F. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/05/87.

Commenting agencies and other entities—Date of letter

Department of the Interior—04/30/87

California Department of Fish and Game—04/30/87

The Resources Agency of California—05/04/87

Department of the Army, Los Angeles District, Corps of Engineers—05/18/87

California Regional Water Quality Control Board, Lahontan Region—05/22/87

Department of Agriculture, Forest Service—02/26/88

Motions to intervene—Date of motion

State of California Water Resources Control Board—05/01/87

2. The applicant responded to the comments or motion(s) to intervene by letter(s) dated 09/16/87.

G. Affected Environment

1. General description of the locale (Source: Joseph M. Keating, 1986, application, exhibit E, unless otherwise indicated):

a. Pine Creek and Morgan Creek Geographic Region:

The project would be constructed and operated on Morgan Creek and Pine Creek approximately 17 miles west of Bishop, California. Both Creeks originate in the eastern Sierra Nevada at about 10,000 feet above mean sea level (m.s.l.). The project would be located primarily in the Inyo National Forest, just south of the John Muir Wilderness area.

The proposed diversion and intake structure would occupy less than 0.05 acre on Morgan Creek about 800 hundred feet upstream from its confluence with Pine Creek. The diversion would be constructed within the developed area of the Stratcor tungsten mine at about 7800 feet above m.s.l. This location is highly disturbed and includes a bridge/road crossing, nearby buildings, local grading and other associated mine facilities (e.g., pipes, rock piles, and discarded equipment). Upstream of the proposed diversion, steep slopes occur on either side of Morgan Creek; the streambed is mostly boulder strewn, and the granite canyon walls have little vegetation. Below the confluence of Morgan Creek and Pine Creek, Pine Creek flows northeasterly 20 miles into the Owens River.

The proposed penstock would be located, for the most part, within a paved road for a distance of 3,400 feet along Pine Creek's northern bank. The proposed powerhouse would be located on private land upstream of Gable Creek, another small tributary of Pine Creek. Pine Creek in this area consists of small boulders, has a gentler gradient, a wider floodplain, and more riparian vegetation. The powerhouse site consists of a naturally flat stream terrace that has been highly disturbed by past construction activities.

The entire project is located on the eastern slopes of the Sierra Nevada and therefore, has a typical dry eastern Sierra Nevada ecology with wide seasonal variations in temperature and low to moderate precipitation including some snow. The vegetation is mostly coniferous forest and shrubby herbaceous growth with some riparian species along creek banks. Drainage begins at Mt. Morgan, and the major flow source is snowmelt and springs.

b. Description of the Owens River Basin:

****25** The Owens River Basin is located in the east-central part of California and in a small portion of Nevada. The Owens River flows in a closed hydrologic basin, is the largest stream draining the eastern face of the Sierra Nevada Range, and flows south parallel to the mountains for about 100 miles. Morgan and Pine ***61078** Creeks are two of many tributaries in the Owens River Basin. The climate is arid, with about 5 inches of precipitation annually (Federal Energy Regulatory Commission 1986).

The Owens River Basin and the adjacent Mono Lake Basin are the source of 80 percent of the water used by the City of Los Angeles. Diversions from the Owens River and its tributaries into the Los Angeles Aqueduct have caused the evaporation of

Owens Lake at the end of the river, which formerly covered 75 square miles. The predominant water dependent land uses in the Owens Valley are recreation and agriculture; much of the valley floor is used as rangeland for cattle and livestock. The major economic activity is associated with recreation along the Owens River and the surrounding Inyo National Forest (Federal Energy Regulatory Commission 1986).

c. Existing hydroelectric development:

In addition to the proposed powerhouse of the Tungstar Project, there are seven powerhouses owned and operated by the Los Angeles Department of Water and Power that are not subject to the Commission's jurisdiction—four powerhouses are on the Owens River 10 to over 25 miles north of Pine Creek and three powerhouses are on tributaries to the Owens River 12 to over 60 miles south of Pine Creek.

As of October 1, 1991, existing licensed projects and exempted projects in the Owens River Basin are as follows.

Project No.	Project name	Water Body
3525 [a1]	Cottonwood Canyon	Lone Tree Creek
3580	Millner Creek	Millner Creek
4669	Rancho Riata	Bishop Creek–Owens River
6188	Tinemaha–Red Mountain	Tinemaha Creek–Owens River
6885	Cinnamon Ranch	Ditch (Middle Creek)
8418A, B	Pine Creek 1, 2	Morgan Creek–Pine Creek
1394	Bishop Creek	Bishop Creek

d. Proposed hydroelectric development:

In addition to the Keating application for licensing of the Tungstar Project, there is one pending application for license in the Owens River Basin, the Rovanna–Pine Creek Project (Project No. 3258), located on Pine Creek and the Owens River.

e. Target resources:

For this assessment, a target resource is defined as an important resource that could be affected cumulatively by two or more proposed hydropower projects.

We identified (1) resident trout, (2) riparian vegetation, (3) riparian-associated wildlife, (4) aesthetics (visual quality), (5) recreation, and (6) local economy as target resources for the Owens River Basin in an environmental impact statement, wherein we also examined the potential cumulative impacts of constructing and operating seven proposed hydropower projects in the basin, including the Tungstar Project (Federal Energy Regulatory Commission, 1986).

****26** Historically, water has been a source of extreme conflict between valley residents and the City of Los Angeles and other users. Stream diversions for the Los Angeles aqueduct, power generation and irrigation caused the complete destruction of 20 percent of the streams in the valley and more than one-half of the flow in another 17 percent of the streams. This flow reduction caused a concomitant reduction of resources such as trout (at least 20 percent), riparian vegetation (15 to 25 percent), and riparian-associated wildlife (15 to 25 percent). The Inyo National Forest has a higher recreational use than Glacier, Yellowstone,

and Grand Canyon National Parks combined, so recreation in the Owens River Basin is also an important component of the local economy (Federal Energy Regulatory Commission 1986).

f. Cumulative impacts:

A cumulative impact is the impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., section 1508.7).

The Tungstar Project would not cause adverse cumulative impacts but would cause cumulative benefits to target resources in the Owens River Basin because the project would provide a 4,000–foot–long meandering channel to enhance habitat for resident trout, riparian vegetation, and riparian-associated wildlife; this would benefit recreation in the project area and the local economy as well.

2. Descriptions of the resources in the project impact area:

a. Geology and soils: Steep ledge and talus slopes form canyon walls on either side of Morgan Creek, and there is very little soil present within the project area. The streambed consists mainly of boulders near the intake site; alluvial deposits occur where the canyon floor broadens ***61079** further downstream. Tungsten deposits which occur in the project vicinity, have been mined since 1916, and are currently mined by Stratcor, as dictated by economic conditions. Earth moving from this milling and mining facility has caused significant alteration of the original ground surface and streambeds. Most of the proposed project features are located within or next to previously disturbed areas. The main ore bodies are several thousand feet west of the proposed project and are several thousand feet higher in elevation. No mineral occurrences or deposits are known to occur within the project boundary.

b. Streamflow:

Morgan Creek Bypass:

Lowest Average Monthly Flow: 11.0 cfs (April)

Highest Average Monthly Flow: 30.6 cfs (June)

Average Annual Flow: 15.5 cfs

Pine Creek Bypass:

Lowest Average Monthly Flow: 15.1 cfs (March)

Highest Average Monthly Flow: 79.4 cfs (June)

Average Annual Flow: 28.3 cfs

c. Water quality: Water quality of Pine Creek and Morgan Creek does not exceed applicable state standards. Tests of water samples revealed the following range of data: pH, 8.12–8.98; total dissolved solids, 36–128 parts per million (ppm); hardness, 24–39 ppm; orthophosphous less than 0.02 milligrams per liter (mg/l); nitrate-nitrogen 0.22–0.70 mg/l; ammonia-nitrogen, 0.13–0.17 mg/l; temperatures range from about 2.0°C in winter to about 8.0°C in summer.

**27 d. Fisheries:

Anadromous: Absent.

Resident: Present.

Resident game fish include: rainbow trout, golden trout, and rainbow-golden trout hybrids. The total trout population in Pine Creek was estimated to be about 1650 fish (3 inches) per mile, and sampling conducted in Morgan Creek located one fish (Keating, 1986.).

e. Vegetation:

Cover type—Dominant species

sagebrush shrub—rabbit brush, sagebrush, dogbane, squirreltail grass, and beavertail cactus

riparian—cottonwood, Jeffrey pine, willows, white fir, alder, water birch, wild rose, horsetails, and scarlet monkey flower.

The riparian community in the vicinity of lower Morgan Creek and Pine Creek is extensive and well-developed, with many areas approaching 100–percent ground cover. In contrast, the upper bypass reach of Morgan Creek flows through a narrow incised channel bordered by a single row of water birches. In the lower reaches of Morgan Creek and Pine Creek, the riparian community appears to be less dependent on streamflows than on the numerous surface springs in the area and on the downslope movement of subsurface water towards Pine Creek (Forest Service 1988; Patterson 1987)

None of the sensitive plant species designated by FS or state agencies, nor habitat which could support such species, were identified during two surveys of the project area (Forest Service 1988).

f. Wildlife: The riparian habitat in the project area is important for a variety of wildlife. Common species include mourning dove, dipper, hermit thrush, black phoebe, and redbreasted sapsucker. The project area is located on the western edge of the winter range used by the Sherwin and Buttermilk mule deer herds. However, winter use of the area is limited because of the heavy snows, and less than 5 percent of the combined deer herds migrate through the project area. No extensive deer trails were noted through the project area (Keating 1986).

g. Cultural: National Register (listed and eligible) properties have not been recorded.

h. Visual quality: The proposed project is located in high mountain valleys on the east slope of the Sierra Nevada. The north facing slope is heavily vegetated with conifers while the south facing slope of the valley is sparsely vegetated. Slopes are very steep. The project area has been visually modified from a natural landscape by an active tungsten mine and its associated roads, transmission lines, and structures. Streamflow in Morgan Creek is often milky from mine processing.

i. Recreation: The Inyo National Forest (NF) and the adjacent John Muir Wilderness Area offer recreational opportunities for fishing, horseback riding, hiking, and hunting. Recreation is an important resource in the Inyo NF, and the trout streams, such as Pine Creek, provide a focal point for much of the recreational opportunity. In the immediate project area, backpackers use an existing trailhead access, on privately owned land, for access into the eastern Sierra Nevada. A seasonal pack station, adjacent to the private land, is located in the Inyo NF and provides access to nearby Pine Lake. No developed overnight camping facilities exist in the immediate area. In 1988, the Inyo NF recorded over 6 million recreation visitor days. Recreation visitor days in the Inyo NF has increased 3 percent each year (personal communication, Adele Goss, Forest Service, Pacific Southwest Region, Department of Agriculture, San Francisco, California, November 8, 1988).

**28 j. Land use: The land in the project area has been altered primarily by mining activities associated with Stratcor's tungsten mine and *61080 millsite and by past mining activities. Other land uses include recreation, livestock grazing, and deer winter range and migration corridor. The project site is approximately 17 miles west of the Town of Bishop.

H. Environmental Issues and Proposed Resolutions

There are 8 issues addressed below.

1. Project-induced recreation plan: In its section 4(e) conditions, the FS recommends that the applicant develop a project-induced recreation plan. The FS states in its environmental assessment dated January 21, 1988, for this proposed project, the recreation demands in the Pine Creek drainage are expected to increase 3 percent annually, and the recreational resources would be improved with the additional facilities proposed by the applicant and in consultation with the FS. Improvements, such as construction of several interpretive sites and a trail system to improve access for anglers and other recreationists would be included as part of the project's recreational enhancement measures.

The applicant proposes to construct an approximate 4,000–foot–long and 14–foot–wide artificial meandering channel to increase recreational fishing opportunities, angler access, and day use areas, and thereby, enhance the recreational and fishery resources in the project area. This channel would be stocked with trout.

Staff believes that the project area is recreationally important for day use activities, such as, fishing and hiking (section G.2.i.). Staff also believes that demand for recreation in the project area could increase by as much as 3 percent annually (Forest Service 1988). Staff, therefore, concurs with the FS and applicant that the meandering channel, which would provide hiking trails, angler access, and fish habitat, would help meet increased demand for recreational opportunities. The design for the meandering channel submitted by the applicant, however, does not contain the necessary detail to approve at this time. Therefore, the licensee, prior to commencing any project land-disturbing activities, and after consulting with the FS, should file for Commission approval, a final recreation plan.

2. Protection of unknown cultural resources from potential impacts: The results of the survey conducted for the proposed project areas, as well as the SHPO's and the FS's comments on the results of the survey and on the proposed project, are based in the premise that the project would be constructed as described in the application without significant changes. Changes to the project, especially changes in the proposed location and design of a project, are occasionally found to be necessary after a license has been issued and may require an applicant to amend a license. Under these circumstances, whether or not an application for amendment of license is required, the survey results and the SHPO's and the FS's comments would no longer reliably depict the cultural resources impacts that would result from developing the project. Therefore, before beginning land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license and previously commented on by the SHPO and the FS, the licensee should consult with the SHPO and the FS about the need to conduct an additional archeological or historical survey and to implement further avoidance or mitigative measures.

**29 Also, land-clearing or land-disturbing activities could adversely affect archeological and historic properties not identified in the cultural resources survey. Therefore, if the licensee encounters such sites or properties during the development of project works or related facilities, the licensee should stop land-clearing and land-disturbing activities in the vicinity of the sites or properties, should consult with the SHPO and the FS on the eligibility of the properties, and should carry out any necessary measures to avoid or to mitigate effects on the properties.

Before starting land-clearing or land-disturbing activities at the project, other than those authorized in a license, the licensee should file a plan and a schedule for conducting the appropriate studies, along with a copy of the SHPO's and the FS's written comments concerning the plan and the schedule. The licensee should not start or resume land-clearing or land-disturbing activities, other than those specifically authorized in this license and commented on by the SHPO and the FS or resume

such activities in the vicinity of an archeological or historic property discovered during construction, until informed by the Commission that the requirements discussed above have been fulfilled.

3. Erosion and sedimentation: Land-disturbing activities during construction of the proposed project would cause temporary, localized erosion and sedimentation, especially during placement of the penstock and construction of temporary and permanent access roads. Erosion associated with the penstock would be minor where it is to be buried in the existing road; however, minor, localized rockfall or movement of rocks and boulders may occur where the penstock crosses a steep talus slope. The applicant has proposed a number of measures to reduce erosion and sedimentation from the project, including: depositing spoil materials away from flowing water; surfacing roads with sufficient rock to maintain stability; providing cross drains; stockpiling topsoil for use ***61081** in revegetation efforts; revegetating disturbed areas; using barriers to prevent sediment from reaching streams; using a meandering tailrace channel to dissipate energy from tailrace discharges; and installing an automatic device to shut off the flow of water if the pipeline ruptures. The Forest Service 4(e) conditions numbers 10 and 13 require preparation of plans to control erosion and dispose of construction spoils. These plans, which are to be approved by the FS and filed with the Commission, would ensure that erosion and sedimentation from project construction and operation would be minor and temporary.

4. Raptor protection: Aboveground transmission lines are a potential electrocution hazard to perching raptors unless properly designed (Olendorff et al. 1981). CDFG recommends that the applicant design and construct the proposed 550–foot–long transmission line in a manner that prevents raptor electrocutions. The applicant agrees to use such a design. Because of the potential hazard to raptors in the area, the staff concludes that the licensee should use a transmission line design that would prevent the accidental electrocution of perching raptors.

****30** 5. Riparian vegetation: Since project facilities would be located in previously disturbed areas or in sparsely vegetated sites, construction of the project would have little adverse impact on riparian vegetation.

Riparian vegetation in the area of Morgan and Pine Creeks would be little affected by project-related reductions in streamflow. As previously discussed in section G.2.e., little of the riparian vegetation adjacent to the two creeks appears to be dependent on streamflows but rather on the numerous springs and the subsurface flows towards Pine Creek. The loss of the mine discharge flows and part of the seasonal high flows in Morgan Creek would represent a minor component of the hydrological conditions that support the area's riparian vegetation. Furthermore, minimum flows required by the FS 4(e) conditions (table 1) would provide flows during the growing season throughout the bypassed reached of Morgan and Pine Creeks.

The applicant proposes to establish a diverse self-sustaining riparian community adjacent to the proposed meandering channel. The preliminary site chosen for the meandering channel is within an existing riparian shrub community; construction there would impact about 6 acres of riparian habitat (Forest Service 1988). Since the proposed project facilities and operation would have minimal impacts on riparian habitat, the applicant views the establishment of a riparian community in conjunction with the meandering channel primarily as enhancement rather than mitigation. However, if the meandering channel is constructed within an existing riparian community, the extent of long-term enhancement would be minimal and over the short-term there would be a loss of 6 acres of valuable habitat. The applicant recognized the value of existing riparian habitat and states in its plan (Patterson 1987) that it intends to avoid existing high value areas in the final alignment of the meandering channel.

To minimize impacts to existing riparian habitat and to maximize the enhancement of the area, FS (1988) recommends that the meandering channel be located in a sagebrush-mahogany covered area, down-canyon from Gable Creek. This alternative site would require a pipeline or other conveyance to transport the water from the project's powerhouse to the channel. The staff concurs with the FS's assessment and recommends that the meandering channel be located at the site identified by the FS or at some other site with similar low riparian habitat values.

Establishing a riparian community in conjunction with the proposed meandering channel would function as more than adequate mitigation in the event of unforeseen impacts on riparian vegetation or, more likely, as enhancement of existing conditions in

the area. The plan submitted by the applicant, however, does not contain the necessary detail to be approved at this time. For example, details on the location of the channel, the size, density, and mix of plants, monitoring programs, survival criteria, and maintenance and ownership agreements are necessary. The licensee, therefore, should submit a final plan for establishing and maintaining a riparian community in conjunction with the meandering channel that includes these details.

**31 6. Minimum flow for fish habitat: During project operation, reduced flows would decrease available aquatic habitat below the diversion facilities in an approximately 800–foot–long bypass reach of Morgan Creek and a 3,900–foot–long bypass reach in Pine Creek (Figure 2).

Keating, CDFG, and FS recommend minimum stream flows to protect the aquatic habitat in Morgan and Pipe Creeks as shown in tables 2 and 3, respectively.

Table 2. Comparison of the Morgan Creek bypass flows (cfs) proposed by Keating, required by the Forest Service (FS), recommended by the California Department of Fish and Game (CDFG), and existing average monthly flows in the bypass reach of Morgan Creek (Source: Joseph M. Keating. 1986. Application for license for a minor water power project, the Tungstar Project, FERC Project No. 7267, September 30, 1986, as modified by staff).

Month	Existing Average Monthly Flows	FS and Keating	CDFG
January.....	11.7	1.50	a1
February.....	11.5	1.50	a1
March.....	11.1	1.50	a1
April.....	11.0	1.00	a1
May.....	17.3	1.00	5.0
June.....	30.6	1.00	5.0
July.....	26.2	1.00	5.0
August.....	15.6	0.75	a1
September.....	13.4	0.75	a1
October.....	12.9	0.75	a1
November.....	12.8	0.75	a1
December.....	12.3	0.75	a1

*61082 Table 3. Comparison of the Pine Creek bypass flows (cfs) proposed by Keating, required by the Forest Service (FS), recommended by the California Department of Fish and Game (CDFG), and existing average monthly flows in the bypass reach of Pine Creek (Source: Joseph M. Keating, 1986, Application for license for the Tungstar Project, FERC Project No. 7267, September 30, 1986, as modified by staff).

Month	Existing Average Monthly Flows	FS and Keating	CDFG
January.....	15.4	6.0	25.0
February.....	15.4	6.0	25.0
March.....	15.1	6.0	25.0
April.....	16.2	6.0	25.0
May.....	40.1	23.8	45.0
June.....	79.4	49.8	45.0
July.....	61.7	36.5	45.0
August.....	27.3	12.4	25.0
September.....	18.8	6.1	25.0
October.....	17.1	6.0	25.0
November.....	16.7	6.0	25.0
December.....	16.2	6.0	25.0

Fish habitat in Morgan Creek is limited due to its high gradient, turbulent flows and boulder-strewn, bedrock substrate. The lack of fish habitat in Morgan Creek was revealed in a fish survey which found only one rainbow/golden trout throughout the survey area (Payne 1986a). Therefore, flows in Morgan Creek are primarily important as a supplement to Pine Creek's flow in maintaining fish habitat in Pine Creek.

An instream flow analysis was completed in 1986 to determine the relationship of flow to the maintenance of fish habitat in Pine Creek (Payne 1986b). Fish habitat, represented by weighted useable area (WUA), produced in Pine Creek by the existing average annual flow (AAF) of 28 cfs and minimum bypass flows proposed by Keating, FS and CDFG are shown in table 4.

****32** Table 4. Approximate weighted useable area (WUA) in relation to stream flow (cfs) for three life stages of rainbow trout in Pine Creek (Source: Instream Flow Assessment for Upper Pine Creek, Tungstar Project, Inyo County, California, Thomas R. Payne and Associates, September 12, 1986, as modified by staff).

	Weighted Useable Area (sq. ft./1,000 ft.) in Pine Creek		
Flows (cfs)	Adult	Juvenile	Fry
6.0 (FS and Keating)	800	620	2170
6.4	805	625	2170
12.4	1260	920	2400
15.0	1420	1110	2560
23.8	1800	1620	3000

25.0 (CDFG)	1900	1775	3050
28.3 (Existing AAF)	2050	1775	3050
36.5	2200	1760	3050
45.0	2380	1690	3090
49.8	2560	1700	2560

***61083** With the existing 28 cfs AAF in Pine Creek, about 2050 square feet per 1000 linear feet (sq. ft./1000 ft.) of WUA exists in Pine Creek for adult rainbow trout; 1775 sq. ft./1000 ft. WUA for juvenile rainbow trout; and 3050 sq. ft./ 1000 ft. WUA for fry rainbow. With 6.0 cfs, the FS/Keating proposed minimum bypass flow for August through April, about 800 sq. ft./1000 ft. WUA, would exist for adult rainbow trout; 620 sq. ft./1000 ft. WUA for juveniles; and 2170 sq. ft./1000 ft. WUA for fry. With CDFG's 25 cfs minimum bypass flows recommended for August through April about 1900 sq. ft./1000 ft. WUA would exist for adult rainbow trout; 1775 sq. ft./1000 ft. WUA for juvenile rainbow trout; and 3050 sq. ft./1000 ft. WUA for fry.

CDFG's recommended flows generally provide greater amounts of WUA in Pine Creek for all life stages of rainbow trout than is predicted for FS's and the applicant's proposed minimum flows. CDFG's proposed flows would provide nearly 100 percent of the WUA existing at the average annual flow in Pine Creek below Morgan Creek for all lifestages year round; whereas, the FS's and the applicant's proposed flows would provide 100 percent of the existing trout habitat at 28 cfs, during springtime high flow period only. During the remainder of the year, only about 37 percent of the adult and juvenile habitat and 71 percent of the fry habitat which exists in Pine Creek below Morgan Creek at the average annual flow of 28 cfs would occur with the FS's/Keating's proposed flows.

However, an electrofishing survey in a 303–foot–long reach of Pine Creek above the confluence of Morgan Creek and a 232–foot–long reach of Pine Creek below Morgan Creek (Payne 1986a) showed that various age classes of rainbow/golden trout inhabit Pine Creek above and below the confluence of Morgan Creek in almost equal numbers (table 5). These data imply that adequate adult, juvenile, and fry habitat and population exists in both reaches of Pine Creek with or without Morgan Creek inflow. That is, 103 fish were found in Pine Creek above the confluence and 81 fish were found in Pine Creek below the confluence. Therefore, flows lower than the average annual flow in Pine Creek below Morgan Creek should provide sufficient habitat to protect the Pine Creek fishery.

****33** Table 5. Rainbow/golden trout size ranges and numbers collected in Pine Creek above and below the confluence with Morgan Creek (Source: Letter dated October 31, 1987, from Thomas R. Payne to Joseph Keating re: review of FS draft EA).

Size Range	Above Morgan Creek		Below Morgan Creek	
	Number	Percent	Number	Percent
30–75 mm	8	7.8	11	13.6
80–115 mm	36	34.9	16	19.8
120–195 mm	56	54.4	41	50.6
200–245 mm	3	2.9	13	16.0

For example, estimates of total trout population in Pine Creek, both above and below the confluence with the Morgan Creek, equaled about 1,650 fish per mile. Pine Creek flows without Morgan Creek inflows, averages about 12 cfs annually. These data

imply that the 12 cfs AAF in Pine Creek above Morgan Creek provides the same fishery that the 28 cfs AAF in Pine Creek below the confluence with Morgan Creek provides, that is, about 1,650 fish per mile. Thus, it appears inflows from Morgan Creek provide little enhancement and are not essential to the Pine Creek fishery below the confluence with Morgan Creek. Therefore, the magnitude of flows in Pine Creek which occur above the Morgan Creek confluence, would be adequate to maintain the existing fishery throughout Pine Creek. Presently, Pine Creek's flow above the confluence with Morgan Creek averages from 3.7 cfs in January to 48 cfs in June, with an average annual flow of 12 cfs.

Therefore, the minimum bypass flows required by the FS 4(e) condition No. 5 and proposed by the applicant, which ranges from 6 cfs in January to 49 cfs in June, would provide ***61084** adequate habitat for all life stages of rainbow/golden trout and would be more than adequate to ensure the protection of the existing fishery in Pine Creek.

7. Fishery enhancement: To enhance the existing fishery in Pine Creek, the applicant proposes to construct and maintain a 4,000–foot–long artificial, meandering fish channel. The channel would be fed by diverted water from the project's tailrace (figure 2). [omitted in printing.] The artificial channel would be designed to support all life stages of native trout now present in Pine Creek. The channel would be designed to include pools, run/glides, and riffle habitat in approximately equal proportions; cover would be added in the form of woody debris and boulder structures. The designed flow capacity would be approximately 12 cfs with seasonal variation between 10 and 30 cfs. The applicant proposes to stock native rainbow/golden trout taken from Pine Creek. In addition, the fish populations would be monitored annually to document the levels and health of the established fish communities. Maintenance would be performed on instream structures as needed to ensure structural integrity and functional competence.

An instream flow analysis of the proposed meandering channel shows that in the channel rainbow trout fry habitat WUA peaks at 6.0 cfs; juvenile WUA peaks at 12.0 cfs; adult WUA peaks at 14.0 cfs; and spawning WUA peaks at 20.0 cfs. At the channel's design capacity of 12 cfs and for every 1,000 lineal feet of channel, a total of 2088 square feet of WUA would be provided for rainbow/golden trout fry; 2751 sq. ft. of WUA for juveniles; 1535 sq. ft. of WUA for adults; and 2301 sq. ft. of WUA for spawning (table 7). The fish habitat produced in the meandering channel at 12 cfs plus the fish habitat remaining in Pine Creek at 6 cfs represents a 40–percent increase in total fry habitat, percent increase in total adult habitat area, and a 90–percent increase in total juvenile habitat area above present conditions in Pine Creek.

****34** Table 6. Tungstar fish enhancement channel instream flow analysis (Source: Attachment A in: Design plan for a meandering channel, Tungstar Hydroelectric Project, Inyo, County, California, Prepared by Thomas R. Payne and Associates, June 10, 1987).

Weighed Useable Area (WUA; sq. ft./1,000 ft.) versus Flow (cfs) in the Propo sed Meandering Channel

FLOW (cfs)	FRY WUA	Juvenile WUA	Adult WUA	Spawning WUA
2	2244	2168	749	330
4	2377	2271	977	959
6	2533	2406	1128	1484
8	2453	2558	1256	1742
10	2378	2739	1466	2009
12	2088	2751	1535	2301

14	1747	2659	1550	2639
16	1451	2609	1520	3181
18	1267	2551	1449	3712
20	1180	2526	1351	3943
22	1140	2489	1250	3911
24	1081	2426	1123	3833
26	1071	2400	996	3736
28	963	2310	856	3644
30	836	2160	727	3548

***61085** The diversion of mine water and Morgan Creek discharges from Pine Creek and the creation of the meandering channel would result in: (1) a net increase in useable fish habitat; (2) provide significant expanded habitat for native trout; (3) provide increased numbers of catchable trout; (4) provide improved angler access; and (5) provide increased recreational opportunities. In addition, at the head of the new channel would be a settling pond to filter tailrace water, thereby allowing any mine water flocculant to settle out. Thus, the channel would potentially enhance the quality of water and fish habitat both in the channel and downstream in Pine Creek once the water is returned to Pine Creek at the tail of the artificial channel.

Therefore, since we believe the channel would provide enhancement to the existing Pine Creek environment, the licensee should construct and maintain the meandering channel as required by FS 4(e) condition No. 7. In addition, the applicant should monitor fish populations in Pine Creek and the meandering channel as required by FS 4(e) condition No. 10.

8. Enhancement of water quality: When the Stratcor tungsten mine and millsite are in operation, particulate matter is settled in a clariflocculator which precipitates the suspended sediments with an alum treatment process. When the alum particulate mix exceeds the clariflocculator's treatment capacity, turbid water is discharged into Morgan Creek. These discharges can cause Morgan Creek and Pine Creek to: (1) have a milky appearance; (2) become more susceptible to algae growth; and (3) coat the stream substrate with fine sediment. Although these mine water discharges have not been shown to have any biological consequence, they could cause negative visual and recreational appeal of Morgan and Pine Creeks.

The applicant proposes to construct a meandering channel (discussed in section H.7.—Fishery Enhancement), which would provide for containment of flocculant discharges and prevent them from being transported downstream in Morgan and Pine Creeks

****35** To enhance water quality, the applicant would divert flows now discharged directly into Morgan Creek and transport this discharge through a clarification settling pond system at the head of the proposed meandering channel. This system would enhance removal of settleable solids and provide a backup to the existing clarification system at the mine site in the event of mine equipment failure. Therefore, conveying all powerhouse discharges through an earthen settling pond would promote settling and cleaning, if needed, to ensure that the mine discharges do not adversely affect natural stream water quality.

Use of the settling pond and the 4,000–foot–long meandering channel would provide a significant enhancement to the mine discharge and provide back up measures in the event of mine equipment failure. That is, any carryover of settleable material from the mine discharge would be subjected to reclarification in the pond and meandering channel (McLaren Environmental Engineering 1987). Therefore, the applicant should construct the settling pond/meandering channel as discussed in the report Water Quality Assurance Facilities for proposed Tungstar Project, June 1987 (McLaren Environmental Engineering 1987).

I. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions ***61086** set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A). Assessment symbols indicate the following impact levels:

0 = None;	1 = Minor;
2 = Moderate;	3 = Major;
A = Adverse;	B = Beneficial;
L = Long-term;	S = Short-term.

	Impact		
Resource	**P**	**Ps**	**A**
a. Geology–Soils	1AS		
b. Streamflow	1AL		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	1BL		
d. Fisheries:			
Anadromous	0		
Resident	2BL		
e. Vegetation	1BL		
f. Wildlife	1BL		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	1BL		
i. Recreation	1AS		
	1BL		
j. Land use	0		
k. Socioeconomics	0		

Remarks:

b. Streamflow would be reduced in Morgan and Pine Creeks.

c. Mine flocculants would settle out in the proposed setting pond thus clarifying Pine Creek's water.

d. Construction of meandering channel should provide additional habitat and fishing opportunities.

e & f. Establishment of riparian vegetation in conjunction with the meandering channel would improve wildlife habitat in the area.

h. Removal and filtering mine water discharges would clarify the milky appearance of Morgan and Pine Creeks. Removal of debris and discarded equipment, revegetating the project area, and providing new and well maintained structures would rehabilitate the existing disturbed and unsightly project location.

****36** i. Increased noise, dust, and vehicular traffic during construction would create a short-term, minor disturbance to recreationists using the immediate project area. Enhanced angler access and fishing opportunities would be created by construction of the meandering channel.

2. Impacts of the no-action alternative.

Under the no-action alternative, there would be no construction of project facilities or changes to the existing physical, biological, or cultural components of the area. Electrical power that would be generated by the proposed hydroelectric project would have to be generated from other available sources or offset by conservation measures.

3. Recommended alternative (including proposed, required, and recommended mitigative measures).

Proposed project.

4. Reason(s) for selecting the preferred alternative.

The proposed project, including the licensee's proposed mitigation measures and the implementation of measures that the staff and FS recommend, would enable the licensee to use mine water discharge flows that emanate from the Stratcor mine and the natural flows of Morgan Creek/Pine Creek to generate electrical power without significantly adversely affecting the environmental resources of the project area. In addition, the proposed project would provide substantial improvements to fish habitat, visual quality, water quality, and recreational opportunities.

J. Unavoidable Adverse Impacts of the Recommended Alternative

Construction of the proposed project would cause: (1) minor, short-term disturbance for recreation use in the project area; (2) short-term impacts during construction consisting of reduced air quality, vegetation alteration, and some landform modifications; (3) minor, temporary, localized erosion and sedimentation; (4) diversion of streamflow for power generation with reduced flows in Morgan and Pine Creeks; and (5) minor, increased motorized, vehicular traffic.

K. Comprehensive Development

Section 4(e) of the Federal Power Act states that in deciding whether to issue a license, the Commission, in addition to considering the power and development purposes of the project, shall give equal consideration to: the purposes of energy

conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality.

Further, in section 10(a), the Federal Power Act says the Commission shall adopt a project that in its judgment will be best adapted to a comprehensive plan for improving or developing a waterway for the following: (1) the use or benefit of interstate or foreign commerce; (2) the improvement and utilization of water power development; (3) the adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat); and (4) other beneficial public ***61087** uses, including irrigation, flood control, water supply, and recreation, and other purposes discussed in section 4(e).

****37** The proposed project's levelized cost of energy would be about 70 mills/kilowatthour (kWh); the project would be economically beneficial with a levelized net annual benefit of $89,000 or 23 mills/kWh and a 100–percent equity rate of return. (ROR) of 13.5 percent, which we think is fairly attractive.

With the CDFG recommended instream flow, however, the project wouldn't be economically beneficial with a levelized net annual benefit of negative $55,000 or negative 36 mills/kWh, and the ROR would be about 3.5 percent, which we think could not be financed.

From our analysis both the environmental and the economic effects of the proposed project and the no-action alternative, we conclude that the proposed project would give the public the greatest benefits from the waterway.

If licensed, the project would generate an estimated average 4.0 gigawatthours of electrical energy per year without significantly adversely affecting environmental resources and with substantial enhancement to fish habitat, recreational opportunities, and water and visual quality. Under section 10(a) of the Federal Power Act, this project would be best adapted to a comprehensive plan for improving a water-way and under section 10(j) of the Act, would provide for adequate protection, mitigation, and enhancement of fish and wildlife.

L. Preliminary Determination of Consistency of Fish and Wildlife Recommendations with the Federal Power Act and Applicable Law

Under the provisions of the Federal Power Act (Act), as amended by the Electric Consumers Protection Act (ECPA) of 1986, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of such resources affected by the project.

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

Pursuant to section 10(j) of the Act, we are making a preliminary determination that certain of the recommendations of the federal and state fish and wildlife agencies are inconsistent with the purpose and requirements of Part 1 of the Act or other applicable law.

As discussed in section H.6. of the EA, staff believes that the applicant's and FS's recommended minimum flows would maintain Pine Creek's fishery. Furthermore, as discussed in section H.7., staff believes that diversion of mine water discharges into the project's proposed settling pond meandering channel would provide substantial enhancement to the existing fishery. With the CDFG recommended flows, the project would not be financially feasible. In conclusion, staff believes the CDFG's recommendation for higher bypass flows are inconsistent with the public interest standard of section 4(e), the comprehensive development standard of 10(a), and the substantial evidence standard of section 313(b) of the Act.

****38** In summary, staff recommends that Keating Associates not incorporate CDFG's recommended minimum flows into the project's design and operation because these recommendations are not consistent with public interest and comprehensive development standards of the Act, nor are they supported by substantial evidence.

M. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [[[I.3.] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

N. Literature Cited

Federal Energy Regulatory Commission. 1986. Owens River Basin seven hydroelectric projects—California. FERC/EIS–004. Final environmental impact statement. Office of Hydropower Licensing. October 1986.

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O. List of Preparers (Name—Position title)

John Ramer—Ecologist (Coordinator)

Joe Davis—Environmental Protection Specialist

Edwin Slatter—Archeologist

Thomas Camp—Landscape Architect

Gaylord Hoisington—Soil Conservationist

John Estep—Wildlife Biologist

Mohamad Fayyad—Civil Engineer

Roland George—Electrical Engineer

Footnotes

a1 6.0 cfs is the minimum flow in Pine Creek below the confluence with Morgan Creek necessary to provide aquatic habitat selected to be provide by this project. It will be necessary for the Tungstar Project to release additional water during these months unless the natural flow in Pine Creek can provide the difference.

aa1 The combined flow from Pine and Morgan Creeks will exceed the 6 cfs selected flow for the stream reach.

a1 exempted project

a1 CDFG did not recommend bypass flows for the months of August through Apri l.

1 U.S. Tungsten was the licensee for the Pine Creek Water Power Project No. 8418, which used the treated mine water discharge to generate hydroelectric power. See 34 FERC ¶ 62,274 (1986). On February 26, 1992, the Director, Division of Project Review, accepted U.S. Tungsten's surrender of its license, because the project was no longer economically feasible. 58 FERC ¶ 62,146.

2 The treatment of the mine water is regulated by a permit issued by the State of California Regional Water Quality Resources Control Board pursuant to the National Pollutant Discharge Elimination System. The treatment facility reduces turbidity and suspended particulate matter derived mainly from granite, garnet, and mica. Alum and polymers are added to the treated mine water as part of the clarifying process, excess amounts of these products are removed through precipitation in Morgan Creek and in Pine Creek below Morgan Creek.

3 These conditions are included in the license for Project No. 7267 as articles 101 through 114.

4 As originally proposed, the project would have used all of the mine water exiting U.S. Tungsten's treatment plant. As amended, the Tungstar Project, except for the spring snow melt months, will release into Morgan Creek a portion of the mine water that it would have otherwise used for generation.

5 See license application, exhibit E, section 1.4.

6 EA at 19 and 22.

7 EA at 12 and 17.

8 The mine has not operated at capacity for some years, and employment has declined from about 450 employees to 46.

9 See n. 2, supra.

10 EA at 24.

11 In October through March, the Forest Service minimum flows for the Morgan Creek bypass reach, when added to the flows in Pine Creek, will, on the average, be insufficient to meet the Forest Service minimum flows for the Pine Creek bypass reach. For example, in January, flows in Pine Creek without Morgan Creek water average 3.7 cfs. Keating proposes a 1.5 cfs minimum flow release for Morgan Creek and a 6.0 cfs minimum flow for Pine Creek. On the average, the 1.5 cfs Morgan Creek flow will result in a minimum flow in the Pine Creek bypass reach of only 5.2 cfs, which is 0.8 cfs short of that proposed. When this occurs, Keating will have to increase the Morgan Creek releases accordingly.

12 With the minimum flows originally proposed in the license application, the project would have generated an estimated 4,300,000 kWh annually.

13 See license application, exhibit E.

14 A comparison of fish habitat, represented by weighted useable area (WUA), produced in Pine Creek at various flows is shown in table 4 of the EA, at 20.

15 See license application, exhibit E.

16 See EA at 21.

17 Flows in the channel will vary from 10 to 30 cfs, depending on the time of year.

18 See EA at 22 and 23.

19 This figure is based on the Energy Information Administration's projected electric utilities alternative energy cost for natural gas, published in its October 1988 service report, “Regional Projection of End Use Consumption Prices Through 2000.” We assumed the project would be operational in July 1994, and the cost of money would be at 11 percent.

20 Cal Fish and Game contends that yearly variability in trout populations has been documented, so that each situation should be evaluated over several generations before conclusions are drawn.

21 Cal Fish and Game provided population estimates for Pine Creek of 934 fish per mile (± 113) above Morgan Creek and 1082 fish per mile (± 262) below Morgan Creek.

22 See generally EA at 18–22 and 27.

23 33 U.S.C. § 1341(a)(1) (1988).

24 33 U.S.C. § 1344 (1988). Issuance of a section 404 dredge and fill permit is contingent upon compliance with section 401(a)(1) of the CWA.

25 In a June 16, 1992 letter from the Corps to Keating, the Corps verified that Keating's nationwide permit authorization (Category 26) remains in effect until January 13, 1993, by which time Keating must complete project construction.

26 See Keating v. FERC, 927 F.2d 616, 625 n. 5 (D.C.Cir.1991).

27 Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (1991).

28 (1) The California Water Plan: projected use and available water supplies to 2010, California Department of Water Resources (1983); (2) California Water: Looking to the Future, California Department of Water Resources (1987); (3) Water Quality Control Plan Report, California State Water Resources Control Board (1975); (4) Recreation Needs in California, California Department of Parks and Recreation (1983); (5) California Recreation Action Program Report, Department of Parks and Recreation (1984–1985); and (6) Land and Resource Management Plan, Department of Agriculture, Forest Service, Pacific Southwest Region (1988).

29 The applicant requested that sections 14 and 15 of the FPA not be waived.

60 FERC P 61016 (F.E.R.C.), 1992 WL 404931

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