

53 P.U.R.3d 18 (F.P.C.), 31 F.P.C. 510, 1964 WL 81097

TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT,

PROJECT NO. 2299

OPINION NO. 420

OPINION AND ORDER ISSUING **LICENSE**

March 10, 1964*

Syllabus

1. Subject to conditions for fish water releases and other conditions set forth in **license**, Commission *finds* applicant's proposed project best adapted to comprehensive plan for development of Tuolumne river. P. 515.2. Commission *rejects* applicant's contention that no fish water releases should be required in **license**. P. 515.3. Prescribed fish water releases will maintain fishery for 20-year period without depriving applicants or San Francisco of water needed to meet essential irrigation and municipal requirements. P. 515.4. 20-year limitation on fish water releases found justified by circumstances of this case. P. 519.5. 20-year limitation should provide parties sufficient opportunity to study and work out alternative solution to fish problem before water situation becomes critical. P. 520.6. Motion to reopen proceedings to require additional evidence and make San Francisco a party is denied. P. 521.7. Commission *issues* major **license** under Section 4(e) of the Federal Power Act. P. 524.

****1 *511** *Robert L. McCarty, Jeremy Cook, Warren Gant, and Charles Wheatley, Jr.* for Turlock Irrigation District and Modesto Irrigation District

Stanley Mosk and J. M. Sanderson for State of California, Department of Fish and Game

Frank J. Barry, Frank B. Horne and William J. Costello for Department of the Interior

George A. Huberty for Tuolumne County, California

Philip Cavalero for Banta Carbona Irrigation District

Daniel Goldstein for the Staff of the Federal Power Commission

Before Commissioners: Joseph C. Swidler, Chairman; L. J. O'Connor, Jr., Charles R. Ross, and David S. Black.

O'CONNOR, *Commissioner*:

This case involves a joint application by Turlock Irrigation District (Turlock) and Modesto Irrigation District (Modesto) for a **license** for a multipurpose project on the Tuolumne River in California to be known as **New Don Pedro**. The project will affect lands of the United States, and is subject to the **licensing** provisions of Part I of the Federal Power Act.

The applicants are two of the largest irrigation districts in California, serving irrigation water and electric power to customers in the vicinity of Turlock and Modesto in California's San Joaquin Valley. **New Don Pedro** will provide additional irrigation storage and hydroelectric power for the applicants. It will provide additional flood control storage desired by the Corps of Engineers. It will also provide municipal water benefits for the City and County of San Francisco, which will purchase exchange storage in the **New Don Pedro** reservoir for the purpose of releasing to the applicants at **New Don Pedro** the irrigation water required under the Raker Act (38 Stat. 245, 1913),¹ and thereby permitting it to increase its diversions of water for municipal purposes from its Hetch Hetchy and other reservoirs located upstream on the Tuolumne in the High Sierra county.² In addition to these primary benefits, **New Don Pedro's** reservoir will provide extensive recreational benefits. The project will be constructed by the applicants, who will own, operate and maintain it; however, its initial cost will be shared with San Francisco and the United States, based on the storage benefits indicated above.³

****2 *512** **New Don Pedro** will be located about one and one-half miles downstream from the applicants' existing **Don Pedro** dam and power house. The existing facilities, which were constructed in 1923, will be flooded out by the **new** project.⁴ Four miles below the existing project are the La Grange dam and reservoir, which were completed in 1894. The La Grange dam is used by the applicants to divert water into their respective irrigation systems. The reservoir has no significant storage, although under certain conditions it offers some pondage. Turlock owns a powerhouse at La Grange which utilizes water in excess of its

needs for irrigation purposes. That portion of the water used for power generation is discharged back into the natural streambed below La Grange dam. The applicants will continue to operate these facilities after construction of **New Don Pedro**.

The basic question presented in this case is whether the Commission should condition its **license** to Turlock and Modesto to require specified releases of water from **New Don Pedro** for the projection of the fall run of King salmon which spawn in the Tuolumne below La Grange dam. The State of California, through its Department of Fish and Game (California), intervened at the outset of the proceeding to request such a condition for protecting the existing salmon fishery. Formal hearing was postponed while the applicants and California sought to work out a settlement with respect to the release of fish water. A tentative agreement was reached, but the California Fish and Game Commission (an independent California agency) declined to ratify the agreed-upon settlement. Thereafter, the case was set for formal hearing. Upon petitions to intervene, filed out of time, the Secretary of the Interior, Tuolumne County, and Banta Carbona Irrigation District were granted limited intervention for the purpose of making an opening statement, cross-examining witnesses, and filing briefs and exceptions. The Secretary requests releases of water for the protection of fish similar to California's but with summer flows somewhat greater than those requested by California.

The applicants contend that **New Don Pedro**, without fish water releases, will provide a definite improvement over fish conditions in the Tuolumne as they are under existing **Don Pedro**. They contend that a **license** condition requiring the fish water releases requested by California or the Secretary would impair and infringe their vested rights to water for irrigation which are protected by Section 27 of the Power Act.⁵ They further contend that the requested releases would reduce the dependable power capacity of the project to zero after 1985, when San Francisco's upstream diversions will exceed 295 mgd (million gallons per day), thus making the project economically unfeasible as a power project.

The Commission's staff takes the position that the **license** should be conditioned to require California's recommended releases, with some modification, for a period of 20 years, during which continuing studies of the fish problem would be made by the applicants in cooperation with the fish interests, and after which minimum releases would be made as prescribed by the Commission upon re-examination of the question.

****3** Both California and staff construe Section 27 as imposing no restriction on the Commission's authority to condition the **license** to require minimum water releases for fish preservation. They contend that the vested rights protected are ***513** not those of applicants for **licenses** under the Act, but the rights of others whose interests might be affected by the issuance of a **license**. They argue that if the necessary water releases required to make the project best adapted to a comprehensive plan as contemplated by Section 10(a) should result in interference with the applicants' vested water rights under state law, the applicants are at liberty to accept the **license** as so conditioned or to reject it.

The examiner issued his decision on June 4, **1963**. He recommends the issuance of a **license** subject to conditions which are generally favorable to the applicants. His conclusions, however, reflect neither acceptance nor rejection of the positions taken by the several parties to the proceeding.

In capsule, the examiner concludes that Section 27 of the Act preserves the irrigation and municipal water rights of the applicants and of San Francisco under state law to the extent that those rights have vested by use. Thus, he finds that the Commission cannot impose conditions under Section 10(a) which would result in diversions of water by the applicants and San Francisco less than those possible with their existing facilities or which would burden or impair their rights to such diversions. On the other hand, to the extent that the **new** project will permit diversions in excess of those presently possible, he finds that the Commission may impose such conditions in the **license** at it deems necessary to make the project best adapted to a comprehensive plan. Because the proposed fish water releases would, in his judgment, have the effect, *inter alia*, of reducing the irrigation supply available to the applicants in critical years below that available from the existing **Don Pedro** project, a result which he says is clearly within the ban of Section 27, he finds it unnecessary to pass upon the fish contentions of California and makes no findings with respect to the river conditions required to preserve the fall salmon run. However, he would impose a condition requiring the applicants to maintain a minimum stream flow based on the additional waters to become available to them and to

San Francisco as a result of the construction of **New Don Pedro**, thus maintaining stream flow to the extent possible to assist in preserving the fish runs; but he finds that he is unable to make a computation of the waters available on the basis of the present record. He therefore includes Article 30 in his recommended **license** requiring applicants to maintain minimum stream flows as may be prescribed hereafter by the Commission upon its own motion or the recommendation of the Secretary or California, after notice and opportunity for hearing and upon a finding that such minimum flows are available, are necessary and desirable, and are consistent with the provisions of the Act.

****4** In addition to the foregoing findings with respect to fish water releases, the examiner makes several findings of special note. First of all, he would require the applicants and San Francisco to construct, pay for, and maintain facilities for fishing, hunting, camping, picnicking, bathing, boat-launching, etc. This requirement is set out in his Article 38, which also requires the applicants to cause a master plan for recreational use of the reservoir to be prepared in cooperation with interested Federal, State, and local agencies, and which requires this plan to be submitted to the Commission for approval before construction of the project can commence. His Article 39 further provides that the applicants must 'acquire such additional lands as will be necessary for recreation, fish and wildlife purposes.'

The examiner notes that San Francisco is not a joint applicant, or even a party to the proceeding, and states that this in no way hampers the exercise of the Commission's jurisdiction.⁶ He finds that sufficient control over San Francisco's ***514** plans can be exercised by requiring the applicants and the city to file an agreement relating to the allocation of project costs for the Commission's approval prior to commencing construction of the project. This provision is set forth in his Article 41.

Exceptions to the examiner's decision have been filed by the applicants, by California, by staff, and by the Secretary of the Interior. Replies to the exceptions have been filed by the applicants and by staff. In addition, the Secretary has filed a motion for institution of an investigation to determine the benefits which San Francisco will derive from this project and for an order directing San Francisco to show cause why it should not file a declaration of intention or file an application for joinder in the pending application before the Commission in this proceeding.

The applicants' exceptions reiterate their position that under Section 27 and the Raker Act the Commission may not curtail their rights to water for irrigation purposes or San Francisco's rights to water for municipal purposes in order to provide water for fish. They argue that the Raker Act contemplates the diversion of up to 400 mgd (million gallons per day) by San Francisco and not merely 210 mgd as found by the examiner. To the extent that the examiner's Article 30 can be construed as permitting an impairment of the project dependable supply for irrigation or the diversion of water for municipal purposes, the examiner, they argue, is in error. Such a construction of Article 30, they say, would veto the project. They also take exception to the unlimited scope of the examiner's recreation requirements and to the conditions which would require approval of their recreation plan before commencing construction of the project and the acquisition by them of additional lands for such purposes.

California, staff, and the Secretary take exception to the examiner's failure to make a finding on the releases required to preserve the fish runs in the Tuolumne River. This, they argue, was the primary purpose of the hearing, and the record is adequate to permit such a finding. Article 30, they contend, merely ducks the issue. These parties find no limitation in the provision of the Power Act or the Raker Act upon the Commission's authority to require the necessary fish water releases as a condition of the **license** for **New Don Pedro**. They contend that the project cannot be found to be best adapted to a comprehensive plan for development of the river under Section 10(a) without a condition for fish water releases.

****5** California and the Secretary also question the examiner's finding of economic feasibility in the absence of evidence of the benefits flowing to San Francisco. They contend that the contract between the applicants and San Francisco should be in evidence if a proper determination of costs and benefits is to be made. They further argue that San Francisco's upstream reservoirs will be operated in conjunction with the **New Don Pedro** facilities of the applicants and that San Francisco should be a party to the **license** application. Both request a reopening of the proceeding, although only the Secretary has filed a motion which would have that effect.

Staff and the Secretary take exception to the examiner's requirement that San Francisco contribute to recreational facilities in connection with the project since San Francisco is not a party to the proceeding or an applicant for **license**. The Secretary would remedy this error by making San Francisco a party. Staff would require the full burden to be borne by the applicants, Turlock and Modesto.

Oral argument of the exceptions to the examiner's decision was held before the Commission on December 5, **1963**.

***515** Upon review of the record presented at the hearing, the parties' briefs, the examiner's decision, the exceptions thereto, and the oral argument before the Commission, it is our judgment that a **license** should be issued to Turlock and Modesto upon the conditions for fish water releases recommended by staff.⁷ Subject to these conditions and such other conditions as are hereinafter set forth in the **license**, we find the applicants' proposed **New Don Pedro** project to be best adapted to a comprehensive plan for the development of the river as required by Section 10(a) of the Act.

In concluding that releases for fish should be required as a condition of the **license**, we do not seriously question the applicants' contention that even without such a condition the salmon runs would be preserved longer with **New Don Pedro** than with existing **Don Pedro**. On the basis of the record, we would expect that **New Don Pedro** could be operated without adverse effect on the salmon runs until after 1985, when San Francisco's upstream diversions reach 295 mgd; whereas without **New Don Pedro** it appears that the fish would be seriously affected, if not destroyed, after 1968, when San Francisco's diversions reach 210 mgd. This evidence, however, does not substantiate the applicants' contention that no fish water releases should be required in the **New Don Pedro license**. In our judgment such releases are required as hereinafter prescribed if the project is to be found to be best adapted to a comprehensive plan for development of the waterway, since only by making the releases a condition of the **license** can we be sure that the project will be operated so as to utilize the available water in the best interest of all parties and provide the best plan for comprehensive development for all public uses.

Assuming the hydrologic cycle of the past 39 years as a generally representative pattern for the future, and assuming the operation of the project so as to maximize the availability of water for fish requirements, it is our judgment that the prescribed releases will maintain the fishery for at least a 20-year period without depriving the applicants or San Francisco of the water needed to meet their essential irrigation and municipal requirements.⁸ The **license** therefore prescribes such releases for a 20-year period. We are not now, however, prescribing releases beyond the first 20 years of project operation, since it is our intention that the parties be encouraged to cooperate in continuing studies of the fish problem and to coordinate their efforts in seeking a mutually satisfactory solution for the future. Further releases will therefore be determined only after further hearing to consider the results of the parties' own efforts to solve the problem. As will be seen below, the need for some modification of the releases after San Francisco's diversions reach 295 mgd, and the possibility that the parties can find an economical and reasonable solution to the problem through the use of alternative sources of water or artificial propagation facilities justify a ***516** re-examination of the release requirements by the Commission at the end of the first 20 years of operation.

****6** No question has been raised with respect to the engineering soundness of the applicants' **New Don Pedro** project. Nor is there any doubt that the applicants' electric systems will be able to absorb the entire output of the project by the time of its completion. The record also shows that the project is financially feasible. With respect to the financing, both applicants have paid off all outstanding indebtedness. They have been authorized by the California District Securities Commission and by the people of the Districts to issue general obligation bonds in the amount of \$34,000,000 for Turlock and \$18,500,000 for Modesto. There is evidence that these bonds can be sold at not more than 4.25 percent interest, and can be paid off in 35 years commencing in 1966 at an annual cost of \$1,885,000 for Turlock and \$1,025,000 for Modesto. To pay its share of the cost of **New Don Pedro**, San Francisco has obtained authorization for the issuance of bonds in the total amount of \$115,000,000, of which approximately \$45,000,000 is earmarked for **New Don Pedro**. We are requiring as a condition of the **license** herein issued that the applicants file with the Commission for its approval prior to the commencement of construction their agreement with San Francisco setting forth the final formula for allocating the cost contribution to be made by San Francisco and other details of the exchange storage arrangement. As for the economic feasibility of the project, there would be no question in the

absence of fish water releases. The **license** as conditioned, however, assures the economic feasibility of the project. The impact of such releases on economic feasibility is discussed later in this opinion.

The bulk of the evidence of record in this proceeding concerns fish and the flows in the river required to preserve them. The fall salmon spawn in the reach of the river extending about 20 miles below La Grange. The record shows the fish runs in the river by actual count for the years 1940, 1941, 1942, 1944, and 1946, and by estimate for the years 1947 through 1961. The average run of salmon for these years was 40,000, the largest run being 130,000 in 1944, and the smallest run being 500 in 1961. The recommendations for fish water releases made by California are based on maintaining an average run of 40,000 salmon. California's evidence shows that in order to maintain this average, spawning grounds must be provided for up to 80,000 adult fish each year, of which about 40 percent will be females. It further shows that 31 percent of the females are expected to be on the spawning beds during the peak of the spawning season, and that as much as 200 square feet of spawning gravel may be required for each female. By relating the gravel required for the spawning females to the flow of the river necessary to cover the gravel to the proper depth for spawning, California has calculated the flows set forth in its recommended release schedules, making suitable allowance for differing conditions in the natural flow of the river.

****7** Our analysis of the record shows California's studies to be reasonable, although somewhat conservative. For example, California's estimates of the number of adult fish to be accommodated and the amount of gravel required for each female are higher than the comparable estimates of the applicants' experts. Also, its studies do not take into account accretions in the river due to the return flow of irrigation water. Under these circumstances, we find it appropriate to adopt the release schedules recommended by California, but with the modification in their use suggested by staff and discussed below. This modification, as will be seen, results in a greater incidence of California's dry-year schedule and a consequent over-all reduction in the releases to be required.

California's recommended schedules of releases are as follows:

Schedule A (normal Schedule B (dry year)

year)

Period Cfs Acre-feet⁹ Cfs Acre-feet⁹

Preseason flushing flow 2,500 4,960

October 1 15 200 5,950 50 1,490

October 16 31 250 7,930 200 6,350

November 385 22,900 200 11,900

December 1 15 385 11,450 200 5,950

December 16 31 280 8,880 135 4,280

January 280 17,210 135 8,300

February 280 15,550 135 7,500

March 350 21,520 200 12,300

April 100 5,950 85 5,060

May-September 3 910 3 910

Total acre-feet 123,210 64,040

***517** These are the normal and dry-year releases recommended by staff. They are also similar to those recommended by the Secretary of the Interior, except that the Secretary would require releases during the summer months of 85 cfs in normal years and 50 cfs in dry years. The 3 cfs for normal and dry years shown in California's schedules is about the leakage through La Grange dam at the present time.

The criteria formulated by California for the use of Schedule A and Schedule B are based on the computed natural inflow of the Tuolumne River at La Grange dam. Whenever the flow equals or exceeds 1,000,000 acre feet in the preceding water year, ending September 30, Schedule A would apply. When the flow is less than 1,000,000 acre feet, Schedule B would apply. Proportionately reduced releases would apply in years of unusually low flows below 750,000 acre feet. By utilizing the computed natural flow of the river at La Grange, California would require normal-year releases regardless of the upstream diversions made by San Francisco. Thus, even though the water available at **New Don Pedro** would be reduced by San Francisco's increasing diversions, and even though there is no assured correlation between the natural flow of the river as computed without any diversions and the amount of water actually flowing into **New Don Pedro**, California would require releases for fish to be based on the computed natural flow. Staff, on the other hand, recommends the use of criteria which would be based on the flow available to the applicants. Thus, under staff's criteria, Schedule A would apply when the inflow into **New Don Pedro** reservoir equals or exceeds 1,000,000 acre feet, and Schedule B would apply when the inflow into the reservoir is less than 1,000,000 acre feet. Under Staff's criteria, Schedule B would, apply in about one year out of four, based on discharges recorded over the past 65 years. Under California's criteria, Schedule B would apply in about one year in ten. For the reasons indicated here and above, we adopt staff's modification of California's proposal.

****8** California has recommended that provision be made for modification of the monthly stream flow schedules within the limits of the total quantities of water involved. These modifications would be made upon California's request when found to be desirable for optimum fishery producton and permissible without infringing upon prior project commitments. Recognizing California's desire to provide for modifications of the monthly flows from time to time, and acknowledging the wisdom of such flexibility in the **license**, staff would eliminate an itemization of monthly flows under Schedules A and B in the **license**. Instead, staff would have us prescribe only the total ***518** quantity of water to be released during the water year, leaving the monthly flows for optimum fishery production to be determined by California in cooperation with the applicants. We agree that the flexibility to modify the river flows within the limits of the total quantities prescribed is a desirable feature of the **license**, and we do not see the necessity of requiring Commission approval of such modifications where California and the applicants agree to the changes to be made. However, in order to provide for the orderly release of fish waters in the absence of agreement between the parties on the monthly flows to be released in any year, we shall include the itemized schedules in the **license**, subject to such modifications as may be agreed upon with respect to scheduling the total quantities of water to be released.

There was conflicting testimony as to what fluctuations in the flow of the river below La Grange dam would be safe for the spawning and incubating fish and be permissible in the operation of the project. California's recommendations are based on an allowance of fluctuations above the base flows provided in the schedules for the spawning period of no more than 0.2 feet in the depth of the river. Where project conditions would require flows during the spawning period higher than those recommended in the release schedules. California would limit the fluctuations to no more than 0.2 feet above or below such higher flows.

California would also limit the reductions in flow from the spawning period to the incubation period to no more than 0.4 feet in the depth of the river.

The applicants, on the other hand, offered evidence to show that the fluctuation limitations recommended by California would be unduly severe, if not impossible to maintain. One of the applicants' witnesses testified that the proposed limitations would have an adverse impact on the peaking capability of the project, and would reduce the average useful capability by as much as 20,000 kilowatts during the period November 1 to December 15 under certain anticipated conditions. Another expert testified that peaking generation would occur during periods of four to six hours, and that for such short periods a rise of 1.5 feet in the stream level would not cause major harm to the spawning population. He also testified that a safe level of downward fluctuation during spawning would be 0.3 feet in a day, and that under base flows of 450 to 500 cfs the fluctuations could be as much as 0.5 feet. He would limit downward fluctuation during incubation to 0.3 feet. There is no need for a limit on upward fluctuations during incubation.

****9** In our judgment the limitation of 0.2 feet recommended by California is too severe. There should be a more flexible arrangement for fluctuations to allow for peak generation of power and for normal variations in river flows resulting from the operation of the project, provided the base flows established under Schedules A and B for the spawning period are maintained. We think that staff's recommendation of a daily upward fluctuation of 10 inches with a further allowance of up to 18 inches for periods not exceeding two hours per day is reasonable, as is its recommendation of not more than a 4-inch reduction in river height from the spawning period to the incubation period. These recommendations are incorporated in the **license** as hereinafter set forth.

Two other conditions urged by California concern the temperature of the water to be released from **New Don Pedro** and the removal of willow growth and other vegetation in the spawning area. California would have us require the construction and operation of the project so as to maintain water temperatures below 56 degrees at La Grange bridge from October through March. However, the record does not convince us that such a rigid requirement is necessary. ***519** The evidence as to the effect of water temperatures over 56 degrees is conflicting and inconclusive. At the same time, there is evidence to show that the applicant's project has been designed to release water from the reservoir at levels which will provide suitable water temperatures for fish, and that in fact the water released through power generation will closely approach the temperature conditions sought by California. In any event, the record is clear that water temperatures with **New Don Pedro** will be more favorable to the fish runs than those possible with existing **Don Pedro**. We think that California and the applicants can cooperate to see that waters of suitable temperature for successful salmon spawning are provided, and the **license** so requires.

Similarly, with respect to the encroachment of willow growth and other vegetation on the spawning areas, the evidence of record is not sufficiently conclusive to justify the **license** condition requested by California.

As noted before, staff recommends that the fish releases required by the **license** be prescribed only for the first 20 years of the project operation, and that minimum flows to be maintained thereafter be determined only after further hearing, either upon the Commission's own motion or upon the recommendation of California or the Secretary of the Interior. In our opinion the 20-year limitation on the releases of water for fish is justified by the circumstances of this case. It is a reasonable limitation which is both appropriate and necessary to serve the best interests and legitimate needs of all of the parties, and of the public as well. There are basically three reasons for this conclusion. First, it appears that some modification of the prescribed releases from **New Don Pedro** will be necessary at the end of 20 years if the economic feasibility of the project for power is to be preserved. Second, there are a number of factors bearing on the need for fish releases in the future which cannot now be properly evaluated and which should be considered before requiring the applicant to make releases from **New Don Pedro** beyond the 20-year period. Third, it appears that there will be sufficient water available in the Tuolumne River for 20 years to meet the essential requirements of all interests. We shall consider these reasons in order.

****10** The record shows that shortly after San Francisco's upstream diversions exceed 295 mgd which should occur in 1985, the dependable capacity of the **New Don Pedro** project will drop to zero if the applicants are required to continue the fish

releases as requested by California. This we cannot allow. As suggested by staff, the parties can utilize the 20-year period to cooperate in continuing studies to determine the most economic and feasible manner for maintaining the salmon fishery. It will serve the best interests of California to seek alternative solutions in such cooperative studies, since it will be necessary for the Commission to modify the fish release conditions at the end of the 20-year period to whatever extent may be required to assure the economic feasibility of the applicants' project and to preserve its dependable capacity.

It is expected that the dependable capacity of the project will be 73,000 kilowatts in 1985, which is the capacity of the plant at minimum pool. Staff studied the economic feasibility of the project on the assumption that a plan could be worked out which would enable the project to retain a dependable capacity of 73,000 kilowatts. This study shows that on the basis of a cost of money of 4.5 percent, which is conservative, there would be an annual deficit over the entire **license** period of \$51,000. If, however, lower interest rates are obtained, as is likely,¹⁰ this small deficit would be wiped out, since a reduction of only 0.5 percent in the interest rates would result in a reduction of \$190,000 in annual project ***520** costs. Moreover, any such small deficit would be more than counter-balanced by the economic value of the augmented irrigation drafts to be realized from **New Don Pedro**.

Apart from the vagaries of the weather, which could always affect the available supply of water as well as the needs of the various interests involved, there are a number of factors which over the next 20 years might have a bearing on the necessity for continuing fish releases from **New Don Pedro**. For example, there is testimony with respect to other reclamation projects being developed for California which might well provide alternative sources of water for the purpose of preserving the fish runs in the Tuolumne. This testimony reveals that the East Side Canal, projected as an extension of the Folsom South Canal under the Auburn-Folsom Project, would cross the Tuolumne River near La Grange. Although this canal is only in the planning stage, and may be 10 to 15 years in the future, it represents one of several possibilities for alternative sources of water which could become available for the Tuolumne fishery from California's developing water program and the Central Valley Project. Another possibility for a solution of the fish problem in the Tuolumne lies in the development of other techniques for preserving the fish runs. Thus, through further study, it might be found that the fish run can effectively be preserved by the use of spawning channels designed to use less water than is now thought necessary for maintaining the runs in the natural river gravels. It might also be found that the use of a fish hatchery would provide the most economical and feasible solution. Other factors which dictate the wisdom of a **new** look at the problem in 20 years are the possibility that the fishery might be destroyed by changes in the flow of the river downstream from La Grange by natural or other causes wholly beyond the applicants' control; and also the possibility that the applicants' irrigation requirements might be reduced due to increased urbanization and industrialization, or by the development of more efficient methods of utilizing the water available for irrigation purposes.

****11** The applicants put into evidence a reservoir operation study covering a 39-year period based on the historical flows of the Tuolumne and showing operations under conditions of diversions by San Francisco of 210 mgd, 295 mgd and 400 mgd. If the water which this study shows to be available or permissible for uses other than irrigation is applied to meet the fish releases herein required, either through current use or through storage for use in subsequent years, the applicants could operate the project as outlined in the study without limitation of their planned irrigation uses for a period of at least 20 years, i.e., until after San Francisco commences the diversion of 295 mgd. Thus the 20-year limitation on the schedule of releases required by the **license** should provide the parties with sufficient opportunity to study and work out alternative solutions to the fish problem before the water situation becomes critical. At the same time, the 20-year limitation assures the applicants that no releases beyond that time will be required without further hearing to consider the need therefor and the legal and operational consequences resulting therefrom.¹¹

***521** As we have pointed out, both California and the Secretary of the Interior question whether **New Don Pedro** can be found to be economically feasible in the absence of evidence showing the benefits flowing to San Francisco. They contend that the contract between the applicants and San Francisco should be in evidence to determine the proper relationship of costs to benefits. They would have us reopen the proceeding, although only the Secretary has filed a motion to that effect; and the Secretary would have us make San Francisco a party.

The history of the efforts of the applicants and San Francisco to develop the resources of the Tuolumne River on a coordinated basis is clear from the record, as is the basic understanding reached by these parties in contracts executed in 1940 and 1949, even though these contracts are not part of the record. San Francisco is contracting with the applicants for 570,000 acre feet of storage at **New Don Pedro**, plus one-half of the 340,000 acre feet of flood storage capacity when not needed for flood control. In consideration of its right to this storage, San Francisco has agreed to contribute to the cost of **New Don Pedro** the equivalent of what it would cost to build a reservoir at that site to a capacity of 1,200,000 acre feet. Thus, San Francisco will pay for sufficient storage (1) to replace for the applicants the 290,000 acre feet of storage which will be destroyed at existing **Don Pedro**, (2) to provide the 340,000 acre feet of flood control storage agreed to with the Corps of Engineers, and (3) to provide the 570,000 acre feet of storage required for its own use. As noted above, it is expected that San Francisco's share of the cost of the project on this basis will be about \$43,181,790.¹² Apart from the land, the applicants will have to provide only the power facilities and the incremental storage in the amount of 830,000 acre feet, of which 811,000 acre feet will be usable for irrigation.

****12** It appears that **New Don Pedro** reservoir is the most economical source of additional storage to meet San Francisco's increasing municipal water needs. San Francisco here is buying water storage. It is not buying power, nor will it share in the power benefits of **New Don Pedro**. It is to pay for this storage on a cost basis, and we find no justification for seeking additional evidence on this question.

We likewise find no justification for seeking additional evidence of the upstream power benefits which San Francisco might realize through the construction of **New Don Pedro**, and which California and the Secretary contend should be considered in determining San Francisco's proper share of the project cost. No reasonable cause has been shown for believing that any substantial upstream benefits will be realized. It appears that the same amount of water will flow through San Francisco's upstream facilities regardless of the construction of **New Don Pedro**, and that its power head will remain unchanged. The only possible difference in its operations would be in the scheduling of its releases, which in turn might have some slight effect on its dependable capacity and energy output. This, however, does not alter our judgment that San Francisco's share of the cost of **New Don Pedro** is properly based on the cost of its storage, which will be finally determined in accordance with its contract with the applicants.

At the outset of this proceeding, we advised San Francisco that it was not necessary for it to join in the **license** application for **New Don Pedro**.⁶ We do not deem it necessary or appropriate at this time to reopen the proceedings to make San Francisco a party or to require additional evidence of the costs and benefits relating to its interest in the project. It is our expectation, however, ***522** that San Francisco will cooperate with the applicants and California in their efforts to find a solution to the fish problem on the Tuolumne, and that it will be a party to any further hearing before the Commission to determine the minimum fish release requirements at the end of the 20-year period. Moreover, as a condition of the **license** herein issued, we shall require the applicants to file their final contract with San Francisco relating to the allocation of the total cost of the project and San Francisco's acquisition of storage space in the reservoir. Construction of the project will not be permitted to commence until this agreement has been approved by the Commission.

The Commission further finds:

(1) Turlock Irrigation District and Modesto Irrigation District, irrigation districts organized under California law, filed a joint application on May 9, 1961, as later amended on March 30, 1962 and May 18, 1962, for **license** under the Federal Power Act to construct, operate and maintain a hydroelectric project known as the **New Don Pedro** project, located on the Tuolumne River at river mile 54.5.

(2) The applicants are municipalities as defined in Section 3(7) of the Federal Power Act.

****13** (3) Public notice was given of the instant application. No conflicting application is before the Commission.

(4) A public hearing was held on the application in San Francisco, California, commencing on October 16, 1962, and concluding on October 26, 1962.

(5) Construction, operation and maintenance of the proposed Project No. 2299 would affect public lands of the United States. Consequently, under the provisions of Section 23(b) of the Federal Power Act, the applicants may not construct, operate or maintain the proposed works upon those lands of the United States until they shall have received a **license** under the provisions of the Federal Power Act.

(6) The exhibits filed by the applicants pertaining to the **New Don Pedro** project conform with the Commission's rules and regulations and should be approved as part of the **license**, but there shall be filed, as hereinafter provided, Exhibits F and K showing and describing the project boundary and project lands.

(7) The **New Don Pedro** project as outlined in the applicants' plans conforms to sound engineering practice and will be safe and adequate.

(8) The **New Don Pedro** project, constructed, operated and maintained as hereinafter ordered and conditioned, will not affect any Government dam, nor will the issuance of a **license** therefor, as hereinafter provided, affect the development of any water resources for public purposes which should be undertaken by the United States.

(9) The Tuolumne River has a large annual variation in flow, ranging from 600,000 acre feet to 3,200,000 acre feet over the 39-year representative hydrologic cycle, namely 1923-1961, and storage is essential in order to provide dependable supplies for irrigation and domestic use, permitting the carryover of waters from wet years to dry years.

(10) The **New Don Pedro** project will provide storage to conserve water for irrigation and domestic supplies, and will provide for the generation of hydroelectric power, for flood control, and for recreation and other public benefits.

(11) The **New Don Pedro** project, as herein authorized, is best adapted to a comprehensive plan for the improvement and utilization of water power development and other beneficial public uses, including recreational purposes.

(12) The construction cost estimated by the applicants for the **New Don Pedro** project is reasonable.

(13) Pursuant to principles laid down in a 1949 agreement between the applicants and the City and County of San Francisco, it is anticipated that the *523 aforesaid parties will enter into a binding agreement fixing San Francisco's contribution to the overall cost of the **New Don Pedro** project. Under the 1949 agreement, San Francisco agreed to pay the actual cost of constructing the **New Don Pedro** project to a reservoir capacity of 1,200,000 acre feet, excluding the cost of land and generating facilities.

(14) Construction of the **New Don Pedro** project should not commence until the applicants and San Francisco enter into a **new** agreement, which shall be filed with and approved by the Commission, allocating the total costs between the parties and obligating San Francisco to pay its share of those expenditures. Such agreement should entitle San Francisco to a maximum of 740,000 acre feet of storage in the **New Don Pedro** reservoir consisting of 570,000 acre feet of municipal exchange storage and 50 percent of the 340,000 acre feet off-season flood control space.

14 (15) The existing **Don Pedro project, under minor part **license** to the applicants as Project No. 1086 and located at river mile 56.0, will be submerged by the **New Don Pedro** project.

(16) The proposed **New Don Pedro** project will utilize the head and stream flow of the Tuolumne River to the maximum extent for power purposes.

(17) The **New Don Pedro** project will have an installed capacity of 130,440 kilowatts and an estimated average annual output of 527,000,000 kilowatt hours, with a peaking capability of 150,000 kilowatts.

(18) The combined loads of joint applicants' electric systems will be sufficient to absorb the entire output of the proposed project by the date of its completion.

(19) The at-market power value of the **New Don Pedro** project is estimated at \$19.55 per kilowatt year for capacity plus 4.06 mills per kilowatt hour for energy.

(20) The financial feasibility of the **New Don Pedro** project has been established.

(21) The installed horsepower capacity of the **New Don Pedro** project for the purpose of computing annual charges is 174,000 horsepower.

(22) It is desirable to reserve for future Commission determination the question of what lands of the United States are affected by the **New Don Pedro** project and the amount of annual charges to be fixed for the use thereof.

(23) The amount of annual charges to be paid under the **license** for the **New Don Pedro** project for the purpose of reimbursing the United States for the cost of administration of Part I of the Federal Power Act is reasonable.

(24) It is appropriate for the Commission to reserve the right hereafter to determine the transmission facilities to be included in the **license**.

(25) The **New Don Pedro** project, as proposed to be operated by the applicants, is economically feasible as a power plant; and its economic feasibility will not be destroyed by the fish releases herein prescribed as a condition of the **license**. Moreover, the economic feasibility of the project will be enhanced by the additional amounts of irrigation water which **New Don Pedro** will make available to the applicants.

(26) Major upstream and downstream migration and spawning activity of King salmon takes place in the stretch of the Tuolumne River from La Grange bridge at river mile 50.5 to Hickman bridge at river mile 31.7 during the months of October through April.

(27) The applicants' planned operation of the **New Don Pedro** project does not provide for any minimum flow in the natural streambed below La Grange dam in a critical year. Therefore, conditions should be prescribed to assure the maintenance of the fishery resources of the Tuolumne River downstream from La Grange dam.

***524** (28) It is reasonable and proper that the applicants be required for the first 20 years of project operation to release into the natural stream-bed below La Grange dam the amounts of water set forth in California's Schedules A and B. However, in determining which schedule shall apply the applicants should select the proper schedule on the basis of the actual inflow into **New Don Pedro** reservoir during the water year immediately preceding October 1 of each year.

****15** (29) The Office of the Chief of Engineers has reported that the Army has no objection to the issuance of a **license** to the applicants provided they and the representatives of the Secretary of the Army can reach a suitable agreement to satisfy the needs of flood control under the Flood Control Act of 1944. That report also states that no special terms and conditions in the interest of navigation are needed in the **license**.

(30) The issuance of a **license** for the **New Don Pedro** project will not interfere or be inconsistent with the purposes of any reservations or withdrawals of public land.

(31) The applicants as public agencies of the State of California have submitted satisfactory evidence of compliance with requirements of all applicable state laws insofar as necessary to effect the purposes of a **license** for the **New Don Pedro** project.

(32) The motion of the Secretary of the Interior, filed herein on July 23, **1963**, for institution of investigation and issuance of order to show cause should be denied.

The Commission orders:

(A) This **license** is issued to the Turlock Irrigation District and the Modesto Irrigation District (hereinafter referred to as the Licensees) under Section 4(e) of the Federal Power Act for a period of 50 years, effective as of the first day of the month in which the acknowledgment of acceptance thereof is filed with the Commission by Turlock Irrigation District and Modesto Irrigation District, for the construction, operation and maintenance of major Project No. 2299, to be known as the **New Don Pedro** project, on the Tuolumne River and its tributaries, located upon public lands of the United States, subject to the terms and conditions of the Flood Control Act of 1944 (58 Stat. 887) and the Federal Power Act which are incorporated by reference as a part of this **license**, and subject to such rules and regulations as the Commission has issued or prescribed under the provisions of the Federal Power Act: *Provided*, however, that the Licensees shall surrender their **license** for Project No. 1086 upon completion of the **New Don Pedro** project.

(i) The proposed project consists of:

All lands constituting the project area and enclosed by the project boundary or the limits of which are otherwise defined and/or interest in such lands necessary or appropriate for the purpose of the project, whether such lands or interests therein are owned or held by the applicants or by the United States; such project area and project boundary being more specifically shown and described by certain exhibits which formed a part of the application for **license** and which are designated and described as follows:

Exhibit J; **FPC** No. Title, **New Don Pedro** Project

Sheet 2299

1 4 General Map-Project location.

2 5 General Map-Reservoir area.

3 53 Reservoir capacity and area curves-Profile.

***525** (ii) An earth and rock-fill dam 580 feet high with impervious center core and pervious shells at river mile 54.5 on the Tuolumne River; a spillway on the right abutment comprised of a gate-controlled section and an ungated broadcrested weir section discharge into Gasburg Creek; a reservoir extending 22 miles up the Tuolumne River having a gross storage capacity of 2,030,000 acre feet and an area of 12,960 acre feet at elevation 830 feet; low level intake discharging through Howell-Bunger valves; a power tunnel 2800 feet long through the left abutment and a penstock extending to a powerhouse located across the river adjacent to the toe of the dam; a powerhouse containing three 69,000-horsepower turbines operating under a rated head of 425 feet connected to three 43,480-kilowatt generators, making a total of 130,440 kilowatts; a switchyard; transmission lines extending to Turlock and Modesto, California; and appurtenant hydraulic, mechanical, and electrical facilities and miscellaneous project works-the location, nature, and character of which structures are more specifically shown and described by the exhibits hereinbefore cited and by certain other exhibits which formed part of the application for **license** and which are designated and described as follows:

Exhibit L; **FPC** No. Title **New Don Pedro** Project

Sheet 2299

2 38 General project layout.

3 39 Rock-fill dam.

4 40 Diversion tunnel.

5 41 Outlet works-Inlet works.

6 55 Power tunnel.

7 43 Spillway.

8 44 Powerhouse-Service area and longitudinal section.

9 45 Powerhouse-Generator floor and transverse section.

10 46 Powerhouse-Turbine and valve floors.

11 47 Powerhouse main single line diagram.

12 48 Switchyard main single line diagram.

13 49 Switchyard layout.

****16** *Exhibit M* 'General Description of Equipment' in 3 sheets revised Mar. 12, 1962.

(iii) All other structures, fixtures, equipment or facilities used or useful in the maintenance and operation of the project and located on the project area, including such portable property as may be used or useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as part of the project is approved or acquiesced in by the Commission; also, all riparian or other rights, the use of possession of which is necessary or appropriate in the maintenance or operation of the project.

(b) This **license** is also subject to the terms and conditions set forth in Form L-2, February 1, 1964, entitled 'Terms and Conditions of **License** for Unconstructed Major Project Affecting Lands of the United States,' [*infra.*, p. 528] which terms and conditions designated as Articles 1 through 33 are attached hereto and made a part hereof, except for Articles 6, 7, 12 and the last sentence of Article 27 thereof, and subject to the following special conditions set forth herein as additional-articles:

Article 34. The Licensees shall commence construction of the project works within one year of the effective date of this **license**, shall thereafter in good faith and with due diligence prosecute such construction, and shall complete construction of such project works within four years from the effective date of this **license**.

Article 35. The Licensees shall within one year from the date of completion of the project, file with the Commission revised Exhibits F and K to define *526 the final project boundary including transmission line rights-of-way in accordance with the rules and regulations of the Commission.

Article 36. The Licensees shall, prior to impounding water, dispose of all temporary structures, unused timber, brush, refuse, or other inflammable material resulting from the clearing of the land or from the construction and maintenance of the project works, and shall clear all lands in the reservoir area up to normal water level; except that all lands in the reservoir area shall be cleared according to a plan to be prescribed by the Commission upon the recommendation of the California Department of Fish and Game and the United States Fish and Wildlife Service. The clearing of the lands and the disposal of the material shall be done with due diligence by the Licensees and to the satisfaction of the authorized representative of the Commission.

Article 37. For the first 20 years of project operation, the Licensees shall maintain minimum stream flows in the Tuolumne River at La Grange bridge (river mile 50.5) for fish purposes in accordance with the schedules set forth below or with such monthly schedules as may, with the approval of the Licensees, be prescribed by the California Department of Fish and Game; *Provided*, that the total volume under Schedule A shall not exceed 123,210 acre feet per water year and the total volume under Schedule B shall not exceed 64,040 acre feet per water year.

Schedule A Schedule B

(normal year) (dry year)

Period Cfs Acre-feet¹³ Cfs Acre-feet¹³

Preseason flushing flow 2,500 4,960

October 1 15 200 5,950 50 1,490

October 16 31 250 7,930 200 6,350

November 385 22,900 200 11,900

December 1 15 385 11,450 200 5,950

December 16 31 280 8,880 135 4,280

January 280 17,210 135 8,300

February 280 15,550 135 7,500

March 350 21,520 200 12,300

April 100 5,950 85 5,060

May-September 3 910 3 910

Total acre-feet 123,210 64,040

****17** The schedule to apply shall be governed by the water year immediately preceding October 1 of each year. Flows under Schedule A shall apply when the inflow into **New Don Pedro** reservoir equals or exceeds 1,000,000 acre feet. Schedule B shall apply in like manner if the inflow is less than 1,000,000 acre feet; *Provided*, that in a water year when the inflow is less than 750,000 acre feet, the amount of water provided under Schedule B shall be reduced by a percentage of the total acre feet equivalent to the percentage reduction in the gravity diversion at La Grange by the Licensees. For this purpose, the diversion shall be defined as 900,000 acre feet to Licensees.

After the first 20 years of project operation, the Licensees shall maintain minimum stream flows in the Toulumne River at La Grange bridge as may be prescribed hereafter by the Federal Power Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the California Department of Fish and Game, after notice and opportunity for hearing and upon a finding based on substantial evidence that such minimum flows are available and are necessary and desirable and consistent with the provisions of the Act.

Article 38. (a) Flows below La Grange bridge may be altered by the Licensees at any time in connection with the operation of the project for flood control purposes ***527** or other emergencies provided that in the 45-day period of November 5 to December 20 (or such other 45-day period between October 15 through December 31 as may be specified on two weeks prior notice by the California Department of Fish and Game), if such flood control or other operations are required, flows shall be increased to 4,500 cfs within 24 hours and shall be reduced as soon as possible after flood control criteria are met.

(b) Subject to the provisions of paragraph (a), so long as fluctuations do not result in reduction of flows below those in the applicable schedule prescribed in Article 28, or such higher minimum daily base flows as may be established in the 45-day period described in paragraph (a) above, fluctuations may be made at any time; *Provided*:

(1) Fluctuations shall be controlled as closely as possible during such 45-day period so as not to cause a daily increase of river height in excess of 10 inches; *Provided, however*, for a period not to exceed two hours per day, the increase may exceed 10 inches but not more than a total of 18 inches.

(2) From the end of such 45-day period until March 31 reduction in river height shall not exceed 4 inches below the average height established in the 45-day period, excluding heights reached as a consequence of the daily fluctuation in excess of 4 inches provided in paragraph (b)(1) and those resulting under paragraph (a).

Article 39. The Licensees in cooperation with the California Department of Fish and Game shall make necessary studies aimed at assuring continuation and maintenance of the fishery of the Toulumne River in the most economical and feasible manner. Such studies shall be completed prior to the end of the 20-year period for which minimum stream flows have been provided in Article 28.

****18** *Article 40.* In the event water temperatures during the critical months of the spawning season are too high for successful salmon spawning, the Licensees and the California Department of Fish and Game shall confer to determine whether project operations may be adjusted to assist in correcting the situation. If no agreement can be reached, the Commission, upon request and after notice and opportunity for hearing, may order such adjustment as it finds to be necessary and desirable, reasonably consistent with the primary purpose of the project.

Article 41. The Licensees shall, prior to the filling of **New Don Pedro** reservoir, provide for free passage of water through the existing **Don Pedro** dam either by opening the low-level outlets or breaching the dam near streambed.

Article 42. Gravels of the river channel downstream from La Grange dam shall not be disturbed during the construction of project facilities except in accordance with a plan developed by the Licensees after consultation with the California Department

of Fish and Game and the United States Fish and Wildlife Service with a view toward maintaining the pre-project value of the gravels for salmon spawning. The Licensees shall take all reasonable measures to prevent silt, fines and other construction debris from being released into the Toulumne River.

Article 43. The Licensees shall, prior to commencement of construction of the **New Don Pedro** project works, enter into an agreement with the Secretary of the Army or his designated representative providing for the operation of the project for flood control in accordance with rules and regulations prescribed by the Secretary of the Army. A conformed copy of the agreement shall be filed with the Commission for its information and records prior to commencement of construction of the project works.

Article 44. The Commission expressly reserves the right to determine at a later date what transmission lines and appurtenant facilities, if any, shall be included in the **license** as part of the project works.

***528** *Article 45.* The Licensees shall construct, maintain and operate or shall arrange for the construction, maintenance and operation of such recreational facilities including modification thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities and utilities, as may be prescribed hereafter by the Commission during the term of this **license** upon its own motion or upon the recommendation of the Secretary of the Interior or interested State agencies, after notice and opportunity for hearing and upon findings based upon substantial evidence that such facilities are necessary and desirable, and reasonably consistent with the primary purpose of the project. The Licensees shall within one year from the date of issuance of the **license**, file with the Commission for approval their proposed recreational use plan for the project. The plan shall be prepared after consultation with appropriate, Federal, State and local agencies, and shall include recreational improvements which may be provided by others in addition to the improvements the Licensees plan to provide.

****19** *Article 46.* The Licensees shall acquire sufficient interest in lands of Sections 20 and 21, T. 2 S., R. 15 E., M.D.M., to provide parking and road access to National Land Reserve in Sections 19 and 20, T. 2 S., R. 15 E., M.D.M.

Article 47. The Licensees shall pay to the United States the following annual charges:

(i) For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge in accordance with the provisions of Part 11 of the Commission's regulations as in effect from time to time. The authorized installed capacity for such purpose is 174,000 horsepower.

(ii) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of its lands, including those used for transmission line right-of-way, an amount to be determined hereafter by the Commission.

Article 48. The licensees shall, prior to commencement of construction of the **New Don Pedro** project, enter into an agreement with the City and County of San Francisco relating to the allocation of the total cost of the project and the acquisition of storage space in the reservoir. A conformed copy of the agreement shall be filed with the Commission for its approval prior to commencement of construction.

(C) The exhibits described in paragraph (A) above are approved as part of the **license** for the project.

(D) The motion for institution of investigation and issuance of order to show cause, filed July 23, **1963**, by the Secretary of the Interior, is hereby denied.

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

FORM L-2

(REVISED FEBRUARY 1, 1964)

TERMS AND CONDITIONS OF **LICENSE** FOR UNCONSTRUCTED
MAJOR PROJECT AFFECTING LANDS OF THE UNITED STATES

Article 1. The entire project, as described in the order of the Commission, shall be subject to all the provisions, terms, and conditions of the **license**.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the **license** until such change shall have *529 been approved by the Commission: Provided, however, that if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval amended, supplemental, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the **license** and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the **license** as may be specified by the Commission.

****20** *Article 3.* Said project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, no substantial alteration or addition not in conformity with the approved plans shall be made to any dam or other project works under the **license** without the prior approval of the Commission; and any emergency alteration or addition so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in the project works or divergence from such approved exhibits may be made if such changes will not result in decrease in efficiency, in material increase in cost, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may from time to time prescribe for the protection of life, health, or property.

Article 4. The construction, operation, and maintenance of the project and any work incident to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project. Construction of the project works or any feature thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, and as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow him and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project land project works in the performance of their official duties.

Article 5. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the **license**, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes; and the Licensee shall release water

from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

****21 *530 Article 6.** The actual legitimate original cost of the original project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Act and the Commission's rules and regulations thereunder.

Article 7. After the first twenty (20) years of operation of the project under the **license**, six (6) percent per annum shall be the specified rate of return on the net investment in the project for determining surplus earnings of the project for the establishment and maintenance of amortization reserves, pursuant to Section 10(d) of the Act; one-half of the project surplus earnings, if any, accumulated after the first twenty years of operation under the **license**, in excess of six (6) percent per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year, provided that, if and to the extent that there is a deficiency of project earnings below six (6) percent per annum for any fiscal year or years after the first twenty years of operation under the **license**, the amount of such deficiency shall be deducted from the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any, thus cumulatively computed, shall be set aside in the project amortization reserve account; and the amounts thus established in the project amortization reserve account shall be maintained therein until further order of the Commission.

Article 8. The Licensee shall install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so, after notice and opportunity for hearing.

Article 9. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 10. The Licensee shall, for the conservation, and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance and operation of such facilities and comply with such reasonable modifications of the project structures and operation as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing and upon findings based on substantial evidence that such facilities and modifications are necessary and desirable, reasonably consistent with the primary purpose of the project, and consistent with the provisions of the Act.

Article 11. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of Licensee's lands and interest in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be prescribed by the Commission, reasonably consistent with the primary purpose of the project, in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities to relieve the Licensee of any obligation under **license**.

****22 *531 Article 12.** The Licensee shall construct, maintain and operate or shall arrange for the construction, maintenance and operation of such recreational facilities including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities and utilities, as may be prescribed hereafter by the Commission during the term of this **license** upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal and State agencies, after notice and opportunity for hearing and upon findings based upon substantial evidence that such facilities are necessary and desirable, and reasonably consistent with the primary purpose of the project.

Article 13. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and recreational purposes, including fishing and hunting, and shall allow to a reasonable extent for such purposes the construction of access roads, wharves, landings, and other facilities on its lands the occupancy of which may in appropriate circumstances be subject to payment of rent to the Licensee in a reasonable amount: Provided, that the Licensee may reserve from public access, such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property and Provided further, that the Licensee's consent to the construction of access roads, wharves, landings, and other facilities shall not, without its express agreement, place upon the Licensee any obligation to construct or maintain such facilities. These facilities are in addition to the facilities that the Licensee may construct and maintain as required by the **license**.

Article 14. The Licensee shall be responsible for and shall minimize soil erosion and siltation on lands adjacent to the stream resulting from construction and operation of the project. The Commission upon request, or upon its own motion, may order the Licensee to construct and maintain such preventive works to accomplish this purpose and to revegetate exposed soil surface as the Commission may find to be necessary after notice and opportunity for hearing.

Article 15. No lease of the project or any part thereof whereby the lessee is granted the occupancy, possession, or use of the project, or any part thereof, shall be made without prior written approval of the Commission; and the Commission may, if in its judgment the situation warrants, require that all the conditions of the **license**, of the Act, and of the rules and regulations of the Commission shall be applicable to such property so leased to the same extent as if the lessee were the Licensee: Provided, that the provisions of this article shall not apply to leases of land or buildings or other property while not required to achieve the purposes of the **license**.

****23** *Article 16.* Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised maps, plans, specifications, and statements insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the **license** or in the maps, plans, specifications, and statements approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved maps, plans, specifications, and statements. Such revised maps, plans, specifications, and statement shall, if and when approved by the Commission, be made a part of the **license** under the provisions of Article 2 hereof.

***532** *Article 17.* In the construction and maintenance of the project, the location and standards of roads and trails, and other land uses, including the location and condition of quarries, borrow pits, spoil disposal areas, and sanitary facilities, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 18. In the construction and maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines, and telegraph, telephone, and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling and obstructing traffic and endangering life on highways, streets, or railroads. None of the provisions of this article is intended to relieve the Licensee from any responsibility or requirement which may be imposed by other lawful authority for avoiding or eliminating inductive interference.

Article 19. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the **license**, and any radio installation, telephone line, or other communication

facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 20. The Licensee shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of **new** growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission line; shall cut and remove all dead or leaning trees which might fall in contact with the transmission line; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

****24** *Article 21.* Timber on lands of the United States cut, used, or destroyed in the construction and maintenance of the project works or in the clearing of said lands shall be paid for in accordance with the requirements of and at the current stumpage rates applicable to the sale of similar timber by the agency of the United States having jurisdiction over said lands; and all slash and debris resulting from the cutting or destruction of such timber shall be disposed of as the officer of such agency may direct.

Article 22. The Licensee shall do everything reasonably within its power and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon request of officers of the agency of the United States concerned, to prevent, make advanced preparations for suppression, and suppress fires on land occupied under the **license**.

Article 23. The Licensee shall interpose no objection to, and shall in no way prevent, the use of the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the **license**, or to the use by said ***533** parties of water for sanitary and domestic purposes from any stream or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the **license**.

Article 24. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the **license**. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 25. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across the project lands, conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other means of transportation and communication not inconsistent with the enjoyment of said lands by the Licensee for the purposes stated in the **license**. This article shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the **license**.

Article 26. There is reserved to the appropriate department or agency of the United States, or of the State or county involved, the right to take over, maintain, and supervise the use of any project road as a public road after construction of the project works is completed.

****25** *Article 27.* The Licensee, its successors and assigns shall, during the period of the **license**, retain the possession of all project property covered by the **license** as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties necessary or useful to the project and to the development, transmission, and distribution of power therefrom will be voluntarily sold, transferred, abandoned, or otherwise disposed of without the approval of the Commission: Provided, that a mortgage or trust deed or judicial

sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article. In the event the project is taken over by the United States upon the termination of the **license**, as provided in Section 14 of the Act, or is transferred to a **new** licensee under the provisions of Section 15 of the Act, the Licensee, its successors and assigns will be responsible for and will make good any defect of title to or of right of user in any of such project property which is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and will pay and discharge, or will assume responsibility for payment and discharge, of all liens or incumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the **license**: Provided, that the provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear, or to require the Licensee, for the purpose of transferring the project to the United States or to a **new** Licensee, to acquire any different title to or right of user in any of such project property than was necessary to acquire for its own purposes as Licensee.

Article 28. For the purpose of determining the stage and flow of the stream or streams from which water is diverted for the operation of the project works, the amount of water held in and withdrawn from storage, and the effective head on the turbines, the Licensee shall install and thereafter maintain such gages ***534** and stream-gaging stations as the Commission may deem necessary and best adapted to the requirements; and shall provide for the required reading of such gages and for the adequate rating of such stations. The Licensee shall also install and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission and may be altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval of the Commission or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of streamgaging operations in the region of said project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

****26** *Article 29.* If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without replacement, or shall abandon or discontinue good faith operation of the project for a period of three years, or refuse or neglect to comply with the terms of the **license** and the lawful orders of the Commission mailed to the record address to the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the **license**, and not less than 90 days after public notice may in its discretion terminate the **license**.

Article 30. Whenever the Licensee is directly benefited by the construction work of another Licensee, a permittee, or of the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereon as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the costs of making the determinations pursuant to the then current Commission Regulations under the Federal Power Act within 60 days from the date of rendition of a bill therefor and, upon failure to do so, shall thereafter be subject to the payment of the penalties specified in the then current Regulations. The Licensee shall have the right to pay such amounts under protest within the 60-day period and to reconsideration of the amounts billed or a hearing as provided by the then current Regulations under the Act.

Article 31. Upon abandonment of the project the Licensee shall remove all buildings, equipment and power lines from lands of the United States and restore said lands to a condition satisfactory to agency having jurisdiction over the lands and shall fulfill such other obligations under the **license** as the Commission may prescribe.

Article 32. The right of the Licensee and of its transferees and successors to use or occupy lands of the United States under the **license** for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the **license** period, unless a **new license** is issued pursuant to the then existing laws and regulations.

535 Article 33.* The terms and conditions expressly set forth in the **license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

INITIAL DECISION OF THE PRESIDING EXAMINER UPON APPLICATION FOR **LICENSE**

(Issued June 4, **1963**)

HALL, *Presiding Examiner*: This case concerns the joint application filed by Modesto Irrigation District and Turlock Irrigation District (Districts) for a major **license** to construct, operate and maintain a multi-purpose project on the Tuolumne River,¹⁴ designated Project No. 2299, and known as the **New Don Pedro** project, to replace Districts' existing **Don Pedro** project located immediately upstream from the site of the proposed **New Don Pedro** development. The application was filed under Part I of the Federal Power Act (Act).¹⁵

****27** The Districts are two of the largest irrigation districts in the State of California and are public agencies of that State. They have been engaged in the irrigation business since 1894 and the power business since 1924-following completion of the existing **Don Pedro** dam and power house. They ***536** own and operate extensive facilities for the distribution of irrigation water and electric power in Stanislaus and Merced Counties in the vicinity of Modesto and Turlock, California, an area once stunted by water shortage but now vigorous and strong, having made great advances agriculturally and industrially because its inhabitants had the foresight and determination to make beneficial use of its water resources.

The history of the Districts dates back to 1887. They are pioneers in California irrigation through the use of the La Grange diversion dam completed by them in 1894. This diversion dam is located about three and a half miles below the site of **New Don Pedro**. **New Don Pedro** will enhance but not change the function of the La Grange dam. That is to say the La Grange dam will continue to raise the waters of the Tuolumne River (below **New Don Pedro**) to a sufficient height to be carried by gravity's free delivery through extensive canals and connected irrigation systems to the fertile area irrigated by the Districts.¹⁶ Such area, nourished by the irrigation water diverted from the Tuolumne River-and also by low cost power-that brought it to life, is extremely prosperous and in a high state of improvement and cultivation, producing under irrigation highly profitable and important agricultural products and income from substantial industrial and other sources. The economy of the area is based on irrigated agriculture with virtually every job, livelihood and activity being totally dependent upon water. **New Don Pedro**, by making much more of the Tuolumne River water usable, will improve the base of this economy in a real and important way. It will, in short, better rearrange and retune nature to more adequately meet the water needs of those served by the Districts. And, as will be shown, the project is also designed to enable San Francisco to meet its estimated water needs and to provide for flood control. In fact it clearly appears that San Francisco's desire to have the project constructed is a dominant, if not the dominant, purpose for its construction.

The Tuolumne River, on which the **New Don Pedro** dam and powerhouse are to be located, flows through the two Districts and is their common source of supply. The headwaters of this stream is also one of the primary sources of water supply for the San Francisco Bay area¹⁷ through the Hetch Hetchy system constructed and operated by the City and County of San Francisco, California (San Francisco) pursuant to Congressional authorization-at least in part, viz., ***537** 38 Stat. 242 (Raker Act of December 19, 1913). The Raker Act, however, prohibits San Francisco from ever interfering with the water rights acquired by the Districts under California law,¹⁸ and from selling Hetch Hetchy power to a private individual or utility. That Act also requires San Francisco to conform to the laws of California relating to the control, appropriation, use, or distribution of water and vested rights acquired thereunder. Therefore, in this case the Commission is dealing with the use and diversion of water and the generation of power concerning which the Districts and San Francisco-which are acting in friendly cooperation insofar

as the construction and operation of **New Don Pedro** is concerned-already have fixed rights and obligations under the Raker Act. Thus this case presents not only the question of fact as to the benefits to be derived from the construction of **New Don Pedro**, but also the legal question of whether what is proposed conforms with the rights, duties and responsibilities arising by virtue of the Raker Act.

****28** While the needs of the Districts and San Francisco call for the fullest possible assistance on the part of the Commission, it is apparent that for them to attain their goal, **new** rights, **new** obligations, **new** machinery, not contemplated by the Raker Act, must be created to give effect to their updated experience, thinking and arrangements. Although the intent of their proposed arrangement is clearly to improve, make more effective and less costly the whole of their undertaking, and reflects the natural diligence of reasonable, prudent and responsible officials, it must nevertheless likewise reflect complete consistency with, and not be a departure from, the obligations of San Francisco under the Raker Act.

The Districts and San Francisco treat the rearrangement here proposed as being wholly consistent with the Raker Act, their position apparently being that the changed arrangement is simply the selection, after thorough study in the light of their needs, of an economical and effective means for accomplishing a greater diversion and use of water of the Tuolumne River. That is to say, they appear to be proceeding upon the assumption that the present and prior method of operation is not the exclusive method permitted by the Raker Act.

***538** The Raker Act authorization for the construction and operation of the Hetch Hetchy water supply and power system, located in the Yosemite National Park and the Stanislaus National Forest, was given at a time when San Francisco faced a water famine and in recognition of the fact that any alternative water supply would cost millions of dollars more, with no credit for power development.

It is claimed that **New Don Pedro**, through the exchange storage arrangement proposed herein, will enable San Francisco to meet its increasing municipal water requirements-again becoming a matter of urgency-until the year 2015 when it is anticipated that demand will have reached 400 mgd. It will also make it possible for San Francisco and the Districts to generate and sell greater quantities of hydroelectric power. The Districts expect to recover their portion of the capital cost of **New Don Pedro** through the sale power generated by this project and have demonstrated its economic feasibility on this basis. San Francisco may also be able to recover its contribution to the project's cost through the sale of additional power.

As indicated, the increased diversions to the San Francisco water system will not be made physically from the **New Don Pedro** reservoir. Rather San Francisco's maximum storage space of 740,000 acre-feet in the **New Don Pedro** reservoir¹⁹ will be operated to store water credited to San Francisco, thus permitting San Francisco to make additional diversions upstream to the extent that a credit exists in the reservoir, such exchange arrangement enabling San Francisco to divert water which the Raker Act obligates it to release for the Districts' use.

The problem now faced by the Districts and San Francisco is that since they cannot add water to full cups they need a **new** and larger cup-the **New Don Pedro** reservoir which will have seven times the 290,000 acre-foot capacity of the existing **Don Pedro** reservoir-to catch and hold water in times of abundance and release it in times of storage.²⁰ This **new** venture requires the issuance of a **license** to the Districts and San Francisco's continued adherence to the terms and conditions of the Raker Act until modified by Congress. The requirements and Congressional policy embodied in that Act are therefore to be considered as being superimposed upon any **license** issued by the Commission for **New Don Pedro**.

****29** Based on project completion by November 15, 1965, and using April 1962 prices, the estimated cost of **New Don Pedro** is \$92,415,850. The construction period will cover about three years. The site selected for the project is located about a mile and a half below the existing **Don Pedro** dam and about three and a half miles above the Districts' La Grange diversion dam. This site was chosen for two reasons: (1) It permits the optimum reservoir. (2) The geologic conditions were found to be superior. The plans for the structure conform to accepted engineering and standard practice. Some additional testing and design analysis will, however, be necessary to establish the final design for the structure.

New Don Pedro will consist of a dam 580 feet high; spillways; a reservoir with a gross capacity of 2,030 acre-feet²¹ with the water surface at elevation 830, *539 such reservoir to extend about 22 miles upstream and to flood approximately 12,960 acres at full pool; a power tunnel about 2800 feet in length; a powerhouse containing three 69,000-horsepower turbines connected to three 45,766 KVA generators; a switchyard; and transmission lines extending to receiving stations near Turlock and Modesto, California. It will have an installed capacity of 130,440 kilowatts and a plant capacity of 150,000 kilowatts (15 percent overload). The hydraulic capacity of the powerplant will be about 4,500 cfs which corresponds to that of the Districts' canals extending from the ends of the La Grange dam. The maximum gross head will be 530 feet (elevation 830 to elevation 300); minimum gross head will be 300 feet at maximum drawdown.

New Don Pedro will make available to the Districts a substantially greater, more predictable and longer lasting water supply for irrigation and domestic uses and for power generation. In addition to recreational benefits, the project, as proposed would accomplish four purposes: (1) Power generation-with a plant capability of 150,000 kilowatts. (2) 811,000 acre-feet of irrigation storage. (3) 340,000 acre-feet of flood control storage. (4) A maximum of 740,000 acre feet of exchange storage (see *supra*, p. 538, note 19).²²

Because of the uncertainty of future construction costs the precise contribution which it is contemplated San Francisco will make to the project's cost is presently unascertainable. However, on the basis of current cost estimates, San Francisco's contribution is calculated to be \$43,181,790-less the applicable portion of the Federal payment for flood control space.²³ San Francisco proposes to make this contribution in consideration for the exchange storage and other benefits which include additional revenue from the sale of power.

The facts relating to the flood control purposes to be served by the project are hereinafter set forth (see *infra*, pp. 548, 550). The costs of providing this flood control have already been paid by the Federal Government in substantial measure through the payment to the Districts of \$4,600,000 and to San Francisco of \$4,400,000, all of which monies were applied to the construction by San Francisco of the Cherry Valley dam and reservoir completed in 1956 without, insofar as the Examiner is able to ascertain, a **license** from the Commission or expanded Congressional authorization under the Raker Act (see *infra*, pp. 548, 550). The total to be paid for flood control on the basis of present estimated costs is about \$14,200,000, leaving a balance of approximately \$5,200,000-deducting the \$9,000,000 already advanced. These monies, according to an agreement entered into between the Districts and San Francisco, may be utilized by San Francisco *540 in meeting its portion of the cost of **New Don Pedro**. It is to be noted that it should be borne in mind that the total payment to be made for flood control was made for the purpose of 340,000 acre-feet of flood control space ultimately to be provided in the **New Don Pedro** reservoir. No agreement between the Districts and San Francisco can alter this fact which becomes of some significance in the subsequent determination of the actual legitimate cost of this project to the Districts.

****30** There is more to this case than meets the eye at first glance. On the surface it seems to be only a soundly conceived cooperative plan, substantially aided by a Federal contribution for flood control, to maximize the quantity of water the Districts and San Francisco will be able to appropriate and put to beneficial use. But other issues relating to San Francisco's rights, obligations, etc., under the Raker Act lurk in the record. What San Francisco was authorized to do in the way of construction, the volume of water Congress intended it to divert, the disposition it makes of its power, and its obligations to the Districts and others are matters governed by the provisions of the Raker Act to the extent it is applicable-not the terms of private contracts between the Districts and San Francisco. Moreover, insofar as the issuance of a **license** for **New Don Pedro** is concerned, such private contracts must yield to regulatory authority and can be given only such force and effect as sanctioned by the Commission.

It is necessary to condition the **license** to be issued herein so as to provide that construction of **New Don Pedro** may commence only after a firm agreement, acceptable to and approved by the Commission, has been entered into by the Districts and San Francisco and obligating San Francisco to pay its proper portion of the cost.²⁴

As stated, to the extent that the cost of **New Don Pedro** is not borne by the Federal Government, it is to be shared by the Districts and San Francisco. Issuance of general obligation bonds in the amounts of \$34,000,000 (for Turlock) and \$18,400,000 (for Modesto) have already been approved by the voters of the Districts for use in financing their respective portions of the project cost. The voters of San Francisco have also approved the issuance of \$115,000,000 in general obligation bonds for utilization in connection with the Hetch Hetchy water supply system, with approximately \$45,000,000 thereof being earmarked for use in connection with **New Don Pedro**. The project financing is therefore already assured even though the details of the agreement to be executed by the Districts and San Francisco have not been finalized.

***541** The Districts would be unable to finance the construction of **New Don Pedro** without (1) the contributions to be made by San Francisco and the Federal Government, and (2) power revenues. The power will be produced, however, only from water released for irrigation or flood control uses or when not inconsistent with the primary water conservation purposes.

History of Proceeding

The joint application for **license** to construct the **New Don Pedro** project was filed by the Districts on May 9, 1961 and was thereafter amended and supplemented. Public notice was given (26 F.R. 5340).

On January 30, 1962, the Commission issued an order fixing hearing and prescribing the specific procedure to be followed with reference to the service of all testimony, exhibits and motions by specified dates in advance of the hearing 'to eliminate any cause which might otherwise exist for a protracted hearing.'

****31** The hearing on the application, initially set for May 21, 1962, was continued from time to time, being finally set for October 16, 1962. It commenced in San Francisco on the latter date and continued for nine hearing days ending October 26, 1962. The record made consists of 2108 pages of testimony of 24 witnesses and 223 exhibits, including two exhibits rejected by the Examiner and one withdrawn.

In addition to the intervention of the State of California (acting by and through its Department of Fish and Game), which had petitioned to intervene within the period set by the Commission in its public notice, the Commission by separate orders issued October 15, 1962, granted limited intervention out of time to the Secretary of the Interior; Tuolumne County, California; and Banta Carbona Irrigation District (Banta Carbona), their participation being restricted to 'an opening statement of position, participation in the cross-examination of witnesses, and the filing of briefs and exceptions to the Presiding Examiner's decision.' The Commission ruled that to have granted the Secretary of the Interior, Tuolumne County and Banta Carbona 'full participation on the eve of the hearing and after filing of elaborate prepared direct testimony by applicants and the California Department of Fish and Game would frustrate the procedures prescribed in our order of January 30, 1962' which was designed to, and did, avoid a protracted hearing.²⁵

Briefs have been filed by counsel for the Districts, Commission Staff, California Department of Fish and Game, Secretary of the Interior, Tuolumne County and Banta Carbona. The final brief of the Districts was filed on March 4, **1963**.

History of the Irrigation and Power Activities of the Districts

Until completion of the existing **Don Pedro** project in 1923,²⁶ the Districts owned and operated only the La Grange diversion dam, the offstream Turlock and Modesto reservoir hereinafter referred to, and the related irrigation systems.

Because the La Grange dam has no significant storage capacity it must be kept full, or nearly so, when the main canals of the Districts are diverting irrigation water from the Tuolumne River. Accordingly, to cope with growth and to be effective in a substantial beneficial way the La Grange reservoir must be implemented through increased storage. Within limits, the larger the other storage facilities and the greater their number the more effective is the function of La Grange dam.

*542 Following completion of the La Grange dam (constructed in 1894 at the site of the then Wheaton dam which had been purchased by the Districts in 1890 along with water rights and properties held by the prior owner),²⁷ and as ditch and lateral construction advanced bringing irrigation water to more acreage within the area served by the Districts, the inadequacy of a simple diversion dam became apparent, for after the feast came the famine-the dry months. Nature's schedule was decidedly wrong for the Districts' needs. Crops would be out of irrigation water by August, making it essential that a means of storing at least a portion of the heavy river runoff-usually occurring in the spring of the year-be provided by the Districts to supplement natural flows during low-flow (sometimes no-flow) periods. Accordingly, offstream reservoirs were constructed downstream from the La Grange dam by Modesto in 1911 and by Turlock in 1914, such reservoirs having capacities of about 28,000 and 50,000 acre feet, respectively, enabling the collection and holding of waters in reserve during the early part of the season for use in the dry periods. But much more was required to utilize the excess runoff to the maximum extent.

**32 In passing it should be pointed out that it was during the period of construction of the Modesto and Turlock reservoirs to provide storage for waters diverted at La Grange that Congress considered and passed the Raker Act permitting San Francisco to develop the Hetch Hetchy water and power system on the Tuolumne River headwaters. That system increased the storage on which the Districts could rely (see *supra*, note 18, p. 537).

In 1924, following completion of the existing **Don Pedro** project, which now has an installed capacity of 37,500 kilowatts, the Districts expanded their business to include the generation, distribution and sale of power.²⁸ Construction of *543 the existing **Don Pedro** project five miles above the La Grange dam not only provided additional storage capacity for growth and a more predictable irrigation supply through the better leveling of seasonal extremes but also enabled the Districts to use the water for power generation²⁹ before its re-use for irrigation purposes, thus achieving the most economic operation.

Because of the great variation in annual stream flow, construction of the existing **Don Pedro** project did not provide the necessary carryover storage, through the lean water years, adequate for demands ranging from 1,000,000 to 1,200,000 acre feet of irrigation water each year. And although the storage then on the river assisted in reducing the variations in flow occurring under natural conditions, it did not accomplish complete regulation of the monthly variations and has had a negligible effect on the annual variation. Thus the idea of a larger reservoir grew to firm up the irrigation and power supply. As stated above, the well-conceived **New Don Pedro** project will significantly amplify and improve the purposes now served by the existing **Don Pedro** project. The enlarged reservoir capacity is designed to permit the Districts, among other things, to carry over waters from wet years to dry years to provide the maximum possible dependable annual irrigation supply.³⁰

The Districts have been the sole distributors of power within their power service area since 1940, that being the year in which the Supreme Court, in *United States v. City and County of San Francisco*, 310 U.S. 16, held San Francisco's sale of power to P. G. & E. to be unlawful under Section 6 of the Raker Act.³¹ In that case the Court affirmed the judgment of the District Court which had-

*544 * * * concluded that the City was violating § 6 by the sale and distribution of Hetch-Hetchy power through the Pacific Gas & Electric Company, a private utility. Accordingly, the City was required by injunction alternatively to discontinue such disposal of the power or cease further use of the lands and rights granted it under the [Raker] Act for generation and transmission of electric energy. * * * [310 U.S. at p. 19.]

In so doing the Court stated (310 U.S. at p. 30):

* * * Congress may constitutionally limit the disposition of the public domain to a manner consistent with its views of public policy. And the policy to govern disposal of rights to develop hydroelectric power in such public lands may, if Congress chooses, be one designed to avoid monopoly and to bring about a widespread distribution of benefits. The statutory requirement that Hetch-Hetchy power be publicly distributed does not represent an exercise of a general control over a public policy in a State but instead only an exercise of the complete power which Congress has over public property entrusted to it.

****33** Faced with the above described alternatives, San Francisco ceased selling power to P. G. & E. and began selling the output of its plants to the Districts. It is contemplated that by 1972 the Districts will be able to absorb not only the full output of **New Don Pedro** but also the total output of San Francisco's system.

The Districts estimated that the annual costs of the **New Don Pedro** power output, including the loss of existing **Don Pedro** generation, over a fifty year period, would amount to \$3,535,000; that the estimated cost at market value of the power to be produced based on alternative cost of steam generation would be \$3,952,000; and that the resulting net annual value of the power production of the project for the fifty year period would be \$417,000, which is \$101,000 more than the net annual value computed by the staff.³²

The Districts, which now look to even greater usefulness in the future, have expanded their usefulness over the years by taking advantage of water and power opportunities. In so doing they have followed the fruitful path of raising the horizons of individual and collective progress, playing a full part in the ever-increasing requirements of the area's growing population, expanding economic activity, and rising standard of living.

San Francisco's Development of Tuolumne River

As previously pointed out, San Francisco's Hetch-Hetchy system is located in the headwaters of the Tuolumne River. The total watershed area tributary ***545** to San Francisco's dams is about 713 square miles and includes the constituent watersheds of the Cherry Valley, Lake Eleanor and the Lower Cherry Diversion watershed, Hetch-Hetchy Valley and the Early Intake watershed.³³

The dams constructed by San Francisco, the year in which each was completed, the names of the reservoirs they form, and the seasonal storage capacity of each, are:

Dam name	Reservoir name	Year completed	Seasonal storage capacity
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Cherry Valley	Lake Lloyd	1956	268,200
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Eleanor Lake	Eleanor	1918	27,100
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O'Shaughnessy	Hetch Hetchy	1923	360,360 ³⁴
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Lower Cherry	None	1918	
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Early Intake	None	1925	
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Total			655,660
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San Francisco presently generates power at two plants (Moccasin and Cherry). A third plant (Intake) has been on standby since completion of the Cherry plant in 1960 and an additional plant (Canyon) is under construction.³⁵ Data relating to these plants are as follows:

Plant Water diverted from- Design head Installed Capacity

in feet in kva in kw

Cherry Cherry Valley and Eleanor Dams 2,230 150,000 135,000

Canyon O'Shaughnessy Dam 1,245 75,000 67,500

Intake Lower Cherry dam 320 3,800 3,600

Moccasin Priest (on aqueduct) 1,250 80,000 70,000

Totals 308,800 276,100

****34** San Francisco's Moccasin power plant, completed in 1925, has been in continuous operation except for occasional periods of shutdown due to maintenance or water shortage. Cherry is the newest of San Francisco's operating power plants.

San Francisco constructed the Early Intake diversion dam in 1925 about 12 miles downstream from the O'Shaughnessy Dam. It is at Early Intake that San Francisco's main diversion from the Tuolumne River takes place. At Early Intake the water is diverted into the 19-mile Mountain Tunnel. This tunnel, driven between 1917 and 1925, has a capacity in excess of 400 mgd³⁶ and carries the water to the Moccasin power plant. From Moccasin the water enters the *546 16-mile Foothill Tunnel,³⁷ driven in the 1926-1929 period, which also has a capacity of 400 mgd. This tunnel extends to Oakdale Portal near the San Joaquin Valley floor. The Canyon power tunnel, now under construction between the O'Shaughnessy Dam and Early Intake, will likewise have a capacity in excess of 400 mgd.

At Oakdale Portal water enters two pipelines to cross the San Joaquin Valley. These lines have a combined capacity of about 160 mgd. The first section of a third pipeline across the San Joaquin Valley is now under construction and will raise the combined capacity of the pipelines across the valley to about 295 mgd by 1968. Another line to increase the capacity to 400 mgd is projected for installation when required. At the Tesla Portal, the western terminus of these lines, the water is taken through the 28-mile Coast Range Tunnel into the Bay area. This tunnel, driven during the 1927-1934 period, can carry about 300 mgd. Current plans embrace either driving a parallel tunnel or the adjustment of the hydraulic gradient so that the existing tunnel will carry about 400 mgd.

According to the Districts' evidence there is no plan, and indeed no possibility, for San Francisco to obtain water from other sources, such as the South Bay Aqueduct, which involves the State of California's Feather River project, or the East Bay Municipal Utilities District. The anticipated supply through the South Bay Aqueduct is already substantially committed and the needs of the area intended to be served through this facility require more than double the facility's expected capacity.

San Francisco's Water Requirements and Rights

San Francisco's local water supply, developed in the 1885-1925 period, has a safe yield of about 36 mgd including carryover storage. It is claimed that in a very dry year no water can be derived from local sources. It was the insufficiency of this supply which caused San Francisco's development of the Tuolumne headwaters through the enactment of the Raker Act in 1913. In that year San Francisco had a population of about 500,000 as compared with the present population of its water service area of approximately 1,650,000. The estimated ultimate population of that area is 3,370,000.

Water consumption in San Francisco's service area was about 90 mgd in 1944. Ten years ago the average daily consumption from the system was approximately 110 mgd. The system demand in the fiscal year 1961-62 of almost 178 mgd is close to the existing sustained capacity of the system of 180 mgd. This situation will be alleviated when the pipelines now under construction across the San Joaquin Valley are completed in 1968.

****35** Demands on the San Francisco water system are estimated to reach 210 mgd in 1968, 295 mgd by 1984, and 400 mgd by 2015.³⁸ San Francisco's existing storage in Hetch Hetchy, Lake Lloyd and Lake Eleanor, presently totaling 655,660 acre feet (see *supra*, p. 545), will support diversions at the rate of about 210 mgd (approximately 86 mgd of which is provided through the completion of the Cherry Valley Dam and reservoir in 1956). Diversions to San Francisco's water system beyond 210 mgd must be supported entirely by the exchange storage in the **New Don Pedro** reservoir. As previously explained, San Francisco, ***547** while storing water in its headwater reservoirs and diverting water into its aqueduct, would release water from its exchange storage at **New Don Pedro** to satisfy the Districts' water rights to Tuolumne River flows.

The Districts' claim that 'San Francisco was authorized, pursuant to the Raker Act of 1913, to utilize public lands and rights of way in the development of a water supply on the Tuolumne River which would permit the ultimate exportation of 400,000,000 gallons daily (400 mgd) to the Bay area for domestic and urban uses.' The Examiner finds this contention to be untenable. In fact counsel for the Districts effectively and completely remove the underpinning for their contention by admitting that San Francisco's 'present storage without **New Don Pedro** will permit only a 210 mgd diversion.' Congress never intended the Raker Act, which contains many limitations, to be a grant without limitation, nor did it anticipate that the diversion of water to San Francisco would ever exceed the capacity of the reservoir facilities it authorized to be constructed, that is, the capacity of those facilities after providing for the water rights of the lower appropriators. Such facilities, including the increased capacity of the Hetch Hetchy reservoir (see *supra*, p. 545, note 34) and the recent construction of the Cherry Valley reservoir, are admittedly capable of delivering only up to 210 mgd to San Francisco's water system.

The Districts claim that San Francisco has obtained State water rights which would permit it to divert 400 mgd. However, such water rights, to the extent that they exceed 210 mgd, are useless without **New Don Pedro**. It is not the extent of the State water rights San Francisco acquired but rather the capacity of the facilities Congress authorized that is controlling. Moreover, one will search in vain for any reference in the Raker Act to an ultimate diversion of 400 mgd by San Francisco. Under no circumstances can San Francisco's planning for an ultimate diversion in excess of 400 be construed as Congressional authorization therefor.

New Don Pedro had not been conceived at the time of the passage of the Raker Act which envisaged an entirely different approach to meeting the then demonstrated needs and rights of the Districts and San Francisco. What San Francisco is here seeking is a right it does not now possess, namely, the right to divert all the water it stores in the Tuolumne River headwaters to the extent it is needed and possible to do so. It is clear that the purpose of **New Don Pedro** is, *inter alia*, to avoid depletion of San Francisco's reservoirs as Congress directed they should be depleted to provide water to the downstream appropriators. It is the ceiling imposed by the Raker Act that is wholly responsible for San Francisco's present problem which it seeks to overcome through the contribution of millions of dollars to the **New Don Pedro** construction cost. Stated another way, the Congressional concept embraced in the Raker Act, to which San Francisco acceded, placed the water rights of the Districts and others on San Francisco's back and this, together with the limited capacity of San Francisco's reservoirs, has led San Francisco to a dead-end. It now faces the necessity of bypassing this dead-end to meet future needs. This confronts San Francisco with the realization that it must embark upon a considerably different and better approach. But any reorientation to meet its ever-changing requirements must take into account the hard facts of the Raker Act and the Commission's regulatory power.

****36** Wholly consistent with the ceiling Congress placed on San Francisco's diversion is the fact that Congress viewed the storage rights it granted would enable an ultimate development of only 115,000 horsepower, or about 85,790 kw (which is 12,190 in excess of the combined capacity of the Intake and Moccasin Power plants completed in 1918 and 1925, respectively). This contemplated ultimate ***548** power development of 85,790 kw is to be contrasted with the total of 276,100 kw capacity San Francisco will have upon completion of its Canyon power plant and the use of the greater water supply resulting from the recent completion of the Cherry Vally reservoir (Lake Lloyd) and the proposed exchange storage arrangement at **New Don Pedro**.

The purposes to be served by **New Don Pedro** and its proposed operation were not only conceived after the passage of the Raker Act, but there appears to have been nothing in the then existing conditions, size of population, and irrigation, industrial and other activity which would have justified its construction or enabled its financing. Thus the facilities that the Districts and San Francisco then planned to and did rely upon were considerably less than those they now claim are required for their future use.

The **New Don Pedro** concept is **new**. It evolved out of many years of experience, knowledge, growth, the Federal Government's interest in flood control, etc. In fact the knowledge gained through the 39-year hydrologic period 1923-1961 is indispensable to the construction of **New Don Pedro**.³⁹ While the Districts, following the completion of the existing **Don Pedro** in 1923, appear to have given thought to a larger project to further firm up their irrigation and power supply, the contemplated construction of **New Don Pedro** project did not begin to take great strides until 1940 when the Districts and San Francisco decided to find, through cooperative effort, the most satisfactory solution to their future water needs. That decision was followed by agreements made in 1949 obligating the Federal Government and San Francisco to make substantial contributions to the first cost of **New Don Pedro**.

Coordinated Efforts of the Districts and San Francisco to Develop the Resources of the Tuolumne River

The Districts initially opposed the Raker Act but withdrew their opposition when that legislation recognized and protected *inter alia*, the prior water rights of the Districts. Insofar as the use of the Tuolumne River is concerned, that Act made it necessary and proper for the Districts and San Francisco to live together in a common sense way. In the years that followed passage of that statute it became increasingly apparent that a dovetailing of the activities of the Districts and San Francisco would maximize the quantity of water each will be able to appropriate. Thus in 1940 the Districts and San Francisco agreed to coordinate their efforts to develop the water resources of the Tuolumne River, such agreement being implemented by further agreements executed in 1949 under which (1) San Francisco agreed to pay for the use of 570,000 acre feet of exchange storage space, and (2) the Federal Government agreed to pay \$14,200,000 for 340,000 acre feet of flood control storage.

****37** Prior to 1949 the Districts and San Francisco became aware of the fact that the Corps of Engineers, in planning for comprehensive flood control in the San Joaquin Basin, had included a reservoir at the Jacksonville site on the Tuolumne River with a capacity of about 320,000 acre feet. Inasmuch as this site would ***549** interfere with, if not defeat, their plan for **New Don Pedro** a request was made by the State Engineer of California, the Districts and San Francisco that in lieu of Jacksonville the Corps consider a financial contribution to the first cost of **New Don Pedro**, or other suitable Tuolumne basin reservoirs, covering a portion of the construction costs to the extent justified by the flood control to be provided. The Chief of Engineers found that flood control would be thus provided as effectively as at Jacksonville and recommended the plan to Congress which approved an allocation of funds therefor in 1944. This was implemented in 1949 by what is referred to as the 'Federal Contract' executed by the Corps, the Districts and San Francisco, This contract, among other things, provided that the Federal Government would pay to the Districts and San Francisco a then estimated \$12,000,000 for flood control in **New Don Pedro** which, according to the agreement, was to be completed on or before December 1, 1959, with a reservoir capacity of not less than 1,200,000 acre feet, with flood control to be furnished therein of not less than 340,000 acre feet. The agreement further provided for (1) the immediate operation of the existing **Don Pedro** reservoir and San Francisco's Hetch-Hetchy and Lake Eleanor reservoirs for flood control until **New Don Pedro** is constructed; (2) construction by San Francisco of the Cherry Valley reservoir on or before December 1, 1951 (it being actually completed in 1956) and its correlation with flood control until **New Don Pedro** is completed; and (3) that-

* * * none of the money paid by the Federal Government under the terms of this agreement shall be expended for purposes other than **new** work on Cherry Valley or **New Don Pedro** or other **new** reservoirs.

The Federal Contract was incorporated as evidence in this proceeding. However, the agreement referred to as having been entered into between the Districts and San Francisco was not made a part of the record. The record is therefore deficient in this respect.

The Federal Contract contemplated that **New Don Pedro** and San Francisco's Cherry Valley project would be constructed under appropriate authorizations, it being provided in Article 4 that the program and conditions of the contract and the completion dates of the projects set forth therein were subject on the part of the Districts and San Francisco 'to such action as may be required by law.' The Districts' application for a **license** for **New Don Pedro** is involved in this proceeding. San Francisco, however, constructed the Cherry Valley project without a **license**, it apparently proceeding on the belief that construction and operation of this project had been authorized by the Raker Act.

****38** As hereinabove pointed out (*supra*, pp. 539, 540), the Federal Government has already paid \$4,600,000 to the Districts and \$4,400,000 to San Francisco of the presently estimated total of \$14,200,000 which the Federal Government will pay for storage space.⁴⁰ The \$4,600,000 paid to the Districts was transferred by them to San Francisco and appears to have been applied, along with the \$4,400,000 received by San Francisco, to the cost of the Cherry Valley project completed in 1956. In explanation of the transfer of the \$4,600,000 by the Districts to San Francisco, a witness for the Districts testified that the Districts-
* * * got relief of 25,000 acre feet of water per month emptying into the **Don Pedro** Reservoir.

PRESIDING EXAMINER: Coult they have released the water in any other direction?

***550** The WITNESS: Well, they could release it as they saw fit. They could peak with the plant and hold the water, but they released the 25,000 acre feet per month during the irrigation season.

PRESIDING EXAMINER: Oh, it is the timing of the releases you were interested in?

The WITNESS: Yes.

PRESIDING EXAMINER: And it is to insure the timing that you paid the money to them?

The WITNESS: Yes.

q. From which reservoirs was this water released?

A. From Lake Lloyd [Cherry Valley].

It appears that the agreement entered into by the Districts and San Francisco-which was not made a part of the record-provides that the balance of \$5,200,000 out of the total estimated Federal Government payment of \$14,200,000 is to be received by San Francisco and might be utilized by it in meeting its portion of the cost of **New Don Pedro**.⁴¹ The provisions of that contract are not binding upon the Commission for regulatory purposes and the treatment to be accorded the Federal Government's contribution, insofar as the portion properly allocable to **New Don Pedro** is concerned, is a matter which it may be necessary for the Commission to fully explore at a subsequent time.

As previously pointed out, the estimated cost of **New Don Pedro** is \$92,415,850, of which it is contemplated the Districts will pay \$49,234,060 and San Francisco will pay \$43,181,790. Bond issues have been authorized in the total amount of \$52,500,000 for the Districts (\$34,000,000 for Turlock and \$18,500,000 for Modesto) and San Francisco has obtained authorization to issue bonds in the total amount of \$115,000,000, of which approximately \$45,000,000 is earmarked for the San Francisco cost of **New Don Pedro**. The full amount of these bonds, which appear to provide adequate leeway for any contingencies, need not be issued unless required by the costs actually incurred. In this regard the fact should not be overlooked that the cost of the project to the Districts and San Francisco will not be \$92,415,850 (assuming the actual cost equals the presently estimated cost) but will be that amount less the portion of the Federal Government's contribution of \$14,200,000 (estimated) properly allocable to **New Don Pedro**.

San Francisco's Recent Construction Activities

****39** The House Committee Report which accompanied the bill that later became the Raker Act recites that the power potential of the Tuolumne River was estimated to be 115,000 horsepower in its ultimate development-equal to 85,790 kw, it apparently being assumed that only the San Francisco system authorized by the Raker Act would develop power on the stream (the existing **Don Pedro** project not being constructed until ten years after the passage of the Raker Act).

Section 5 of the Raker Act required that construction of the Hetch Hetchy system should 'be prosecuted diligently, and no cessation of such construction shall continue for a period of three consecutive years' unless prevented by act of God or unforeseen circumstances, or difficulties beyond the control of San Francisco. In other words, San Francisco was to construct and place its system in operation with all possible expedition, with no delay except such as might be incident to the work itself.

***551** The combined capacity of the Intake power plant (3,600 kw) completed in 1918 and the Moccasin power plant (70,000 kw) completed in 1925 (the first two power plants completed by San Francisco) is 73,600 kw, and is within 12,190 kw of the total of 85,790 kw Congress thought San Francisco's system would ultimately develop. The maximum of 85,790 kw is to be contrasted with the total of 276,100 kw of capacity San Francisco will have upon completion of its Canyon power plant (see *supra*, p. 545).

In 1956, or 43 years after the passage of the Raker Act, San Francisco completed the Cherry Valley Dam pursuant to its 1949 agreement with the Districts and the Corps of Engineers, and thereafter completed its Cherry power plant and placed it in operation in 1960. This plant utilizes the water from Lakes Lloyd (created by the Cherry dam) and Eleanor. This plant alone has a capacity of 135,000 kw-far in excess of what the Raker Act contemplated. And as pointed out, San Francisco now has the Canyon power plant (with a capacity of 67,500 kw) under construction. Furthermore, the height of San Francisco's O'Shaughnessy dam (completed in 1923) was raised in the 1935-1938 period from 206,000 acre feet to 340,000 acre feet, with the storage capacity being further increased to a total of 360,000 acre feet in 1949.

In passing it is also pertinent to point out that while the Raker Act (Sections 9(a) and (d) makes specific reference to the 'Hetch Hetchy Dam' and the 'Lake Eleanor Dam' and to the 'Hetch Hetchy and Lake Eleanor sites', no similar reference is made therein to the Cherry Valley dam completed in 1956. In this connection, the Examiner observes that Staff counsel states in his brief that the Raker Act authorized 'construction of Hetch Hetchy and Lake Eleanor Dams.'

The House Report which accompanied the bill that became the Raker Act refers to the acreage and capacity of three proposed reservoirs, namely, 'Hetch Hetchy', 'Lake Eleanor' and 'Cherry Valley'. San Francisco proceeded to construct three dams as a part of its initial system, namely Lower Cherry (completed in 1918), Eleanor (also completed in 1918) and O'Shaughnessy (the Hetch Hetchy reservoir completed in 1923). The House Report refers to 'Cherry Valley' as being the smallest of the proposed reservoirs and what is referred to now as 'Lower Cherry' is the smallest of San Francisco's reservoirs. The fourth reservoir, the Cherry Valley project completed in 1956, is an additional reservoir having a reservoir capacity of 268,200 acre feet.

****40** While the record is not as complete as it might be (due in part to the fact that San Francisco did not become a party to this proceeding), it is sufficient to raise a question in the Examiner's mind as to whether San Francisco in recent years has carried out a more expansive construction program than authorized under the Raker Act. The foregoing and other facts are therefore set forth herein for the Commission's consideration in connection with the **license** sought by the Districts and also for consideration in determining whether or not to institute an investigation under Section 4(g) of the Federal Power Act to ascertain whether San Francisco's recent construction referred to was in addition to and not in conformity with the Raker Act authorization-and without Commission approval.

In conclusion it should be pointed out that while the Secretary of the Interior has supervision over San Francisco's activities to the extent authorized by the Raker Act, San Francisco's dam and power facilities not within that authorization, if any, would necessarily fall within the Commission's jurisdiction in the absence of sanction by additional special legislation. Of interest here also is the fact that in *United States v. City and County of San Francisco*, 310 U.S. 16, decided April 22, 1940, the Supreme Court appears to have been clearly of the view that San Francisco had prior to 1940 constructed and was then utilizing ***552** all the power and water facilities authorized by the Raker Act. It said (310 U.S. at p. 29):

* * * After passage of the Bill the City accepted the grant by formal ordinance, assented to all the conditions contained in the grant, constructed the required power facilities, *and up to date has utilized the rights, privileges and benefits granted by Congress.* * * * [Italic supplied.]

Sixteen years after this decision San Francisco completed the Cherry Valley dam. Twenty years after that decision it completed the Cherry Valley power plant. And now more than twenty-three years after that decision San Francisco has the Canyon power plant under construction.

Variant Views of the Parties

None of the parties recommend denial of the **license**. Rather the Staff of the Commission and the Interveners contend that the water resources of the Tuolumne River are capable of being put to greater beneficial use than the Districts presently propose. They say that the fuller use of the stream can and should be accomplished pursuant to Section 10(d) of the Act through the incorporation of conditions in the **license**; and that this can be done without affecting the rights of the Districts or destroying the economic feasibility of the project. In their view, nothing contained in Section 27, upon which the Districts rely, or any other provisions of the Act constitute a bar to the proposed conditions.

The Staff and the Interveners request that the Commission condition the **license** so as to require releases of water, not now contemplated by the Districts, for anadromous fish spawning in a seventeen mile stretch of the river commencing about five miles below the **New Don Pedro** site. Additionally, they seek conditions in the **license** relating to recreation, protection of wildlife resources, access roads, water quality, etc., so that the project will provide, as they say Section 10(d) contemplates, the most comprehensive development of the Tuolumne River.

****41** Before stating the position of the Districts it will facilitate an understanding of the various views if it is pointed out that Section 10(a) of the Act was intended to afford an effective means of bringing about the development of water resources to the maximum practicable extent consistent with the primary purposes of proposed projects, such consistency with the primary purposes being essential since without protection of the primary purposes proposed projects might never be constructed.

In the discharge of its responsibilities the Commission, among other things, gives full consideration to the preservation and enhancement of fish and wildlife resources, the creation and enhancement of recreation potentialities, flood control and irrigation. Except where superior water uses or the law or compelling circumstances dictate otherwise, releases of water from reservoir projects should be adequate to protect the continued use of a stream by fish and wildlife. As for recreation, this matter takes on added significance in densely populated areas and in regions where natural water recreation opportunities are limited. In this regard counsel for the Districts point out that the proximity of **New Don Pedro** 'to large population centers assures

substantial use for camping, swimming, boating, water-skiing and sport fishing.' It is therefore the Commission's function to require that adequate land, facilities, etc., be constructed and made available for general public use.

Because of limitations in the Act and the fact that particular needs and uses of water vary from stream to stream and region to region, the Commission is unable to apply a single uniform policy to all streams and situations. Accordingly it necessarily has flexibility in its policy and adjusts to the realities *553 of each situation. It goes without saying that a project designed to serve one or more particular purposes may not be of equal benefit to others.

There is a contrariety of opinion as to what constitutes comprehensive development, particularly in the light of the provisions of Section 27 of the Act. The Districts argue 'that (1) comprehensive development is fully served by the **New Don Pedro** project as proposed to be operated, with the salmon fishery downstream to be helped rather than hindered by the **new** project; and that (2) use of the water for irrigation and domestic purposes are shielded by the * * * Act (Sec. 27) from being undercut by the' proposals made by the Staff and the Interveners.

With respect to fish in the proposed reservoir, the greatly increased size of the reservoir will substantially increase the catch over existing conditions. As to the effect on fish below the project, the evidence shows that if it is constructed there will be, for a number of years following construction, more water in storage than can be used by the Districts and San Francisco. It therefore appears that if the excess stored water is released in adequate amounts during the fish spawning season that, for the years immediately following construction of **New Don Pedro**, greater benefits can be expected with than without **New Don Pedro**. But thereafter, assuming San Francisco's needs measure up to estimates, water would not be available in significant amounts and, therefore, the fish and wildlife resources would suffer.

42 The Districts claim that fish and wildlife conditions will be worse in the future without **New Don Pedro than with it. The short answer to this assertion is that it is based upon the unwarranted assumption that San Francisco now has the right to divert the water it proposes to divert and that it would be physically able to do so (see *supra*, pp. 546, 548). San Francisco's present storage without **New Don Pedro** will permit only a 210 mgd diversion and there is no evidence that it could either physically or legally develop other storage facilities on the river to supply additional water to its Bay area system.

Raker Act Was the Mould in Which Congress Shaped Sections 9(b), 10(a) and 27 of the Federal Power Act

The Raker Act became law in 1913. The Federal Water Power Act (now Part I of the Federal Power Act) was enacted in 1920 after several years of consideration and debate.

The procedure set forth in the Federal Power Act, to the extent relevant to the issues raised herein by the parties, is the same as that which Congress required San Francisco to follow under the Raker Act. In this regard, a matter of great significance in the interpretation of Section 27 of the Federal Power Act is that except for the fact that Section 27 has reference to 'the laws of the respective States' whereas Section 11 of the Raker Act was necessarily limited to 'the laws of the State of California', the language of Section 27 is identical to language contained in Section 11 of the Raker Act. Accordingly, Section 27 may be interpreted in the light of the Congressional action under the Raker Act. In short, the Raker Act is the mould in which Congress shaped Section 27. It is also the mould in which it shaped the Section 9(b) and 10(a) of the Federal Power Act to which Section 27 is related. Having so shaped these sections, Congress, in effect, handed the Raker Act mould to the Commission for its use in following the Raker Act example.

The Raker Act required prior compliance by San Francisco with the water law of the State of California, just as Section 9(b) of the Federal Power Act requires of each applicant with respect to the law of the state in which the *554 proposed project is to be located. But notwithstanding the necessity for compliance with California water law at the outset, Congress 'being jealous of its own responsibility to dispose of * * * rights [in the public domain] in a manner deemed by it most likely to render the benefits widespread' (*United States v. City and County of San Francisco*, 344 U.S. 16, 31), exacted from San Francisco conditions consistent with its view of public policy, just as the Commission, now 'plainly made the guardian of the public

domain' (**F.P.C. v. Idaho Power Co.**, 344 U.S. 17, 23), is authorized to exact under Section 10(a) of the Federal Power Act.⁴² The conditions exacted of San Francisco were not considered by Congress to be an infringement upon the provisions of Section 11 of the Raker Act prohibiting interference with the laws of the State relating to 'water *used* in irrigation or for municipal' purposes. This is true even though some of the conditions, in recognizing and protecting the water rights of the Districts *used* for irrigation purposes, restricted San Francisco's diversion of water for municipal purposes (the highest use to which water may be put) for which San Francisco had obtained its State permits. That is to say, Congress regarded water *to be used* as being subject to the conditions it imposed, with the water *being used* by the Districts subject to the protection afforded by Section 11. As to water San Francisco proposed *to use* Congress, in exercising authority which it has now empowered the Commission to exercise under Section 10(a) of the Federal Power Act, in effect modified the State water permits San Francisco had obtained, but had not then perfected through use, by limiting the water San Francisco could divert under those permits to amounts which would not interfere with the prior and superior appropriative rights⁴³ of the Districts and then *in use* by the *555 latter. In fact, Congress went even further in limiting San Francisco's use of water by increasing the storage upon which the Districts could rely (see *supra*, p. 537, note¹⁸) and, as counsel for the Districts point out in their brief, by expressly recognizing 'the right of the Districts to divert water for the irrigation of not to exceed three hundred acres of land' (§ 9(b), 32 Stat. 242; Ex. 7, p. 6), a point they have not yet reached.' That is to say, Congress enforced its views of public policy through the conditions imposed in the Raker Act rather than leaving benefits to be derived completely at the mercy of state legislation. That Section 11 of the Raker Act, like Section 27 of the Federal Power Act, is applicable to State water rights *being used*, as distinguished from water rights proposed *to be used*, is clearly apparent from the provisions thereof:

**43 Sec. 11. That this Act is a grant upon certain express conditions specifically set forth herein, and nothing herein contained shall be construed as affecting or intending to effect or in any way to interfere with the laws of the State of California relating to the control, appropriation, use, or distribution of water *used* in irrigation or for municipal or other uses, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with the laws of said State.

In other words, as to the water Congress permitted San Francisco to *use* for municipal purposes, the Secretary of the Interior was to proceed in conformity with the laws of the State of California in carrying out the provisions of the Raker Act. Likewise, all conflicting claims and controversies respecting water rights affected by San Francisco's *use* of water are to be determined under State law [See *Meridian, Ltd. v. San Francisco*, 90 Pac. 2d 537; 91 P. 2d 105 (1939)].⁴⁴

In connection with the consideration and passage of the original Federal Water Power Act of 1920, which as amended is now Part I of the Federal Power Act, Congress had the Raker Act very much in mind, providing in Section 29 thereof-

* * * That nothing herein contained shall be held or construed to modify or repeal any of the provisions of the Act of Congress approved December 19, 1913, granting certain rights-of-way to the city and county of San Francisco, in the State of California * * *.

As hereinabove made clear (*supra*, p. 547), it is the conditions imposed by Congress in the Raker Act that have brought San Francisco to the dead-end it is now attempting to by-pass through the purchase of exchange storage in the proposed **New Don Pedro** reservoir.

Interpretation of Sections 9(b), 10(a) and 27 of the Federal Power Act

Since Sections 10(a) and 27 of the Act, discussed in the briefs of the parties, are intimately related to Section 9(b), a review of the intent of Congress with reference to Sections 10(a) and 27 necessarily must take into account Section 9(b).

*556 Section 9(b) requires each applicant for a **license** to submit to the Commission 'satisfactory evidence' of its compliance with state laws 'with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes and

with respect to the right to engage in the business of developing, transmitting, and distributing power, and in any other business necessary to effect the purposes of a **license** under this Act.' Such compliance was intended to be a condition precedent to Commission consideration of an application for a **license**.

By Section 10(a) of the Act Congress specifically limited the Commission's authority to issue **licenses** under Section 4(e) to those projects which, in the judgment of the Commission, are-

* * * best adapted to a comprehensive plan for improving or developing a waterway or waterways * * * for the improvement and utilization of waterpower development, and for other beneficial public uses, including recreational purposes; and if necessary in order to secure such plan the Commission shall have authority to require the modification of any project and of the plans and specifications of the project works before approval.

****44** Following submission of an application for **license** showing compliance with State law as required by Section 9(b), the Commission, on the basis of evidence before it, then determines, *inter alia*, the extent to which the proposed use of water, as reflected in the State permits, is to be modified so that the subsequent use of the water, when State water rights are perfected through actual use, will accomplish the comprehensive development contemplated by Section 10(a). In fact, insofar as the water right permits and other State authorizations obtained by an applicant are concerned, the Commission is empowered to do one of three things: First, by denying the application for **license**, it can in effect veto all the State permits and authorizations obtained by, but not yet used by, the applicant. Second, it can, where necessary, accomplish full development of a stream through conditions incorporated in the **license** which modify the purposes for which the water right permits were obtained, doing this where it is shown that the additional purposes are reconcilable with the basic purposes to be served by the project. Third, grant the **license** as requested, thereby placing its approval upon subsequent perfection of the water rights-through use-for the identical purposes for which such rights were obtained.

As to water right permits obtained under California law and submitted in compliance with Section 9(b) of the Act, it is important to bear in mind that such permits, as counsel for the Districts point out in their brief-

* * * require the application of water to the proposed use * * * subject to any conditions the permit may impose. * * * Then when the works involved have been constructed and the water applied to the maximum beneficial use, an inspection is made of those works and the use of the water as authorized by the permit. A **license** is then issued confirming the beneficial use of water made under the application and permit. [California Water Code, Division 2, Part 2, Sections 1200-1677 (1961).]

In other words, an applicant for a **license** does not have, under state law, an indefeasible water right until he obtains from the Commission the **license** applied for, constructs the project, and applies the water to an actual beneficial use. Accordingly, the Commission in bringing about the comprehensive development contemplated by Section 10(a), is not normally dealing with water rights already perfected through use, with which Section 27 is concerned, but with rights that can only be perfected in the manner authorized by the Commission to accomplish comprehensive development. Thus, as to water rights pertaining to water proposed *to be used*, any action of the Commission which modifies ***557** the purposes for which water right permits have been obtained does not affect or in any way interfere with the laws of California but is wholly consistent therewith for the reason that the effectiveness of the state permits are made to depend upon a Commission **license**, construction of the project, and actual use of the water through the operation of the project. To borrow the words of the Supreme Court in *P.U.C. v. Gas Co.*, 317 U.S. 456, 467, relating to regulation under the Natural Gas Act, state commissions and this commission regulate 'without any confusion of functions' to attain what Congress intended, i.e., 'a harmonious dual system of regulation * * *-federal and state regulatory bodies operating side by side, each active in its own sphere'.

****45** This case presents a factual situation which will rarely be encountered by the Commission but is similar to that involved in the Raker Act authorization. Normally the Commission is confronted with a proposed project for which the applicant has, by obtaining State permits, complied with State law with reference to water he proposes to put to beneficial use. Here, however, the Commission, like Congress in connection with the Raker Act, is dealing with water rights *used* as well as water rights proposed *to be used* for irrigation and municipal purposes. As to the water rights the Districts and San Francisco *are using*, it is clear

that such rights may not be impaired through conditions incorporated in the **license** issued for **New Don Pedro**. However, as to the water rights obtained by the districts to increase the storage of water over and above the capacity of the existing **Don Pedro** project, and as to water rights held by San Francisco for use in diverting water in excess of 210 mgd, or whatever lesser amount it is determined San Francisco was actually authorized by the Raker Act to use, the Commission is authorized under Section 10(a) of the Act to limit the proposed use of water by the Districts and San Francisco to whatever extent is practicable and feasible in bringing about comprehensive development.

Before setting out the provisions of Section 27 of the Act, it is important to review, to the extent possible, the Congressional intent underlying Section 27 which is reemphasized in Section 10(a). The legislative history discloses that the phrase 'other beneficial uses' contained in Section 10(a) was intended to cover the uses specified in 27. An unsuccessful attempt was made in Congress to insert the word 'irrigation' in Section 10(a).⁴⁵ This word was not included (see 58 Cong. Rec. 2135 (1919)), not because irrigation was not to be considered by the Commission in arriving at its judgment as to what represents comprehensive development of a particular stream, but because the inclusion of the word 'irrigation' in Section 10(a) might tend to give the Commission a semblance of authority over irrigation rights and powers specifically reserved to the States.⁴⁶ The word 'irrigation' was included in Section 27, however, in order to affirm state jurisdiction over water *used* for irrigation purposes as well as to prevent the Commission from interfering with water *used* for this purpose in **licensing** power projects.

While Congress assumed that the usual rules of supersedure would apply to state laws in conflict with the Act occupying the field, it included in Section 27 explicit provision to save, in the case of conflict, those state laws not relating ***558** to the development of hydroelectric power which it wanted to continue in effect (*First Iowa Hydro-Electric Cooperative v. F.P.C.*, 328 U.S. 152, 175-176). Section 27 expressly precludes any supersedure of the State laws relating to water 'used in irrigation or for municipal or other uses.' This section provides:

****46** That nothing herein contained shall be construed as affecting or intending to affect or in any way to interfere with the laws of the respective States relating to the control, appropriation, use, or distribution of water *used* in irrigation or for municipal or other uses, or any vested right acquired therein. [Underscoring supplied.]

Section 27 is not intended to deprive the Commission of any jurisdiction which is expressly conferred by the Act, but is only intended to cause the Commission to exercise jurisdiction in a manner which does not deprive the States of whatever constitutional powers they may have with respect to water *used* within their boundaries for the indicated purposes.

While the Commission rarely ever deals with water *used* for irrigation and municipal purposes in connection with its **licensing** authority, a case in which water *used* for irrigation was involved is *Southern California Edison Co.*, 8 **FPC** 364. In this case the company claimed that the requirement of the Commission 'for release of water for recreational purposes is in direct conflict with the provisions of a certain contract between the Company and downstream riparian owners * * * who have irrigation rights in the waters of the Kern River prior to the Company's rights and requested that the condition be omitted from the **license**.' The Commission held, *inter alia*, that-

* * * operation of the plant under the proposed condition would not actually or inferentially affect the use of the Kern River water by the lower irrigators * * *. A private agreement to divert all the water from the stream, even though the lower irrigators might be benefited by such diversion, is not binding against the United States. [8 **FPC** at 372.]

In passing it seems appropriate to point out that the establishment and operation of irrigation districts, such as the districts herein, requires investments by them and their customers running into millions of dollars. Absolutely essential to their creation and maintenance in a beneficial way is a long-term assurance as to water supply which is not subject to change whenever the interests of others dictate. Business reality and the public interest therefore demand that such water users be protected by law from losing their water supply-or be fully compensated if deprived of it. Section 27 of the Federal Power Act, the water law

of California, and the Raker Act therefore manifest a proper concern for the legitimate interests of irrigation districts in whose success and financial stability the public has a vital stake. The same, of course, can be said of municipal water systems.

Fish Water Releases Proposed by the California Department of Fish and Game

The primary interest of the California Department of Fish and Game in this proceeding is in connection with the salmon runs of the Tuolumne River. Salmon is an anadromous fish, meaning that it is propagated in fresh water, migrates to salt water where it spends most of its adult life and then returns to fresh water to spawn.

****47** Although there is a general tendency for fish born of spawning in a particular year to return to spawn themselves four years later, it is very common for fish to return as three years olds, five year olds, and even six year olds. These tendencies of the fish not only contribute to the yearly runs but also appear to ***559** enable a salmon population to reconstitute itself so that intermittent years of poor or even zero spawning do not mean that runs in a stream will be destroyed.

There is a great variety of species of salmon, but king and silver salmon appear to predominate in California coastal waters. King salmon is the only variety of salmon of consequence in the Sacramento-San Joaquin River system of California's Central Valley. The salmon population of the Sacramento system is considerably larger than that of the San Joaquin system. As to the San Joaquin river system, king salmon spawning populations have been known on the main river as well as on its tributaries, including the Consumnes, Mokelumne, Stanislaus, Tuolumne and Merced Rivers. Of the San Joaquin tributaries the Tuolumne is said to be the largest producer but in relation to the entire Central Valley production, it is indicated that the Tuolumne produced on the average between 7 and 8 percent.

In addition to the Sacramento-San Joaquin River complex there are a great number of coastal streams in California having salmon populations. Among these are the Mad, the Klamath, the Eel and the Smith. There is disagreement in the record as to the importance of the various rivers in salmon production.

Access for the fish to coastal streams such as the Klamath, Eel, Mad and Smith is a matter of going directly from the ocean into the stream. The situation is otherwise for the inland rivers of the Central Valley. First the fish must proceed through San Francisco Bay and then easterly to its upper reaches, known as Suisun Bay, where they enter the great Delta area of the Sacramento and San Joaquin Rivers. Those fish electing the San Joaquin then traverse the maze of Delta channels by a route or routes unknown to reach the lower San Joaquin. It is approximately 50 miles from the Delta area to the mouth of the Tuolumne River.

Mention should also be made of the fact that 'straying' is the ability of the salmon to return for spawning purposes to a stream other than the stream in which the salmon was born. It appears that straying is somewhat common for Central Valley salmon.

The California Department of Fish and Game, supported by the Secretary of the Interior, and in part by the Commission Staff, seeks to preserve and enhance the fish resources of the Tuolumne River by conditioning the **license** so as to provide for the flows hereinafter set forth, such flows being based upon spawning areas over six inches in depth.

King salmon have spawned in a seventeen mile reach of the Tuolumne River extending from La Grange bridge to the Hickman-Waterford bridge. This area begins at the Hickman-Waterford bridge, about thirty-two miles upstream from the point where the Tuolumne joins the San Joaquin and ends just below La Grange bridge, about two miles downstream from the La Grange dam.

****48** Gravels utilized for spawning in the Tuolumne River apparently resulted in part at least from gold dredging activity. The extent and utility of the gravels for spawning are the subject of different estimates. The chief witness for the California Department of Fish and Game considered gravels were available to accommodate at least 80,000 spawning salmon. Witnesses for the Districts considered the gravels such as to accommodate in excess of 25,000 spawning salmon, with the potential being from 40,000 to 60,000.

For successful spawning, salmon require, in addition to gravel, water of suitable temperature, quality, depth and velocities. The spawning areas must contain gravels of certain sizes and composition. Water moving over gravels creates 'riffles' in which salmon prefer to spawn. A riffle was described as 'a portion of the stream (having) water velocity and depth * * * (and) some gradient and have water passing over it at a suitable velocity.' But some riffle areas, for reasons known only to the fish, are preferred above others in which areas the *560 fish will indulge in what is known as 'mass spawning'. This phenomenon occurs even though there are gravels which are unoccupied by any fish and such activity.

The usable salmon spawning area is dependent upon flow, with the area required depending upon several factors including the number of spawning salmon to be accommodated, the distribution of the run as to time and location, numbers of female spawning at any one time and spawning area required per female.

The California Department of Fish and Game contends, that the Tuolumne River has an average annual run of 40,000 king salmon; that to maintain the 40,000 average space must be provided for double the average, or 80,000 salmon; that 40 percent of the salmon run are females; that an average of 31 percent of the total run will be on the spawning beds at any one time; that for spawning purposes a female salmon will use 40 to 60 square feet for the actual redd or nest, but will keep other females from using a much larger area of approximately 200 square feet; that the total spawning area requirement for the support of an average run of 40,000 fish would be approximately 1,984,000 square feet; that to provide for migration of any salmon into the Tuolumne River a flow of approximately 200 c.f.s. is needed at the town of Waterford; that to provide for the successful spawning of a run of 80,000 salmon, a flow of 385 c.f.s. is needed over the spawning beds during the spawning season; and that water temperatures of 56° F. or less are needed for successful spawning.

The California Department of Fish and Game and the Secretary of the Interior seek to have fish water releases required for the entire life of the **license**, with the Commission retaining jurisdiction to reopen the matter for review at any appropriate time. In the view of the Commission Staff, the recommended releases should be allowed, at the outset, for only a period of 20 years and be re-examined at the end of that time. It should be pointed out in this regard that the recommendations of the California Department of Fish and Game failed to take into consideration the proposed diversion of water by San Francisco for municipal purposes. As is clear from the record, shortly after San Francisco's diversion exceeds 295 mgd, estimated to be about 1985 (or 20 years after completion of the project), the dependable capacity of the **New Don Pedro** project would drop to zero. It is this circumstance that causes the Staff to recommend re-examination of the fish water releases after the initial 20-year operating period.

****49** The water which the California Department of Fish and Game seeks to have released from the **New Don Pedro** reservoir into the natural stream-bed below the La Grange dam to benefit spawning conditions of fall run king salmon is set forth in its schedules 'A' and 'B' as follows:

Schedule A Schedule B

Period

(normal year) (dry year)

Period Cfs Acre-feet⁴⁷ Cfs Acre-feet⁴⁷

Preseason flushing flow 2,500 4,960

October 1 15 200 5,950 50 1,490

October 16 31 250 7,930 200 6,350

November 385 22,900 200 11,900

December 1 15 385 11,450 200 5,950

December 16 31 280 8,880 135 4,280

January 280 17,210 135 8,300

February 280 15,550 135 7,500

March 350 21,520 200 12,800

April 100 5,950 85 5,060

May-September 3 910 3 910

Total acre-feet 123,210 64,040

***561** Concerning the fish water releases requested by the California Department of Fish and Game for the Tuolumne fall run salmon, it should be observed that upstream migration begins in early October and continues through November and into December. Spawning activities begin upon arrival in the spawning areas between Waterford and La Grange, and spawning continues throughout November and December and for some days in January. Incubation begins with first spawning and continues for about 60 days after final spawning until early in March, the actual period depending on water temperature. The period of emergency begins approximately three weeks after hatching. Following emergence the young fish start their downstream migration with the bulk migrating seaward by the end of March. Some, however, remain until April.

Because the proposed fish water releases would have the effect, *inter alia*, of reducing the irrigation supply available to the Districts in critical years below that available from the existing **Don Pedro** project, a result clearly within the ban of Section 27 of the Act, it would serve no useful purpose, insofar as this opinion is concerned, to pass upon above described contentions of the California Department of Fish and Game or to detail the evidence and contentions of the Districts with reference thereto. No evidence was offered by the Staff of the Commission. Suffice it to say that while there are some areas of agreement as to the evidence and contentions set forth above in a generalized fashion, there are other areas in which opinions differ, such as the weight to be accorded some of the evidence, the amount of water necessary to provide suitable spawning conditions for salmon, the space required by an individual spawner, the need to provide for 80,000 salmon and the amount of space necessary to accommodate that number of salmon, and the water temperature required.

****50** But before proceeding further, an additional contention of counsel for the California Department of Fish and Game should be considered. They argue that the annual power loss of \$1,777,000 that their proposed fish conditions would inflict upon the **New Don Pedro** project can be made up by the Districts by charging the water users for water and raising their present low power rates.⁴⁸ In this regard they call attention to the fact that the Districts' portion of the cost of **New Don Pedro** is proposed to be paid for out of power revenues, with no charge to be made for the additional water to be provided; and that if the Districts 'divert a million acre-feet of water each year to the farmers, then a charge of only a little over a dollar an acre-foot would make up the loss in power revenues' (see also *infra.*, p. 566, note 50). In their view, 'it is more equitable to let those

who get the benefits pay the costs, and in this case, it is readily apparent that the Districts can afford to build the project and provide safeguards for the fish and wildlife resources.'

This contention, as counsel for the Districts point out, 'misses the crucial point that the proposed fish conditions destroy the primary purpose of **New Don Pedro** to conserve water for the dry years. As we demonstrated * * *, the result of the State's fish conditions is to reduce the dependable minimum year irrigation supply obtainable from **New Don Pedro** to below that obtainable from the existing **Don Pedro** project after six years of operation, or 1972. By 1985 the dependable minimum year irrigation supply under **New Don Pedro** with the fish conditions would be about 546,000 acre-feet or more than 100,000 acre-feet less than that of existing **Don Pedro**. Certainly no farmer can be expected to pay more for a **new** project that will provide less water. He would rightly ask why such a project should be built at all.'

**562 Limitation on the Commission's Jurisdiction*

The desire of the California Department of Fish and Game, the Secretary of the Interior and the Commission Staff to preserve and enhance the fishery resources of the Tuolumne River is understandable, particularly in view of the fact that the spawning areas in coastal streams, which are so important to the fishing industry, recreational pursuits, etc., are shrinking in number. However, the Commission may only issue a **license** in this proceeding which will not impair the rights of the Districts and San Francisco to water *being used* for irrigation and municipal purposes. So far as the Districts are concerned, not only may the Commission not reduce its irrigation supply available in the critical years below that available from the existing **Don Pedro** project, but in the Examiner's view, it ought not to unduly interfere with the central purpose of the project to provide the Districts with a more dependable supply during the critical dry years.

For reasons unknown to the Examiner, the proposed fish water releases were intended to be provided solely out of water belonging to the Districts rather than out of water belonging to both the Districts and San Francisco. It is clear, of course, that by limiting the proposed use of water by both to provide for fish water releases, the effect would be less burdensome on the Districts but, on the basis of the record, would after a few years of project operation interfere with San Francisco's water supply for municipal purposes.

****51** The proposal to provide fish water releases out of water belonging to the Districts may be due to the fact that the California Department of Fish and Game, the Secretary of the Interior and the Commission Staff (1) appear to have erroneously assumed that San Francisco has the right to divert in excess of 400 mgd from the Tuolumne River, a right it does not presently possess and, unless **New Don Pedro** is constructed, will not have (see *supra*, pp. 546, 548); or (2) that they were of the opinion-shared by the Examiner-that water for municipal purposes should take preference over fish. Of course, if there can be a sharing of the water so that fish as well as irrigation and municipal purposes can be provided for, the **license** should be conditioned to provide therefor.

It is of interest to point out in passing that the fact that San Francisco is not one of the joint applicants, or even a party to this proceeding, in no way hampers the exercise of the Commission's jurisdiction. In the present state of the record, all the Commission needs to do in order to exercise complete control over San Francisco's plans is to prohibit commencement of construction until an agreement satisfactory to the Commission is entered into by the Districts and San Francisco with reference to the construction and operation of the project. In connection with the contract to be executed by the Districts and San Francisco it should be borne in mind that, as stated in *United States v. Willow River Co.*, 324 U.S. 499, 503, 'only those economic advantages are 'rights' which have the law back of them', and Congress has left the final decision to this Commission rather than to the contracting parties.

Because the record was made on the basis that fish water, if provided, would be provided out of the total volume of water belonging to the Districts the Examiner is unable to compute the water which might be available for fish water releases when provided solely out of a portion of the additional volume of water to become available to the Districts and San Francisco as a result of the construction of the **New Don Pedro** project. As previously pointed out (*supra*, p. 557), it is only out of the

additional water to become available that fish water releases may be provided, assuming that the water which can be provided for this purpose will be sufficient in volume to make it worthwhile. In making a record which will permit this determination to be made it appears that it will *563 be necessary to inquire into, *inter alia*, the circumstances under which, and the period over which, San Francisco proposes to sell water stored in the recently completed Cherry Valley project to the Districts (see *supra*, pp. 549, 550); whether a Commission license is required for the Cherry Valley project; and the justification for the claim that San Francisco's local water supply, which was its sole source of supply until it began receiving Tuolumne River water in 1934, cannot now be depended upon to supply any water in a very dry year (see *supra*, p. 546).

**52 In view of the state of the record concerning fish water releases, and the requirements of the Act with reference thereto, the order accompanying this opinion grants a license on the condition that the Districts maintain minimum stream flows in the Tuolumne River at La Grange bridge as may be prescribed hereafter by the Commission (see Article 30). To expedite disposition of this case the parties may be able to stipulate the necessary facts for the Commission's consideration.

The Districts' Recreation Proposal

Section 10(a) of the Act is quoted hereinabove (see *supra*, p. 556). If, as this Section contemplates, the general welfare is to be served to the maximum practical extent, the Commission's outlook in this case may not be limited to the interests of those who will bear the cost of New Don Pedro. Rather its outlook must be as comprehensive as the total public interest. And as is well known, the Commission is showing a renewed and increasing interest in the development of the Nation's water resources for the benefit of all.

The evidence shows that the New Don Pedro project will create one of the largest low-elevation lakes in the San Joaquin Valley. At full pool it will have a shoreline of 159 miles and afford many varied recreational opportunities including sport fishing, camping, hunting, boating, water skiing, swimming and picnicking, with such opportunities being afforded in a region in a region which, along with the State of California in general, is experiencing an accelerated increase in population and in industrial and other activity.

The Districts plan to employ a consultant to develop a master plan for recreation consistent with the project purposes, but such plan is not proposed for development by the Districts but rather for implementation by interested local, state or federal agencies. The Districts have not offered to create recreational facilities at their own expense, nor have they offered to purchase land for recreational purposes. They contemplate that the only land to be made available for such purposes will be the land within the project boundary and this would be true with respect to the entire 159 miles of shoreline with the exception of the area adjacent to the proposed New Don Pedro dam. Notwithstanding this long shoreline it appears that the only access road proposed to the reservoir will be to the dam site. In the view of Tuolumne County, proper recreational development could be afforded along the entire reservoir shoreline with suitable access roads and the acquisition by the Districts of various sites which lend themselves to recreational development.

Counsel for the Districts request that the following finding, among others, be made:

The New Don Pedro project at full pool will create a lake of about 12,000 acres and of about 3,000 acres at the minimum storage of approximately 309,000 acre feet, affording many and varied recreational opportunities including fishing, boating, water skiing, swimming and picnicking.

**53 Counsel for the Secretary of the Interior suggests that there be added to this proposed finding the words 'if sufficient lands, access roads, and recreational facilities are provided for these purposes.' He recommends the addition of *564 this language because it 'clearly sets forth the fact that the Applicants intend for someone else to provide the means of achieving the recreational values which they claim will flow from the construction of this project. The record is clear to the effect that the Districts have no present intention of investing any funds in facilities for public use of the reservoir. Unless they are willing to

make some contribution other than planning to these uses, it is doubtful that they may claim properly that they are improving the recreational opportunities of the area by the construction of the project.' The Examiner agrees.

The proposal of the Districts' to do no more than cause a master recreational plan to be prepared is to be contrasted with the conditions Congress exacted of San Francisco in connection with its construction of the Hetch Hetchy system (also located on public lands) under the Raker Act. In consideration of the rights and privileges granted under that Act, San Francisco was required, *inter alia*, to construct and maintain access and scenic roads, trails and bridges under the direction and approval of the Secretary of the Interior and the Secretary of Agriculture; to construct telephone systems, fences, camp sites, etc.; to permit free access to and use of the Hetch Hetchy area by the public; to supply water for camp purposes; to comply with sanitary regulations; and to dispose of all power generated by the Hetch Hetchy system to the public at cost. In this connection it is of interest to point out that House Report No. 41, 63d Congress, 1st Session, which accompanied the bill that became the Raker Act, stated in part (p. 11, 15):

Section 7 provides that for and in consideration of the grant to grantee shall make certain payments, the proceeds of which are to be used exclusively for the construction of roads and other improvements in the Yosemite National Park and other national parks in the State of California.

Paragraph (p), section 9, provides for the building of roads and trails in the Yosemite National Park as designated by the Secretary of the Interior.

(The routing of these roads and trails was made by Mr. Marshall, of the Geological Survey, who surveyed the Hetch Hetchy Valley and is familiar with all the scenic and topographical conditions there. These roads will cost the city of San Francisco \$500,000 to \$1,000,000, and are to be turned over, free of charge, to the United States. This is one of the important considerations, and carries compensation to the Government for the rights of way granted. The construction of these roads will make the Hetch Hetchy Valley accessible and will provide a convenient and easy way for mountaineers to reach the higher parts of the Sierra. This paragraph also contains a requirement that the grantee shall provide a water supply for camp purposes at the Meadow camping place, a third of a mile from Hetch Hetchy. It is also provided that all trail and road building shall be done subject to the approval and direction of the Secretary of the Interior or the Secretary of Agriculture, according to their respective jurisdictions.)

****54** Paragraph (q), section 9, provides that the grantee shall furnish water at cost to any authorized occupant within 1 mile of the reservoir, and shall repair and maintain roads and trails constructed under the provisions of the grant.

Paragraph (r) provides that the grantee shall pay all the cost of inspection and investigations which may be required of the Department of the Interior . . .

Paragraph (t) requires the grantee to convey to the United States any and all tracts of land now owned by the city within Yosemite National Park or ***565** the national forest, which lands are not actually required for use under the provisions of this act.

(The city of San Francisco purchased private lands for the purpose of exchanging the same with the Government in lieu of that portion of the floor of the Hetch Hetchy Valley, which is not owned by the city. The purpose of this plan is to provide suitable and desirable camping places for visitors who may wish to visit the Sierra and who would otherwise have camped in the Hetch Hetchy, and at the same time compensate the United States for lands to be submerged.)

Paragraph (u) provides that the grantee shall sell water at cost to the military reservations in San Francisco. * * *

The Raker Act was enacted in 1913 when the population of California and adjoining states was far less than today. Today, for example, California is the largest state in the Nation population-wise. Accordingly, it is apparent that the need for creating and maintaining extensive recreational facilities, access roads, bridges, trails, camp sites, etc., is far greater now than in 1913. The order accompanying this opinion therefore requires that such facilities be provided at the expense of the Districts and San Francisco.

While the Districts claim that they lack legal authority to construct and maintain recreational facilities, there is no merit to this contention. This is particularly so since **New Don Pedro** will be a **licensed** project. It clearly appears that under State law the Districts may do any and all acts necessary to providing water and power. But even if this contention had merit the required recreational facilities could be constructed, maintained and paid for by San Francisco, with San Francisco's portion of the other project costs being reduced accordingly.

Tuolumne County has a sincere and urgent interest in the **licensing** of the **New Don Pedro** project, particularly insofar as recreational features and the cost of relocation of roads and bridges are concerned. Their counsel stated at the hearing that he had talked with representatives of the Districts 'and they have promised nothing.' He further stated that the negotiations in which he had participated had led 'to complete frustration as far as Tuolumne County is concerned.'

Counsel for Tuolumne County points out in his brief that 'Tuolumne County . . . has a land area in excess of 1,400,000 acres. Of this land area 72% is owned by the United States and 6% by other tax exempt agencies such as Modesto . . . and Turlock . . . * * * The **New Don Pedro** project . . . will remove an additional 8,917 acres from the tax roles . . . ' The county estimates that the total cost of the relocation of the county roads and bridges which they desire to be relocated⁴⁹ is roughly \$1,618,000.00, but requests that the Districts be held responsible for no more than the actual replacement cost. In this regard counsel points out that, as the evidence indicates, 'more than sufficient money has been budgeted [by the Districts] for the County road relocation.'

****55** Concerning the recreation potential of the **New Don Pedro** project counsel for Tuolumne County contends that it 'could be unlimited if developed properly' since 'it lies within easy reach of the densely populated central valley and bay area regions of California. The fact that the reservoir is at a low elevation means that it would be used by the public for recreational purposes ***566** during the greater part of each year. A well planned and controlled recreational development along the shores of **New Don Pedro** Reservoir would allow a maximum of public use and would tend to make the recreational operation a financial success.' Tuolumne County recommends that the recreation facilities be provided at the expense of the Districts since the resources of the County 'are already strained to the limit by reason of the fact that over 70% of its land area is owned by tax exempt agencies. With its small tax base, it would be impossible for Tuolumne County to provide the initial basic facilities, the land necessary for these facilities, and the access roads to these facilities.' Counsel for the county further states that 'After the basic recreational facilities are installed Tuolumne County believes that it should be allowed to participate in the operation of the recreational development with the Irrigation Districts since the reservoir is entirely situated within Tuolumne County. Furthermore, since Tuolumne County will have to provide the police and fire protection and other government services which are afforded by taxes raised solely within the County, there is no way for Tuolumne County to mitigate this financial burden unless it is allowed to participate in the operation of the recreational development.'

The financial ability of the Districts and San Francisco to provide the recreational facilities, etc., is obvious. The Districts, for example, propose to recover their portion of the cost of **New Don Pedro** entirely out of power revenues and San Francisco may be able to recover its cost contribution in the same manner. It is not proposed that the farmers of the area, in order to get more water for irrigation, will pay for the additional water they receive.⁵⁰ It is clear, of course, that irrigation as well as power will provide revenues and attract capital, as will the high credit rating of the Districts and San Francisco. Moreover, the cost of the project to the Districts and San Francisco is substantially reduced by the Federal Government's payment for flood control space.

Position of Banta Carbona

The source of water of Banta Carbona for irrigation is by diversion from the San Joaquin River below its confluence with the Tuolumne River. In its petition to intervene Banta Carbona stated that:

In recent years, as the consumptive use of water for irrigation in the San Joaquin valley upstream from [Banta Carbona's] points of diversion has increased, [Banta Carbona's] water supplies have been seriously impaired, principally through the deterioration of the quality thereof. As a result severe damage to crops and orchards within [Banta Carbona's] service area has been caused by the excessive salinity of the water diverted *567 from the San Joaquin River. A substantial part of [Banta Carbona's] water supplies during the early months of the irrigation season is derived from runoff in the Tuolumne River. Heavy snow melt runoff in the Tuolumne River and other tributaries of the San Joaquin River during the spring months has been beneficial to the District in that it has served to flush out the excessive saline water that had previously accumulated in the stream channels and sloughs in the San Joaquin Valley.

**56 As counsel for Banta Carbona states in his brief, 'The water quality problem in the lower San Joaquin has been developing gradually over many years. But * * * only in recent years has this problem become so acute that it now constitutes deprivation of property and impairment of vested rights.'

Counsel for Banta Carbona recognize, of Course, that the serious water quality problem that now exists in the lower San Joaquin River is not due to the proposed construction of the **New Don Pedro** project. What Banta Carbona seeks is an appropriate condition in the **license** issued to the Districts to prevent any 'further deterioration in the water quality in the lower San Joaquin as a result of' the construction of **New Don Pedro**. In this regard counsel states that Banta Carbona does 'not expect the Tuolumne River to contribute all the water that is necessary to maintain water quality in the lower San Joaquin. We only expect the Tuolumne River to contribute its historical proportion. We do not believe anyone controverts the water rights of the Banta Carbona Irrigation District of the fact that said water rights have a priority dating from August 11, 1911, which is prior to both the existing **Don Pedro** applications made in 1919 and the **New Don Pedro** applications made in 1951.'

The question of whether a downstream irrigator can require upstream irrigators to prevent an alleged impairment of quality of river flows is an issue of State law depending upon the rights held by the respective users. As counsel for the Districts point out, 'The Commission has consistently ruled * * * that once a **license** applicant has shown prima facie compliance with State laws regarding its water rights * * * a challenge to those rights * * * should be made not to the Commission, but to the appropriate State agency having jurisdiction over State water rights.' See *Power Authority of the State of New York*, 19 **FPC** 186, 190-191; *California Oregon Power Co.*, 13 **FPC** 1, 5; *Oakdale Irrigation District, et al.*, 10 **FPC** 810, 811, *East Bay Municipal Utility District*. 1 **FPC** 12, 13.

Mention should also be made here of the fact that counsel for Banta Carbona point out in their brief 'that if mandatory fish releases from the **New Don Pedro** project are to be made in accordance with the recommendations * * *, these would mitigate the quality problem in the lower San Joaquin River to a considerable extent during part of the irrigation season at least.' But as hereinabove pointed out, the Examiner is unable, on the basis of the record made, to calculate the extent that fish water releases can be made consistent with the provisions of the Act.

FINDINGS

Based on the evidence of record, the briefs and arguments of counsel, as well as the preceding portion of this decision, it is further found and concluded that:

(1) The Districts, two public agencies of the State of California, filed a joint application on May 9, 1961, as amended on March 30, 1962 and May 18, 1962, for a major **license** under the Act to construct, operate and maintain a hydroelectric project known as the **New Don Pedro** project, **FPC** Project Number 2299, at approximately river mile 54.5 on the Tuolumne River in California.

****57 *568** (2) No conflicting application is before the Commission. Public notice has been given.

(3) The proposed **New Don Pedro** project would be located about one and a half miles downstream from and would inundate the existing **Don Pedro** project of the Districts, located at river mile 56.0, and covered under **FPC** Minor Part **License** Number 1086 issued in 1930.

(4) A public hearing was held on the application in San Francisco, California commencing on October 16, 1962, and continuing for nine hearing days ending October 26, 1962.

(5) The proposed project would affect public lands of the United States and is subject to **licensing** under the Act.

(6) The Chief of Engineers, Department of the Army, has reported that special terms and conditions in the interests of navigation are not considered necessary for insertion in any **license** which may issue.

(7) The **New Don Pedro** project, constructed, operated and maintained as hereinafter ordered and conditioned, will not affect any Government dam, nor with the issuance of a **license** therefor, as herein provided, affect the development of any water resources for public purposes which should be undertaken by the United States.

(8) The issuance of a **license** for the **New Don Pedro** project will not interfere or be inconsistent with the purposes of any reservations or withdrawal of public lands.

(9) The exhibits filed by the Districts pertaining to the **New Don Pedro** project conform with the Commission's rules and regulations and should be approved as part of the **license**, but there shall be filed, as hereinafter provided, Exhibits F and K showing and describing the project boundary and lands.

(10) The **New Don Pedro** project would consist of a dam about eight hundred feet long at crest Elevation 850, which will have a centrally located impervious rolled earth core and previous gravel and cobble shells; a reservoir of 2,030,000 acre feet capacity at full pool water surface Elevation 830, which will extend about twenty-two miles upstream to a point on the main stream known as Wards Ferry Bridge; a control spillway consisting of a concrete structure with an ogee crest at Elevation 800 and provided with three radial type, hoist operated steel gates capable of passing 81,000 cfs at reservoir Elevation 832; and uncontrolled emergency overflow spillway 1900 feet wide with the crest at Elevation 832 which in combination with the controlled spillway will pass 324,000 cfs with the water surface at Elevation 843.3; a diversion tunnel through the left abutment with permanent outlet works; a power tunnel through the left abutment extending to a steel penstock leading to an outdoor type power house at the downstream toe of the dam containing three units, each consisting of a reaction type turbine with a rated capacity of 69,000 horsepower operating under a 425 feet head and a directly connected generator rated at 45,766 kva, and connected to the main transformers rated at 58,000 kva; a switchyard; and six 69 kv transmission lines to substations of the Districts, together with appurtenant works, the location, nature and character of all of which are more specifically shown and described by the exhibits which form part of the application for **license**.

****58** (11) The structures proposed as part of the **New Don Pedro** project conform to sound engineering practice and will be safe and adequate.

(12) The estimated cost of construction of the **New Don Pedro** project is reasonable.

(13) The project site was selected after examination of four other sites, all in the same general vicinity, and was chosen not only because it will permit the maximum practicable reservoir size which the topography of the area will support but also because it offers superior geologic conditions.

***569** (14) The Tuolumne River has a large annual variation in flow, ranging from 600,000 acre feet to 3,200,000 acre feet over the 39 year representative hydrologic cycle, namely 1923-1961, and storage is essential in order to provide dependable supplies for irrigation and domestic use, permitting the carryover of waters from wet years to dry years.

(15) As proposed, the purposes of the **New Don Pedro** project are to (a) conserve water for the Districts for irrigation and domestic supply, with releases of water for irrigation purposes to be used in the generation of hydroelectric power; (b) enable San Francisco to increase its upstream diversions and power output; and (c) provide flood control and some recreation.

(16) The major purposes of the Districts in constructing the **New Don Pedro** project are to generate additional hydroelectric power for distribution in their power service area and to firm up the water supply available for irrigation through providing sufficient storage to carry them over dry years, thus providing the area with needed power and improving and stabilizing the basic agricultural economy of the area.

(17) The major purposes of San Francisco in proposing to contribute to the first cost of constructing the **New Don Pedro** project are to enable it (a) to increase its ultimate diversion of water from the Tuolumne River to more than 400 mgd; (b) avoid the cost of constructing other storage space and aqueduct facilities; and (c) to generate and sell additional hydroelectric power.

(18) The **New Don Pedro** project, as authorized herein, is best adapted to a comprehensive plan for the improvement and utilization of water power development and other beneficial public uses, including recreational purposes.

(19) It is anticipated that pursuant to the terms of an agreement previously entered between the Districts and San Francisco that San Francisco will enter into a binding agreement with the Districts fixing San Francisco's contribution to the overall cost of the **New Don Pedro** project. Under the prior agreement San Francisco agreed to pay the actual cost of constructing the **New Don Pedro** project to a reservoir capacity of 1,200,000 acre feet.

(20) Construction of the **New Don Pedro** project should not commence until the Districts and San Francisco enter into an agreement filed with and acceptable to the Commission and allocating the total costs between the parties and obligating San Francisco to pay its proper share of those expenditures. Such agreement should entitle San Francisco to a maximum of 740,000 acre feet of storage in the **New Don Pedro** reservoir consisting of 570,000 acre feet of municipal exchange storage and 50 percent of the 340,000 acre feet of off-season flood control space.

****59** (21) Federal financial participation in the **New Don Pedro** project in the interests of flood control was authorized by Congress in the Flood Control Act of 1944 (58 stat. 887) and the Chief of Engineers, department of the Army, has reported no objection to the issuance of a **license** providing that a satisfactory agreement is reached to satisfy the needs of flood control, pursuant to the 1944 Flood Control Act.

(22) The Corps of Engineers, San Francisco and the Districts entered into a contract in 1949 providing for the operation of then existing projects of the Districts and San Francisco for flood control, the construction of Cherry Valley dam by San Francisco to incorporate flood control, and for the transfer of flood control operations to **New Don Pedro** when completed, with a federal monetary contribution for flood control currently estimated at approximately \$14,000,000, about \$9,000,000 of which has already been advanced.

(23) The substantial contribution made and to be made by the Federal Government is another demonstration that the water resource development for flood ***570** control space in the **New Don Pedro** reservoir in the Tuolumne and San Joaquin basins is not a matter limited to local concern.

(24) The contract entered into in 1949 by the Corps of Engineers, San Francisco and the Districts, and referred to in paragraph (22) above, specified that 'none of the money paid by the Federal Government under the terms of this agreement shall be expended for purposes other than **new** work on Cherry Valley or **New Don Pedro** or other **new** reservoirs.' The only **new**

reservoir constructed by San Francisco is Cherry Valley. **New Don Pedro** is the only **new** reservoir which the Districts contemplate constructing.

(25) The Districts transferred to San Francisco the \$4,600,000 paid by the Federal Government to them under the 1949 contract in exchange for headwater benefits, a matter subject to the Commission's jurisdiction under Section 10(f) of the Act. The transfer of \$4,600,000 by the Districts of San Francisco does not appear to conform to the requirement of the 1949 contract limiting the use of Federal payment to 'new work', nor does it appear that such payment is justification for the Commission regarding it as being other than a contribution to the first cost of **New Don Pedro**.

(26) The California Districts Securities Commission approved the feasibility of the proposed **New Don Pedro** project in 1961 and authorized the Districts to hold elections on the question of whether general obligation bonds in the amounts of \$34,000,000 (for Turlock) and \$18,500,000 (for Modesto) should be issued, the issuance of which was approved by the voters of the Districts on November 7, 1961.

(27) The voters on San Francisco approved the issuance of \$115,000,000 in general obligation bonds in an election held on November 7, 1961 for utilization in connection with the Hetch Hetchy water supply system, to include approximately \$45,000,000 for use in connection with the **New Don Pedro** project.

****60** (28) The Districts have demonstrated their ability to finance their portion of the **New Don Pedro** project cost pending the conclusion of a final agreement with San Francisco as to the exact amount of the cost of the project to be paid by San Francisco.

(29) The proposed **New Don Pedro** project will utilize the head and stream flow of the Tuolumne River to the maximum extent for power purposes.

(30) Under the proposed plan the hydraulic capacity of the **New Don Pedro** project will be about the same as the combined capacity of the Districts' irrigation canals below La Grange dam.

(31) The **New Don Pedro** project will have an installed capacity of 130,440 kilowatts and an estimated average annual output of 527,000,000 kilowatt hours, with a peaking capability of 150,000 kilowatts. The additional energy values to be developed in the upstream generation facilities of San Francisco as a consequence of the construction of the **New Don Pedro** project are not a matter of record.

(32) The combined loads of the Districts' electric systems will be sufficient to absorb the entire output if the **New Don Pedro** project by the date of its completion.

(33) The at-market power value of the **New Don Pedro** project is estimated at \$19.55 per kilowatt year for capacity plus 4.06 mills per kilowatt hour for energy.

(34) As proposed, the usable storage capacity of the **New Don Pedro** project will be 1,721,000 acre feet at a drawdown of 230 feet, of which 340,000 acre feet will be for flood control; 811,000 acre feet will be for irrigation; and 570,000 acre feet for exchange storage for San Francisco.

***571** (35) The installed horsepower capacity of the **New Don Pedro** project for the purpose of computing annual charges is 174,000 horsepower.

(36) It is desirable to reserve for future Commission determination the question of what lands of the United States are affected by the **New Don Pedro** project and the amount of annual charges to be fixed for the use thereof.

- (37) The amount of annual charges to be paid under the **license** for the **New Don Pedro** project for the purpose of reimbursing the United States for the cost of administration of Part I of the Act is reasonable.
- (38) It is appropriate for the Commission to reserve the right hereafter to determine the transmission facilities to be included in the **license**.
- (39) The Districts at present jointly own 37,500 kilowatts at the existing **Don Pedro** dam and Turlock Irrigation District owns 4300 kilowatts at the La Grange powerhouse.
- (40) The Districts have generated and distributed power within their service area since the completion of the existing **Don Pedro** project in 1923 and currently purchase power from the San Francisco plants upstream because of the insufficiency of their own generating sources.
- (41) The combined peak loads served by the Districts have been increasing at an average annual rate of 8 percent and are estimated to reach 180,000 kilowatts by 1965 indicating that the full installed capacity of **New Don Pedro** of 150,000 kilowatts would be absorbed in the systems of the Districts when the project goes on the line.
- **61** (42) The combined energy requirements of the two Districts have been increasing at a rate of about 8 percent and are estimated to reach 840,000,000 kilowatt hours by 1965, indicating that most, and probably all, of the proposed energy production will be absorbed within the Districts when **New Don Pedro** project goes on the line, depending upon hydrologic conditions.
- (43) The total dependable capacity that would be provided at the **New Don Pedro** project would be fully utilized in the Districts' systems promptly upon construction of the project.
- (44) The lowest alternate source of power to meet the Districts' requirements is steam electric power, the average annual cost of which is estimated to exceed the annual cost of **New Don Pedro** power by about \$316,000 based on the Districts' estimated share of the project cost before making any allowance for fish releases.
- (45) The **New Don Pedro** project is economically feasible as a power plant when operated in the manner proposed by the Districts.
- (46) The Districts, organized in 1887, have been engaged since that time in the development of the waters of the Tuolumne River for irrigation purposes, under their rights to the use of river waters.
- (47) Developments by the Districts, in addition to the construction of main canal and lateral systems totaling over 400 miles, include the La Grange dam, constructed in 1894 at the site of the then Wheaton dam, the Turlock and Modesto reservoirs, completed in 1911 and 1914, of 50,000 and 28,000 acre-foot capacity respectively which provide offstream storage for waters diverted at La Grange, and the existing **Don Pedro** project with a 290,000 acre-foot reservoir and a power plant of 37,500 kilowatts installed capacity, completed in 1923.
- (48) The Raker Act of 1913 (38 Stat. 242) protected the prior water rights of the Districts against interference by San Francisco and recognized the possibility that the Districts might irrigate up to 300,000 acres.
- (49) San Francisco was authorized, pursuant to the Raker Act of 1913, to utilize public lands and rights of way in the development of hydroelectric power ***572** and a water supply on the Tuolumne River, but that authorization did not envisage the construction and operation of the **New Don Pedro** in connection with San Francisco's Hetch Hetchy system.
- (50) San Francisco has developed storage at Hetch Hetchy, Lake Eleanor and Cherry Valley aggregating about 656,000 acre feet, four power plants and a network of diversion dams and tunnels and pipe lines across the San Joaquin Valley which transmit

Tuolumne River water over 130 miles to the Bay area for distribution to a service area which in 1961-62 had a demand of 178 mgd.

(51) Additional pipeline construction now underway by San Francisco, to be completed by 1968, will provide capacity in the San Joaquin Valley pipelines of 295 mgd.

(52) It is estimated that demands on the San Francisco water supply system will reach 210 mgd in 1968, 295 mgd by 1984, and 400 mgd by 2015. San Francisco anticipates that it will ultimately require a maximum diversion of 471 mgd from the Tuolumne River watershed.

****62** (53) The existing reservoirs of San Francisco's Hetch Hetchy system will support diversions to San Francisco of 210 mgd and the exchange storage to be provided by the **New Don Pedro** project will be capable of permitting a future diversion in excess of 400 mgd if no allowance is made for downstream flow maintenance.

(54) The California Department of Fish and Game has recommended that the low level outlets of the existing **Don Pedro** dam be opened before the filling of the **New Don Pedro** reservoir, to permit free passage of water, which is agreeable to the Districts.

(55) The California Department of Fish and Game has recommended that vegetation be cleared from the **New Don Pedro** reservoir site according to a plan developed in consultation with that Department for the purpose of providing maximum fish habitat values consistent with other interests and the Districts are agreeable to this, provided that such a plan will not create any conflict with project operations and will be devised so as not to increase clearance costs.

(56) The California Department of Fish and Game has recommended a minimum project pool of at least 100,000 acre feet which would be covered by the minimum pool proposed by the Districts of 309,000 acre feet.

(57) The Districts have agreed to permit free access to project lands to the California Department of Fish and Game to allow management of fish and wildlife resources; to impose limitations upon contractors constructing project features to prevent unnecessary destruction to fish and wildlife, and, in utilizing river gravels for dam construction, not to disturb gravels in a river channel downstream from the project accommodating approximately 500 cfs, leaving a gravel cover over borrow areas adjacent to such a channel so as to prevent the unnecessary washing of silts and fines by flows above that level.

(58) The record does not contain sufficient evidence to justify requiring the Districts to remove willow growth and other vegetation from salmon spawning areas of the Tuolumne River.

(59) The Districts as public agencies of the State of California have submitted satisfactory evidence of compliance with requirements of all applicable state laws insofar as necessary to effect the purposes of a **license** for the **New Don Pedro** project.

(60) The Districts propose to employ a recreational consultant to develop a master plan for recreational purposes, consistent with the primary purposes of the project, and to deliver the plan to interested federal, state and county agencies for implementation.

***573** (61) The **New Don Pedro** project at full pool will create a lake of about 12,000 acres and of about 3,000 acres at the minimum storage of approximately 309,000 acre feet, affording (in a region which, along with the State of California in general, is experiencing an accelerated increase in population and industrial and other activity) many and varied recreational opportunities including camping, fishing, hunting, boating, water skiing, swimming and picnicking, making it desirable that the Districts not only prepare a master plan but provide, with San Francisco's financial assistance, lands, access roads, and recreational facilities to the maximum practical extent in the same manner as Congress required of San Francisco under the Raker Act.

****63** (62) The **New Don Pedro** project will permit a seasonal reservoir draft of at least 1,105,000 acre feet for almost 80 percent of the 39 year hydrologic cycle and a draft of 900,000 acre feet for the balance of the time, under a 210,000,000 gallons per day (210 mgd) diversion condition upstream; as seasonal draft of at least 1,105,000 acre feet almost 75 percent of the time and a draft of 900,000 acre feet for most of the balance of the time under a 295 mgd diversion condition upstream; and at least a 1,105,000 acre-foot draft about 56 percent of the time, 900,000 acre feet about 33 percent of the time and smaller diversions for the remaining 12 percent of the time, under a 400 mgd diversion condition upstream, representing the optimum yields possible under the hydrologic cycle.

(63) Major upstream and downstream migration and spawning activity occurs in the stretch of the Tuolumne River from La Grange bridge at river mile 50.5 to Hickman bridge at river mile 31.7 during the months of October through April.

(64) The State of California, acting through its Department of Fish and Game, intervened in this proceeding for the purpose of protecting and maintaining the fishery and wildlife resources of the Tuolumne River.

(65) The California Department of Fish and Game, in its recommendations for the protection of the fish and wildlife resources of the Tuolumne River, has requested that the Districts maintain minimum stream flows downstream from La Grange dam, which aggregate 123,000 acre feet for a normal year (Schedule A) and 64,000 acre feet in a dry year (Schedule B) for the protection and utilization of fish spawning areas downstream during the period October through April.

(66) In its criteria for operation under Schedule A or B the California Department of Fish and Game makes no allowance for the increasing diversions proposed to be used by San Francisco.

(67) The California Department of Fish and Game did not take into account the accretions which occur in the Tuolumne River in its computations of the flows and areas it recommended for salmon spawning.

(68) The report of the Secretary of the Interior states that the **New Don Pedro** project will have an adverse effect on fish and wildlife resources of the Tuolumne River, and makes various recommendations for the preservation and enhancement of such resources. Insofar as those recommendations call for specific releases of water into the natural streambed below La Grange dam they exceed those proposed by the California Department of Fish and Game by 25,000 acre feet per annum in a normal water year and by 15,000 acre feet per annum in a dry year.

(69) A fall run of king salmon has spawned in a 17-mile reach of the Tuolumne River commencing about two miles below La Grange dam, actual counts of which are available only for the years 1940-42, 1944 and 1946, and estimates of which are available for the years 1947-49 and 1951-61, the estimates for the 1951-61 ***574** period ranging from a high of about 46,000 fish in 1959 to a low of 500 in 1951, while the actual counts range from 27,000 in 1941 to 130,000 in 1944.

****64** (70) Salmon spawning gravel surveys were conducted on the Tuolumne River by teams composed of California Department of Fish and Game and Department of the Interior personnel in the fall of 1961 and field studies were made of the spawning gravels inundated, by the personnel of these same agencies, with the cooperation of the Districts in releasing various flows over the February 26-March 6, 1962 period.

(71) In appraising the area which would be inundated over the seventeen mile reach of the spawning area by a flow at La Grange Bridge (about one mile below La Grange dam and at the upstream end of the spawning area) it would be appropriate to take into account accretions which occur in the Tuolumne River as a consequence of return flow from irrigation if these flows were stable and present in the same quantities during the salmon spawning season.

(72) The Tuolumne River is a 'gaining' stream and even in times of full diversion of the river at La Grange dam for irrigation purposes when the only flow immediately below the dam is about 2 cfs as a consequence of seepage and leakage at the dam, accretions have resulted in a flow of 80 to 100 cfs at the Hickman-Waterford Bridge (the downstream end of the spawning

area), which continued to increase the flow of the river from 200 to 300 cfs at Tuolumne City, just before the confluence of the Tuolumne River with the San Joaquin River.

(73) The Districts' planned operation of the **New Don Pedro** project does not provide for any minimum flow in the natural streambed below La Grange dam in a critical year.

(74) The fish water releases proposed by the California Department of Fish and Game, the Secretary of the Interior, and the Commission Staff would have the effect of reducing the irrigation supply available to the Districts in critical years below that available from the existing **Don Pedro** project, a result which is prohibited by Section 27 of the Act.

(75) The Examiner is unable, on the basis of the record as made, to compute the volume of water which might be made available for fish water releases.

(76) There is no necessity in this proceeding for the Commission to pass upon the request of Tuolumne County, California, that the **license** issued to the Districts contain a condition requiring the Districts to pay any headwater benefits that might result from the proposed construction by the County of an upstream project.

ORDER

WHEREFORE, *It is ordered*, subject to review by the Commission on appeal, or on its own motion, as provided by its Rules of Practice and Procedure, that:

(A) This **license** is issued to the Districts (hereinafter referred to as the Licensees) under Section 4(e) of the Federal Power Act for a period of fifty years, effective as of the first day of the month in which the acknowledgment of acceptance thereof is filed with the Commission by the Licensees, for the construction, operation and maintenance of major Project No. 2299, known as the **New Don Pedro** Project, on the Tuolumne River and its tributaries, affecting certain public lands of the United States, subject to the terms and conditions of the Flood Control Act of 1944 (58 Stat. 887) and the Federal Power Act which are incorporated by reference as a part of this **license**, and subject to such rules and regulations as the Commission has issued or prescribed under the provisions of the Federal Power Act: *Provided, however*, that Licensees shall surrender their **license** for Project No. 1086, upon completion of the **New Don Pedro** project.

****65 *575** (i) The proposed project consists of:

All lands constituting the project area and enclosed by the project boundary or the limits of which are otherwise defined and/or interest in such lands necessary or appropriate for the purposes of the project, whether such lands or interests therein are owned or held by the Licensees or by the United States; such project area and project boundary being more specifically shown and described by certain exhibits which formed a part of the application for **license** and which are designated and described as follows:

Exhibit J; PEC No. Title, **New Don Pedro** Project

sheet 2299

1 4 General map-Project location.

2 5 General map-Reservoir area.

3 53 Reservoir capacity and area curves-Profile.

(ii) An earth and rock-fill dam 580 feet high with impervious center core and pervious shells at river mile 54.5 on the Tuolumne River; a spillway on the right abutment comprised of a gate-controlled section and an ungated broadcrested weir section discharging into Gasburg Creek; a reservoir extending 22 miles up the Tuolumne River having a gross storage capacity of 2,030,000 acre feet and an area of 12,960 acre feet at elevation 830 feet; low level intake discharging through Howell-Bunger valves, a power tunnel 2,800 feet long through the left abutment and a penstock extending to a powerhouse located across the river adjacent to the toe of the dam; a powerhouse containing three 69,000-horsepower turbines operating under a rated head of 425 feet connected to three 43,480-kilowatt generators, making a total of 130,440 kilowatts; a switchyard; transmission lines extending to Turlock and Modesto, California; and appurtenant hydraulic, mechanical, and electrical facilities and miscellaneous project works-the location, nature, and character of which structures are more specifically shown and described by the exhibits hereinbefore cited and by certain other exhibits which formed part of the application for **license** and which are designated and described as follows:

Exhibit L; PEC No. Title, **New Don Pedro** Project

sheet 2299

2 38 General project layout.

3 39 Rock-full dam.

4 40 Diversion tunnel.

5 41 Outlet works-Inlet works.

6 55 Power tunnel.

7 43 Spillway.

8 44 Powerhouse-Service area and longitudinal section.

9 45 Powerhouse-Generator floor and transverse section.

10 46 Powerhouse-Turbine and valve floors.

11 47 Powerhouse main single line diagram.

12 48 Switchyard main single line diagram.

13 49 Switchyard layout.

Exhibit M: 'General Description of Equipment' in 3 sheets revised Mar. 12, 1962.

****66** (iii) All other structures, fixtures, equipment or facilities used or useful in the maintenance and operation of the project and located on the project area, including such portable property as may be used or useful in connection with the project or any

part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as part of the project is approved or acquiesced in by the Commission; also all water rights the use or possession *576 of which is necessary or appropriate in the maintenance or operation of the project.

(B) This **license** is also subject to the terms and conditions set forth in Form L-2, December 15, 1953, entitled 'Terms and Conditions of **License** for Unconstructed Major Project Affecting Lands of the United States,' (17 **FPC** 62), except for Articles 10, 20 and 21 and the last sentence of Article 23 thereof, and subject to the following conditions set forth herein as additional articles:

Article 25. The Licensees shall commence construction of the project works within one year of the effective date of this **license**; shall thereafter in good faith and with due diligence prosecute such construction; and shall complete construction of such project works within four years from the effective date of this **license**.

Article 26. The Licensees shall, within one year from the date of completion of the project, file with the Commission revised Exhibits F and K to define the final project boundary including transmission line rights-of-way in accordance with the rules and regulations of the Commission.

Article 27. The Licensees shall, prior to impounding water, dispose of all temporary structures, unused timber, brush, refuse, or other inflammable material resulting from the clearing of the land or from the construction and maintenance of the project works, and shall clear all lands in the reservoir area up to normal water level; except that all lands in the reservoir area shall be cleared according to a plan to be prescribed by the Commission upon recommendation of the California Department of Fish and Game and the United States Fish and Wildlife Service. The clearing of the lands and the disposal of the material shall be done with due diligence by the Licensees and to the satisfaction of the authorized representative of the Commission.

Article 28. The Licensees shall construct, maintain and operate such protective devices and shall comply with such reasonable modifications of the project structures and operation in the interest of fish and wildlife resources as may be prescribed hereafter by the Commission upon the recommendation of the Secretary of the Interior: *Provided*, that such modifications shall be reasonably consistent with the primary purpose of the project, as may be prescribed hereafter by the Commission upon its own motion or upon recommendation of the Secretary of the Interior or the California Department of Fish and Game after notice and opportunity for hearing and upon a finding that such modifications are necessary and desirable and consistent with the provisions of the Act: *Provided further*, That subsequent to approval of the final design drawings prior to commencement of construction no modifications of project structures in the interest of fish and wildlife resources which involve a change in the location, height or main structure of a dam, or the addition of or changes in outlets at or through a dam, or a major change in generating units, or a rearrangement or relocation of a powerhouse, or major changes in a spillway structure shall be required.

****67 Article 29.** Whenever the United States shall desire, in connection with the project, to construct fish handling facilities or to improve the existing fish handling facilities at its expense, the Licensees shall permit the United States or its designated agency to use, free of cost, such of Licensees' lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such fish handling facilities or such improvements thereof. In addition, after notice and opportunity for hearing the Licensees shall modify the project operation as may be prescribed by the Commission, consistent with the primary purposes of the project, in order to permit the maintenance and operation of the fish handling facilities constructed or approved by the United *577 States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish handling facilities or to relieve the Licensees of any obligation under this **license**.

Article 30. The Licensees shall maintain minimum stream flows in the Toulumne River at La Grange bridge as may be prescribed hereafter by the Federal Power Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the California Department of Fish and Game, after notice and opportunity for hearing and upon a finding based on substantial evidence that such minimum flows are available and are necessary and desirable and consistent with the provisions of the Act.

Article 31. Licensees in cooperation with the California Department of Fish and Game shall make studies for the purpose of assuring continuation and maintenance of the fishery of the Toulumne River in the most economical and feasible manner consistent with the Act and the requirements of the Commission thereunder.

Article 32. In the event water temperatures during the critical months of the spawning season are too high for successful salmon spawning, the Licensees and the California Department of Fish and Game shall confer to determine whether project operations may be adjusted to assist in correcting the situation.

Article 33. The Licensees shall, after notice and opportunity for hearing coordinate the operation of the project, electrically and hydraulically, with such other power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, the benefits of which shall be shared equitably by the participants in such coordination.

Article 34. The Licensees shall, prior to the filling of **New Don Pedro** reservoir, provide for free passage of water through the existing **Don Pedro** dam either by opening the low-level outlets or breaching the dam near streambed.

Article 35. Gravels of the river channel downstream from La Grange dam shall not be disturbed during the construction of project facilities except in accordance with a plan developed by Licensees after consultation with the California Department of Fish and Game and the U.S. Fish and Wildlife Service with a view toward maintaining the pre-project value of the gravels for salmon spawning. Licensees shall take all reasonable measures to prevent silt, fines and other construction debris from being released into the Toulumne River.

****68** *Article 36.* The Licensees shall, prior to beginning of operation of the **New Don Pedro** reservoir, enter into an agreement with the Chief of Engineers, Department of the Army or his designated representative for the operation of the reservoir in the interests of flood control pursuant to the Flood Control Act of 1944 (58 Stat. 887).

Article 37. The Commission expressly reserves the right to determine at a later date what transmission lines and appurtenant facilities, if any, shall be included in the **license** as part of the project works.

Article 38. The Licensees shall cause to be developed a master plan for recreational use of the reservoir which shall not conflict with the safe and efficient operation of the project. Such plan shall show the location of the areas, access roads and facilities to be constructed, maintained and paid for by the Licensees and San Francisco for fishing, hunting, camping, picnicking, bathing, boat-launching, etc., and shall be prepared in cooperation with interested federal, state and local agencies, including Toulumne County. Such plan shall be submitted to the Commission on or before August 15, **1963**, for approval, and shall be accompanied by such written comments as the interested agencies desire to make with reference thereto. Commencement of construction of the project ***578** shall be delayed until the Commission, by order, has approved the plan as submitted or as modified by the Commission.

Article 39. Licensees shall acquire sufficient interest in lands of Section 20 and 21, T. 2 S., R. 15 E., M.D.M., to provide parking and road access to National Land Reserve in Sections 19 and 20, T. 2 S., R. 15 E., M.D.M., and shall acquire such additional lands as will be necessary for recreation, fish and wildlife purposes.

Article 40. The Licensees shall pay to the United States the following annual charges:

(i) For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge in accordance with the provisions of Part II of the Commission's regulations as in effect from time to time. The authorized installed capacity for such purpose is 174,000 horsepower.

(ii) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of its lands, including those used for transmission line right-of-way, an amount to be determined hereafter by the Commission.

Article 41. The Licensees shall enter into an agreement with the City and County of San Francisco relating to the allocation of the total cost of the project (including the cost of recreation and other facilities required by the Commission) and its acquisition of storage space in the reservoir. A conformed copy of the agreement shall be filed with the Commission on or before July 15, 1963, for its approval. Construction of the project shall not commence until the Commission, by order, has approved such agreement as submitted or as modified by the Commission.

****69** *Article 42.* The Licensees shall, if desired by the State of California or by Tuolumne County, California, on or before July 15, 1963, enter into agreements with the State and County obligating the Licensees to pay the replacement cost of all State and County roads involved in the construction and operation of the **New Don Pedro** project. Such agreements shall be filed with the Commission on or before July 20, 1963.

Article 43. The Licensees shall, if desired by the California Department of Fish and Game, enter into an agreement with that agency which makes available for management by it for fish and wildlife purposes those lands which the Commission hereafter finds to be adaptable to management of fish and wildlife.

Article 44. The Licensees shall allow the public free access to the entire project area, except such limited areas to be reserved for reasons of safety and efficient operation of the project, for all recreational pursuits, and shall permit any road or trail leading to the project area to be freely used by the public.

(C) The exhibits described in paragraph (A) above are approved as part of the **license** for the project.

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

FRANCIS L. HALL,
Presiding Examiner

FEDERAL POWER COMMISSION

Footnotes

- * Initial decision appears on p. 535. Modified; rehearing denied by order issued May 6, 1964, 31 **FPC** 1128. Affirmed, 345 F. 2d 917 (CA9-1965); cert. denied 382 U.S. 941 (1965).
- 1 The Raker Act gave San Francisco rights of way in Yosemite National Park and Stanislaus National Forest for the purpose of constructing its Hetch Hetchy municipal water supply system. A condition of the authorization so granted was a specified release of water to the applicants for irrigation purposes. Section 29 of the Federal Power Act makes the provisions of the Raker Act immune to modification or repeal by reason of any language in the Federal Power Act.
- 2 San Francisco furnishes water for domestic and urban use in San Francisco County and portions of San Mateo, Santa Clara and Alameda Counties, a major portion of which is obtained from the upper Tuolumne River watershed. The consumption of water by San Francisco was at the rate of 178 mgd (million gallons per day) or about 199,000 acre feet for the fiscal year 1961-1962. San Francisco anticipates that it will require diversions of 210 mgd by 1968, 295 by 1985, and 400 mgd by 2015, and that it will ultimately require a maximum diversion of 471 mgd (528,000 acre feet per year) from the Tuolumne River watershed.
- 3 **New Don Pedro** will provide 2,030,000 acre feet of gross storage, of which 340,000 acre feet will be available for flood control, 811,000 acre feet will be for irrigation, and 570,000 acre feet will be for San Francisco's Raker Act releases to the applicants. Total cost of the project is estimated to be \$92,415,850. The applicants' share of this cost is approximately \$49,234,060. San Francisco's

is approximately \$43,181,790. The applicants and San Francisco will be reimbursed, however, for the flood control storage to the extent of approximately \$14,200,000 to be contributed by the Federal Government. In non-flood seasons this flood control storage will be available to the applicants and San Francisco for conservation storage on an equal sharing basis.

4 Some of these facilities were placed under a minor part **license** (Project No. 1086) in 1930 when higher spillway gates were installed and some Federal lands were affected for the first time.

5 'Sec. 27. That nothing herein contained shall be construed as affecting or intending to affect or in any way to interfere with the laws of the respective States relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein.'

6 In August of 1960, San Francisco inquired of the Commission whether it should join in the application for **New Don Pedro**. The Commission, by the Secretary, advised San Francisco that it was not necessary for it to join in the application.

7 In oral argument, California and the Secretary indicated that staff's recommendations would be generally acceptable to them as a basis for disposing of the fish problem.

8 The examiner erred in finding that after six years of project operation under California's requested releases the dependable minimum irrigation yield from **New Don Pedro** would be less than that obtainable from the existing project. Examination of the record reveals that the applicants have diverted water for irrigation purposes at an annual average of about 845,000 acre feet for the 39-year period, varying from a minimum of 570,544 acre feet in 1961 to a maximum of 1,027,136 acre feet in 1956. Examination of the record further indicates that with the fishery releases hereinafter provided the applicants' average irrigation yield will be 1,088,000 acre feet with upstream diversions of 210 mgd, decreasing to 1,051,000 acre feet with upstream diversions of 295 mgd after 1985. The examiner also erred in finding that the Raker Act limits San Francisco's upstream diversions to no more than 210 mgd. Our review of the Raker Act and its legislative history reveals no such limitation.

9 One cfs day equals 1.983 acre-feet.

10 The applicants estimated their costs using an interest rate of 4.25 percent.

11 Inasmuch as the **license** herein issued does not presently require fish releases which interfere with the water rights of the applicants or San Francisco under state law, or which are expected to interfere with such rights during the first 20 years of operation, it is not necessary at this time, and it may never be necessary in this case, to pass upon the legal question of the Commission's authority under the Power Act to require releases which would interfere with vested state water rights. We note, however, the recent decision of the Court of Appeals for the Ninth Circuit construing Section 27 insofar as it relates to the Commission's authority to impose navigational conditions under Section 11, and upholding a Commission determination that Section 27 is not a limitation on the Commission's exercise of the authority vested in it by Section 11. *Portland General Electric Co. v. F.P.C.*, decided February 7, 1964, 328 F.2d 165.

12 See footnote 3, above. This cost will be reduced by the Federal Government's contribution of approximately \$14,200,000 for flood control storage.

13 Cfs day equals 1.983 acre-feet.

14 The Tuolumne River rises in the Sierra-Nevada Mountains, the highest point from which drainage flows west into the Hetch Hetchy Valley being Mt. Lyell at elevation 13,000 feet. Other streams such as Cherry and Eleanor Creeks join the main river from the surrounding area constituting a total drainage of approximately 1,540 square miles at the point where the river flows past the Districts' La Grange diversion dam located below the **New Don Pedro** site. At this point the river, having dropped to about elevation 175, flows about 50 miles between the two Districts to its confluence with the San Joaquin River. The river has a highly variable annual runoff, making it necessary to provide storage to regulate the river for substantial beneficial use.

15 The Federal Water Power Act of June 10, 1920, which created the Commission, was amended, expanded and made Part I of the Federal Power Act of 1935 by Title II of the Public Utility Act of 1935 (49 Stat. 838).

Under Part I of the Act it is unlawful to construct, operate or maintain any dam over which the Commission has jurisdiction except under and in accordance with a permit or valid existing right-of-way granted prior to June 10, 1920, or a **license** granted pursuant to the Act.

Part I of the Act, providing a comprehensive scheme of national regulation for the improvement or navigation, the development of water power, and the use of public lands in relation thereto, vests in the Commission jurisdiction over the **licensing**, regulation and control of hydroelectric projects on streams subject to Federal jurisdiction and on public lands or reservations. The act gives preference to States and municipalities; limits **licenses** to not more than fifty years; and reserves to the United States the right of recapture at the end of the lease period. Upon expiration of franchises the Government has the option of (1) taking over the **license** upon payment of the net investment not to exceed fair value, plus reasonable severance damages; (2) renewing the old **license**; or (3) granting a **new** one. In short, the Act 'proceeds on the theory of private development with ultimate public ownership possible' (Senate Rep. No. 180, 66th Cong., 1st Sess. (1919)).

With the establishment of the Commission in 1920 it was no longer necessary for Congress to consider each and every proposal separately and enact special legislation in granting the consent of Congress, where appropriate, to construct and operate each

individual hydroelectric project. Once the Commission's jurisdiction to issue a **license** has been determined (as it has been with reference to **New Don Pedro** since it will occupy public lands), the only questions remaining are whether a **license** should issue, and, if so, the conditions under which it should be issued, the intention of the Act being to assure, through the imposition of conditions, if necessary, the accomplishment of the purposes of the Act. All **licenses** are conditioned upon the acceptance by the licensee of all the terms and conditions of the Act and such further conditions as the Commission may prescribe in conformity with the Act.

'The grant of a **license** under the act is a gratuity, a privilege from the sovereign, and can only be justified on the theory of the benefit to inure to the public' (*Clarion River Power Co. v. George Otis Smith et al.*, 59 F. 2d 861, 863, cert. den. 287 U.S. 639.)

16 Turlock's irrigation system begins with a main canal extending 9 miles from the left end (facing downstream) of the La Grange dam to its offstream reservoir having a capacity of about 50,000 acre feet, with water being carried below this point by a canal and subsidiary laterals comprising a 250-mile system which in turn feeds some 1,600 miles of community pipelines and ditches.

The Modesto system, beginning at the right end of the La Grange dam, extends 21 miles to the Modesto offstream reservoir, with a capacity of about 28,000 acre feet, and beyond through a system of canals and laterals with a combined total length of about 165 miles, which system feeds community ditches and pipelines in the same fashion as in the Turlock District. The Waterford Irrigation District, an adjacent small irrigation District, draws its Tuolumne River water from six points on Modesto's main canal.

The Districts serve water to some 9,200 irrigators. The annual water requirements of the farms within their boundaries can vary from over 1,000,000 acre feet to 1,200,000 acre feet, depending upon climatic conditions, the type of crops and the acreage under irrigation. The present insufficient regulatory storage of the Districts has rarely made it possible for them to come within this range of river diversion.

17 The service area of the San Francisco Water Department includes all the northern end of the San Francisco peninsula; extends south along the shores of San Francisco Bay to include the Cities of Mountain View and Sunnyvale, easterly to include the City of Milpitas and northerly along the eastern shores of the Bay to include the City of Hayward. More than 30 other cities, districts, and agencies are supplied with water from the San Francisco system.

18 Subsections (b), (c) and (d) of Section 9 of the Raker Act (1) require San Francisco to recognize the rights of the Districts to 2,350 second feet of water measured at the La Grange diversion dam (the existing **Don Pedro** project not being constructed until ten years after the passage of the Raker Act); (2) required San Francisco to release the the necessary amount of water to assure the flow of 2,350 second feet included in the priorities of the Districts; (3) recognized the rights of the Districts to take free of charge 4,000 second feet of water out of the natural flow of the river during the 60 days beginning April 15 of each year; and (4) requires San Francisco to sell to the Districts, under the various conditions and circumstances recited in Section 9(d), additional 'amounts of stored water as may be needed for the beneficial use of said irrigation districts at such a price as will return to [San Francisco] the actual total costs of providing such stored water.'

House Report No. 41, 63d Congress, 1st Session, which accompanied H.R. 7207, that became the Raker Act, explains that 'The provision relating to the 4,000 second-feet above referred to is to provide for the beneficial use by the irrigationists of water which otherwise goes to waste. In the period mentioned, April 15 to June 15, the Tuolumne River is a torrential flood. Fifty miles of watershed intervene between the Hetch Hetchy Dam and the dam of the irrigationists at La Grange. It is proposed that the irrigationists may take up waste waters, store them, and thus lessen the possible draft upon stored waters of the city. It should be borne in mind that San Francisco does not contemplate interfering with the natural flow of the Tuolumne. The intent is to store flood waters which come from melting snows and leave the normal flow of the river uninterrupted. The benefit to the irrigation districts in this provision is that the landowners will receive the benefit of an investment of approximately \$50,000,000 without being compelled to put up any part of the cost, and the construction of the system will insure the priorities of the irrigationists and they will receive water in the dry period when it is most needed. Without the construction of the Hetch Hetchy Dam there can be no flow in the river during the summer and fall.'

19 There will be available to San Francisco in the **New Don Pedro** reservoir 570,000 acre feet of exchange storage space, plus one-half of the 340,000 acre foot flood control space whenever such space is available under flood control criteria.

20 Construction of the 580-foot **New Don Pedro** project immediately below the existing **Don Pedro** dam will result in the top of the 284-foot existing **Don Pedro** dam being more than 200 feet below the surface of the enlarged reservoir.

21 An acre foot is the amount of water required to cover one acre to a depth of one foot. One cubic foot per second (cfs) flowing continuously for one day equals slightly less than 2 acre feet.

22 Although ownership and control of **New Don Pedro** will be vested in the Districts, it is to be constructed and operated under a cooperative arrangement with San Francisco and the Federal Government.

23 San Francisco's portion of the cost is to be based on the ratio of the cost to San Francisco to build a dam having a reservoir capacity of 1,200,000 acre-feet as related to the 2,030,000 capacity of **New Don Pedro**, which 1,200,000 acre-foot capacity comprises the present storage of the existing **Don Pedro** (290,000 acre-feet), the desired flood control storage of 340,000 acre-feet and San Francisco's exchange storage of 570,000 acre-feet (see *supra*, p. 538, note 6). According to the evidence, San Francisco's commitment to pay for

the assumed 1,200,000 acre-foot reservoir is firm. The Districts proposed to pay for the increment of storage in excess of 1,200,000 acre feet and for the project's power facilities, their contribution being presently estimated to be \$49,234,060.

The project cost estimate of \$92,415,580 was made by the Bechtel Corporation and appears to be reasonable. It includes \$10,100,000 on specific construction costs of \$60,471,350 for omissions, contingencies, engineering and management of construction; \$7,494,500 for land and rights together with a contingency figure of \$5,000,000 to cover the possibility of increased highway costs; and monies for general expense as well as \$4,350,000 to cover interest during construction.

24 The following colloquy occurred at the outset of the hearing between counsel for the Districts and the Presiding Examiner:

Mr. MCCARTY. * * * I think the governing organizations of all three entities involved feel that it is necessary to have a **license** and know what is in that **license** before consummating the final agreement as to the cost.

PRESIDING EXAMINER. Well, wouldn't you think the Commission would have to know the same thing, otherwise maybe they wouldn't know what they were **licensing**.

Mr. McCARTY. I think that is correct * * * but I think what has happened on the river in the past indicates the good faith of the parties involved.

PRESIDING EXAMINER. I don't think the Commission would question the good faith. I think they would like to be advised as to the final understanding.

Mr. MCCARTY. It may be possible that it would be necessary to condition a **license** * * *. We would have no objection to that.

PRESIDING EXAMINER. The Commission could do that.

The issuance of a **license** upon condition requiring a licensee to firm up its arrangements prior to commencement of construction and in a manner acceptable to the Commission in both practical and legal. To use the words of the court in *Panhandle Eastern Pipe Line Co. v. F. P. C.*, 169 F. 2d 881, 883 (CADC, 1948), Congress has not conformed the Commission 'with a dilemma like that created by the famous municipal ordinance requiring that when two trains approach a grade crossing at the same time, both shall stop and neither shall proceed until the other has proceeded. * * *'

25 Counsel for Banta Carbona state in their brief that while 'Banta Carbona's permission to intervene out of time does not permit it to introduce evidence. We have no complaint. We are grateful for the hearing accorded us under the circumstances.'

26 The existing **Don Pedro** project is covered under a minor part **license**, No. 1086, issued by the Commission in 1930. Staff counsel states that in 1930 'lands of the United States were inundated as a result of construction of spillways.'

27 Upon organization in 1887 the Districts had a combined total of about 257,000 acres, with about two-thirds thereof being in the Turlock District and one-third in the Modesto District. The water diverted at La Grange dam was, by agreement, divided two-thirds Turlock and one-third Modesto, inasmuch as this was the ratio of lands between them. This ratio also controls the financing of the project, making it necessary for Turlock to contribute about two-thirds of the cost to be borne by the Districts. It further accounts for the project's power output being divided two-thirds for Turlock and one-third for Modesto, notwithstanding the fact that Modesto's electric load is more than 50 percent greater than that of Turlock.

At the present time the combined acreage of the Districts exceeds 279,000 acres, largely as a consequence of including within their respective boundaries the lands of each covered by the **Don Pedro**, Turlock and Modesto reservoirs.

28 The power systems of the two Districts, although operated independently, are connected at the Ceres Substation just south of Modesto and there is a free interchange at this point whenever necessary. In addition, the Districts have connections to San Francisco transmission lines from the Hetch Hetchy system power plants and presently purchase all of their power requirements, beyond those generated at the **Don Pedro** and La Grange facilities (see note 16, page 543, *infra*). There are two connections with the P. G. & E. power system resulting from the fact that prior to 1924, when the Districts commenced distributing power themselves, the area was served by P. G. & E. and its predecessors. Such connections are maintained for emergency purposes only. The San Francisco system is also connected to the P. G. & E. network at two points. The significance of these connections is that if a failure should occur on the Hetch Hetchy lines it will be possible for the Districts to get emergency power from the P. G. & E. system.

The Districts purchase power solely from San Francisco.

The Districts began distributing electric power in 1924 with about 8,000 customers. They expanded with general growth and now serve in excess of 51,000 customers. They anticipate that the number of their power customers will double by 1985.

The combined loads of the Districts have increased from almost zero in 1924 to an existing combined peak requirement of about 141,000 kilowatts in 1962. Their combined peak load requirement is expected to increase at a rate of about 8 percent annually, reaching almost 180,000 kilowatts in 1965. The situation is similar in connection with the combined electrical energy requirements of the Districts.

The population within the power service area of the Districts has grown from an estimated 29,500 in 1930 to 135,590 in 1960. The population is estimated to increase to 189,000 by 1970, 260,000 by 1980 and 385,000 in 1990.

29 Water in excess of irrigation needs which passes La Grange dam is utilized, to the extent possible, in a small power plant located on the left bank of the river downstream from the dam. This plant, of 4,300 kilowatt capacity, was constructed by the Turlock District in 1924

and is owned operated solely by that District. Water taken through the plant is not diverted directly from the dam but is taken from the Turlock main canal, downstream from the dam. There is no connection between power production at **Don Pedro** and La Grange. The generally favorable weather conditions in the area irrigated by the Districts allow a growing season of approximately 270 days out of the year, permitting double cropping in some instances. The area is, however, deficient in rainfall, the average annual precipitation being on the order of only twelve inches, roughly ninety percent of which occurs in the months of November through April. Accordingly, to take advantage of the favorable climate and valley soils, irrigation is essential to successful agriculture, the irrigation season usually beginning in March and terminating in mid-October. It is pertinent to point out in this regard that if the hydrologic cycle which **New Don Pedro** planning must anticipate repeats itself, there will still by years in which the farms will not have the water they require.

Agricultural activity in Stanislaus County to which the Districts contribute the major share has ranked that county among the top ten in the nation in agricultural production, major crops being peaches and other tree crops, grapes, crops associated with the dairy industry, and livestock and poultry and products thereof, the acres of crops raised under irrigation totaling 267,000 acres in 1961.

This grant to San Francisco of certain lands and rights in the public domain was made subject to the prohibition contained in Section 6, acquiesced in by San Francisco, that San Francisco shall not sell or let to any corporation or individual, except a municipality or a municipal water district or irrigation district, the right to 'sell or sublet the water or the electric energy sold or given to it or him by' San Francisco. The Supreme Court therefore held that the sale of Hetch Hetchy power by San Francisco to P. G. & E., for resale by the latter, was an evasion and frustration of the purposes of Congress.

The Raker Act was drawn for the benefit of the people of California, it being intended for use by San Francisco as a means of supplying water and the distribution and sale of power. It contemplated that San Francisco would sell the power at cost to consumers in order to bring it into direct competition with power sold by private utilities. As the Supreme Court pointed out (310 U.S. at p. 26), 'Congress clearly intended to require-as a condition of its grant-sale and distribution of Hetch Hetchy power exclusively by San Francisco and municipal agencies directly to consumers in the belief that consumers would thus be afforded power at cheap rates in competition with private power companies, particularly Pacific Gas & Electric Company. It is not the office of the courts to pass upon the justification for that belief or the efficacy of the measures chosen for putting it into effect.'

The Commission staff believes that the annual net benefit should be shown as \$316,000 instead of \$417,000, pointing out that the cost of money used by the staff in determining the value of power was 4.5 percent whereas the Districts used a cost of money of 4.25 percent. They point out that in order to be comparable, the total fixed charge should be computed using 4.5 percent per annum for both the cost of the alternative steam plant and the hydroelectric plant; that when the Districts' cost figures as adjusted (to add .25 percent to the cost of the project) for a 50-year period, the cost of money is increased annually by \$101,000, thereby reducing the Districts' estimate from \$417,000 to \$316,000.

Throughout that economic analysis the Districts used at-market annual power values furnished by the Commission staff. Those unit values were based on the cost alternative steam electric generation at an assumed 4.5 percent cost of money. The unit values so determined were \$19.55 per kilowatt year and 4.06 mills per kilowatt hour.

The Tuolumne River watershed and the various dams, reservoirs, etc., to which frequent references are made herein, are shown on the map at the end of this opinion.

The O'Shaughnessy Dam was completed in 1923 to a capacity of 206,000 acre feet. This storage capacity was increased to 340,360 acre feet during the 1935-38 period and was further increased to 360,360 acre feet in 1949.

The Canyon power plant now under construction will take advantage of the power drop from O'Shaughnessy Dam to Early Intake. Water used in the Canyon plant will be returned to the stream at a point just above Early Intake and will be diverted at that point, as at present, for the 130-mile journey to the Crystal Springs Reservoir in the San Francisco Bay area.

'mgd' refers to 'million gallons per day.' Equivalents for mgd quantities to which reference will be made are as follows:

1. 210 mgd equals 325 cfs equals 235,000 acre feet/365 day year
2. 295 mgd equals 456 cfs equals 330,000 acre feet/365 day year
3. 400 mgd equals 619 cfs equals 448,000 acre feet/365 day year

Water in the Foothill Tunnel not presently needed for consumptive uses in the San Francisco system is returned to the Tuolumne River at a point above the present **Don Pedro** reservoir.

San Francisco will need an additional 340,000 acre feet of storage for a diversion of 295 mgd, and 674,000 acre feet of additional storage for a diversion of 400 mgd. The **New Don Pedro** reservoir could provide this additional storage. San Francisco anticipates that if **New Don Pedro** is constructed it will be able to obtain a maximum diversion of 571 mgd from the Tuolumne River watershed (528,000 acre feet per year).

Counsel for the Districts state in their brief that 'Exhaustive operation studies were conducted with the use of computers in order to determine the anticipated inflow to the **New Don Pedro** reservoir in the future, utilizing all the hydrologic records available * * *. The 37-year hydrologic period 1923-1961 was then selected because this contained years of extremely high as well as of extremely low

flow and permitted the studies to assume a full reservoir at the start of the period containing 1,690,000 acre feet which is the maximum permissible storage in January for flood control purposes * * *. The actual anticipated inflow was determined after deducting for evaporation losses in upstream reservoirs as well as for diversions by San Francisco in the amounts of 210 mgd, 295 mgd, and 400 mgd, respectively.'

40 The Federal Government's initial payment way, by the terms of the contract, paid as work on the Cherry Valley project progressed, with the balance to be paid as work on **New Don Pedro** progresses.

41 Under Article 11 of the 1949 contract entered into between the Districts and San Francisco, the payments to be made by the Government during the construction of **New Don Pedro** will be made 'in a manner to be prescribed in a supplemental agreement.'

42 **New Don Pedro** will occupy public lands. The power of Congress over public lands, conferred by Article 3, section 1, clause 2 of the Constitution, is, as the Supreme Court said in *United States v. City and County of San Francisco*, 310 U.S. 16, 29, 'without limitation.' The imposition of the conditions requested by the Staff or the Commission and the Interveners in the **license** for **New Don Pedro** would be under authority of the same constitutional provision.

While it is true that States may make laws respecting the character of rights to the use of water which may be acquired in streams within their boundaries, the Supreme Court long ago held that States may not, by legislation and without the consent of Congress:

* * * destroy the right of the United States, as the owner of lands bordering on a stream, to the continued flow of its waters, so far at least as may be necessary for the beneficial uses of the government property [*United States v. Rio Grande Irrigation Co.*, 174 U.S. 690, 703 (1899)].

The Court had earlier held that admission of a state into the Union did not deprive the United States of power to protect adequately its own property, saying that a 'different rule would place the public domain of the United States completely at the mercy of the state legislation.' [*Comfield v. United States*, 167 U.S. 518, 526 (1897).]

Federal authority over the use of public lands is accordingly complete. And as noted above, under the Federal Power Act 'the Commission is plainly made the guardian of the public domain.' [*F.P.C. v. Idaho Power Co.*, 344 U.S. 17, 23.]

43 California law includes the rights of use acquired by prior appropriation and rights inherent in the ownership of lands riparian to natural streams, such rights having been in competition throughout California legal history (*United States v. Gerlach Live Stock Co.*, 339 U.S. 725, 742-755). The water rights of the Districts and San Francisco were all acquired under the principle of priority of appropriation. The effect to be accorded priority has been construed by the Supreme Court of California as follows:

* * * One of the essential elements of a valid appropriation is that of priority over others. Under this doctrine, he who is first in time is first in right, and, so long as he continues to apply the water to beneficial use, subsequent appropriators may not deprive him of the rights his appropriation gives him, by diminishing the quantity or deteriorating the quality of the water. [*Joeger v. Pacific Gas & Electric Co.*, 276 Pac. 1017, 1026.]

While California law recognizes prior appropriate rights, it should be pointed out that insofar as applications filed with the State Water Rights Board are concerned [Section 1254 of the California Water Code](#) provides that 'the board shall be guided by the policy that domestic use is the highest use and irrigation is the next highest use of water.'

44 The *Meridian* case is of interest here. The conflicting claims of the parties involved their rights in and to the waters of the Tuolumne and San Joaquin Rivers and their tributaries. The plaintiff relied upon his rights both as a riparian owner and appropriator downstream from the Hetch Hetchy project.

The plaintiff was the then owner of the El Solyo Ranch (now the El Solyo Water District), located just south of the Banta Carbona Irrigation District (one of the Interveners herein) on the San Joaquin River. The flow of the San Joaquin River past the ranch consisted largely, and at times almost entirely, of waters contributed to it by the Tuolumne River.

The Districts, applicants herein, were among the defendants, although their rights were not involved.

45 When the original Federal Water Power Act (now Part I of the Federal Power Act) was being debated in 1919, Congressman Raker offered an amendment on the floor of the House (to H.R. 3184, 66th Cong., 1st Sess., 1919), to include 'irrigation' as within the Commission's Section 10(a) jurisdiction in determining comprehensive development. The Raker amendment was to: . . . strike out the word 'of' before 'water power', and insert the word 'irrigation.' [58 Cong. Rec. 2134 (1919).]

46 See statement of Congressman Taylor of Colorado (58 Cong. Rec. 2135 (1919)), following which Congressman Raker's amendment was rejected.

47 Cfs day equals 1.983 acre-feet.

48 The consultants for the Districts have recommended a slight increase in power rates so that a reserve fund may be created. The increase recommended by the California Department of Fish and Game would be a further but slight increase.

49 Counsel for Tuolumne County states in his brief that 'These are the only county roads which Tuolumne County seeks to have replaced. Other county roads and parts of county roads have been inundated, but Tuolumne County feels that the damage by the loss of these roads and parts of these roads is negligible. Therefore, Tuolumne County does not seek their relocation, nor redress for their loss.'

50 Counsel for the State of California state that ‘The two irrigation districts involved had in 1961 a gross agricultural product of over \$70,000,000 (Ex. 23). The water which is used to produce this great amount of agricultural income is served to farmers of Modesto . . . without charge, and is served to the farmers of ‘Turlock . . . at a nominal fee of 31 cents an acre-foot . . . In California, at least, this is a rather unique situation. The United States Bureau of Reclamation and the State of California have built and are building vast irrigation projects so that land may be served with water and produce agricultural crops. This water, however, will not be free. For example, the State of California Will serve water to the Delta or upstream from the Delta at \$3.50 an acre-foot and the price downstream from the Delta will be the \$3.50 an acre-foot plus additional distribution costs.’

The past success of the Districts, however, is not a reason for now imposing onerous conditions upon them. It is true, of course, that they have provided the area they serve with a larger and larger slice out of an expanding cake, but the key to that flourishing growth has been the know-how and integrity of a competent management filled with determination and enjoying the confidence of the inhabitants.

53 P.U.R.3d 18 (F.P.C.), 31 F.P.C. 510, 1964 WL 81097