

Circuit Court of Appeals for the Ninth Circuit. The decision of any three of such arbitrators shall be a valid and binding award of the arbitrators.

MEMBER OF CONGRESS CLAUSE

27. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom. Nothing, however, herein contained shall be construed to extend to this contract if made with a corporation for its general benefit.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed the day and year first above written.

THE UNITED STATES OF AMERICA,

Attest:

NORTHCUTT ELY.

By RAY LYMAN WILBUR,
Secretary of the Interior.

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA,
By W. P. WHITSETT,
Chairman of the Board of Directors.

[APPENDIX 13]

BOULDER CANYON PROJECT
ALL-AMERICAN CANAL

UNITED STATES
AND
IMPERIAL IRRIGATION DISTRICT

DECEMBER 1, 1932

321

ALL-AMERICAN CANAL—CONTRACT FOR CONSTRUCTION OF DIVERSION DAM, MAIN CANAL AND APPURTENANT STRUCTURES AND FOR DELIVERY OF WATER

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ALL-AMERICAN CANAL

CONTRACT FOR CONSTRUCTION OF DIVERSION DAM, MAIN CANAL, AND APPURTENANT STRUCTURES AND FOR DELIVERY OF WATER

ARTICLE 1. This contract, made this 1st day of December, nineteen hundred thirty-two, pursuant to the act of Congress approved June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, all of which acts are commonly known and referred to as the reclamation law, and particularly pursuant to the act of Congress approved December 21, 1928 (45 Stat. 1057), designated the Boulder Canyon project act, between the United States of America, hereinafter referred to as the United States, acting for this purpose by Ray Lyman Wilbur, Secretary of the Interior, hereinafter styled the Secretary, and Imperial Irrigation District, an irrigation district created, organized, and existing under and by virtue of the laws of the State of California, with its principal place of business at El Centro, Imperial County, Calif., hereinafter referred to as the district.

Witnesseth:

EXPLANATORY RECITALS

ART. 2. Whereas, for the purpose of controlling the floods, improving navigation, and regulating the flow of the Colorado River, providing for storage and for the delivery of the stored waters for reclamation of public lands and other beneficial uses exclusively within the United States, the Secretary, subject to the terms of the Colorado River compact, is authorized to construct, operate, and maintain a dam and incidental works in the main stream of the Colorado River at Black Canyon or Boulder Canyon, adequate to create a storage reservoir of a capacity of not less than twenty million acre-feet of water, and a main canal and appurtenant structures located entirely within the United States connecting the Laguna Dam, or other suitable diversion dam, which the Secretary is also authorized to construct if deemed necessary or advisable by him upon engineering or economic considerations, with the Imperial and Coachella Valleys in California, the expenditures for said main canal and appurtenant structures to be reimbursable as provided in the reclamation law; and

ART. 3. Whereas, after full consideration of the advantages of both the Black Canyon and Boulder Canyon Dam sites, the Secretary has determined upon Black Canyon as the site of the aforesaid dam, hereinafter styled the Hoover Dam, creating thereby a reservoir to be hereinafter styled the Boulder Canyon Reservoir; and

ART. 4. Whereas, there are included within the boundaries of the district areas of private and public lands, and additional private and public lands will by appropriate proceedings be included within the district, and the district is desirous of entering into a contract for the construction of a suitable diversion dam and main canal and appurtenant structures, hereinafter respectively styled Imperial Dam and All-American Canal, located entirely within the United States connecting with the Imperial and Coachella Valleys, and for the delivery to the district of stored water from Boulder Canyon Reservoir; and

ART. 5. Whereas, the Secretary has determined, upon engineering and economic considerations, that it is advisable to provide for the construction of such diversion dam and main canal and appurtenant structures, and has determined that the revenues provided for by this contract are adequate in his judgment to insure payment of all expenses of construction, operation, and maintenance of the said diversion dam, main canal, and appurtenant structures in the manner provided in the reclamation law;

ART. 6. Now therefore, in consideration of the mutual covenants herein contained, the parties hereto agree as follows, to wit:

CONSTRUCTION BY UNITED STATES

ART. 7. The United States will construct the Imperial Dam in the main stream of the Colorado River at the approximate location indicated on the map marked Exhibit A attached hereto and by this reference made a part hereof, and will also construct the All-American Canal and appurtenant structures to the Imperial and Coachella Valleys, the approximate location of said canal to be as shown on the aforesaid Exhibit A. Said canal shall be constructed to a designed capacity of fifteen thousand (15,000) cubic feet of water per second from and including the diversion and desilting works at said dam to Syphon Drop; thirteen thousand (13,000) cubic feet of water per second from Syphon Drop to Pilot Knob, and ten thousand (10,000) cubic feet of water per second westerly from Pilot Knob to Engineer Station nineteen hundred and seven as said Engineer Station is indicated on said Exhibit A. Other portions of said canal shall be constructed with such capacities as the Secretary may conclusively determine to be necessary or advisable upon engineering or economic considerations to accomplish the ends contemplated by this contract; provided, however, that changes in capacities, locations, lengths, and alignments may be made during the progress of the work as may, in the opinion of the Secretary, whose opinion shall be final and binding upon the parties hereto, be expedient, economical, necessary, or advisable, except the capacities above indicated from and including the diversion and desilting works at Imperial Dam to Engineer Station nineteen hundred and seven as hereinabove in this article referred to, which capacities may be changed only by mutual agreement between the Secretary and the district. The ultimate cost to the district of the aforesaid works shall in no event exceed the aggregate sum of thirty-eight million five hundred thousand dollars (\$38,500,000). Such cost shall include all expenses of whatsoever kind heretofore or hereafter incurred by the United States from the reclamation fund or the Colorado River Dam fund in connection with, growing out of, or resulting from the construction of said diversion dam, main canal, and appurtenant structures, including but not limited to the cost of labor, materials, equipment, engineering, legal work, superintendence, administration, overhead, any and all costs arising from operation and maintenance of said dam, main canal, and appurtenant structures prior to the time that said costs are assumed by the district, damage of all kinds and character and rights of way as hereinafter provided. The district hereby agrees to repay to the United States expenditures incurred on account of any and all damages due to the existence, operation, or maintenance of the diversion dam and main canal, the incurrence of which increases expenditures

by the United States beyond said sum of \$38,500,000. The United States will invoke all legal and valid reservations of rights of way under acts of Congress, or otherwise reserved or held by it, without cost to the district, except that the United States reserves the right where rights of way are thus acquired to reimburse the owners of such lands for the value of improvements which may be destroyed, and the district agrees that the United States may include such disbursements in the cost of the work to be performed hereunder. If rights of way are required over an existing project of the Bureau of Reclamation, such sum or sums as may be necessary to reimburse the United States on account of the construction charges allocated to irrigable areas absorbed in such rights of way shall also be considered as a part of and be included with other costs of the work to be performed hereunder. The district agrees to convey to the United States without cost, unencumbered fee simple title to any and all lands now owned by it which, in the opinion of the Secretary, may be required for right of way purposes for the aforesaid diversion dam, main canal, and appurtenant structures. Where rights of way within the State of California are required for the construction of works herein provided for, and such rights of way are not reserved to the United States under acts of Congress, or otherwise, or the lands over which such rights of way are required are not then owned by the district, the district agrees that it will, upon request of the Secretary, acquire title to such lands, and in turn convey unencumbered fee simple title thereto to the United States at the actual cost thereof to the district, subject to the approval of such cost by the Secretary.

ASSUMPTION OF OPERATION AND MAINTENANCE BY DISTRICT

ART. 8. Upon sixty (60) days' written notice from the Secretary of the completion of construction of the aforesaid diversion dam, main canal, and appurtenant structures, or of any major unit thereof useful to the district as determined by the Secretary, whose determination thereof shall be final and binding upon the parties hereto, the district shall assume the care, operation, and maintenance of said diversion dam, main canal, and appurtenant structures, or major units thereof, including Laguna Dam, and thereafter the district shall at its own cost and without expense to the United States care for, operate, and maintain the same in such manner that such works shall remain in as good and efficient condition and of equal capacity for the diversion, transportation, and distribution of water as when received from the United States, reasonable wear and damage by the elements excepted. Operation and maintenance of Imperial Dam by the district is a part of the obligation undertaken under this contract by the district for the transportation and delivery of water to public and Indian lands of the United States, and shall not interfere with the control of such dam by the United States. The United States may from time to time in the discretion of the Secretary, resume operation and maintenance of said dam upon not less than 60 days' written notice and require reassumption thereof by the district on like notice. During such times, after completion, as the dam is operated and maintained by the United States, the district shall on March 1 of each year advance to the United States the estimated cost of operation and maintenance for the following twelve months, upon estimates furnished therefor on or before September 1 next preceding. After the

care, operation, and maintenance of the aforesaid works have been assumed by the district, the district shall save the United States, its officers, agents, and employees harmless as to any and all injury and damage to persons and property which may arise out of the care, operation, and maintenance thereof. In the event the United States fails to complete the works herein contemplated and the district fails to elect to make use of the works theretofore partially or wholly constructed, the district shall be fully relieved of any and all responsibility for any further operation and maintenance of the works theretofore taken over by the district for that purpose and thereupon the district shall no longer be responsible for said maintenance or operation or damage to person or property which may arise therefrom.

KEEPING DIVERSION DAM, MAIN CANAL, AND APPURTENANT
STRUCTURES IN REPAIR

ART. 9. Except in case of emergency no substantial change in any of the works to be constructed by the United States and transferred to the district under the provisions hereof shall be made by the district without first having had and obtained the written consent of the Secretary and the Secretary's opinion as to whether any change in any such works is or is not substantial shall be conclusive and binding upon the parties hereto. The district shall promptly make any and all repairs to and replacements of all works constructed hereunder or transferred to it under the terms and conditions hereof, which in the opinion of the Secretary are deemed necessary for the proper operation and maintenance of such works. In case of neglect or failure of the district to make such repairs, the United States may, at its option after reasonable notice to the district, cause such repairs to be made and charge the actual cost thereof plus fifteen per centum (15%) to cover overhead and general expense to the district. On or before September 1 of each calendar year the United States shall give written notice to the district of the amount expended by the United States for repairs under this article during the twelve-month period immediately preceding. Such cost plus overhead and general expense as stated above shall be repaid by the district on March 1 immediately succeeding.

AGREEMENT BY DISTRICT TO PAY FOR WORKS CONSTRUCTED
BY THE UNITED STATES

ART. 10. (a) The district agrees to pay the United States the actual cost, not exceeding thirty-eight million five hundred thousand dollars (\$38,500,000), incurred by the United States on account of the aforesaid works, subject, however, to the provisions of article seven (7) hereof; provided, that should Congress fail to make necessary appropriations to complete the work herein provided for, then the Secretary may, at such reasonable time as he may consider advisable, after Congress shall have failed for five consecutive years to make the necessary appropriations which shall have been annually requested by the Secretary, give the district notice of the termination of work by the United States and furnish a statement of the amount actually expended by the United States thereon. Upon the receipt of such notice by the district the district shall be given two years from and after such receipt of notice to elect whether it will utilize said works theretofore constructed, or some particular part thereof. Such elec-

tion on the part of the district shall be expressed by resolution of the board of directors submitted to the electorate of the district for approval or rejection in the manner provided by law for submission of contracts with the United States. If the district elects not to utilize, or fails within said two-year period to elect to utilize said works or some portion thereof, then the district shall have no further rights therein and no obligations therefor. If the district elects to utilize said works or a portion thereof, then the reasonable value to the district of the works so utilized not exceeding the actual cost thereof to the United States shall be paid by the district under the terms of this contract; the first payment to be due and payable on the first day of March following the first day of September next succeeding the final determination of the reasonable value to the district of such works, in case no further work is done by the district. Should the district elect to complete the work contemplated by this contract, or some portion thereof, the first payment shall be due and payable on the first day of March following the first day of September next succeeding the date of final completion of the work by the district as determined by the Secretary. In determining the value of such works to the district there shall be taken into account, among other things, the method of financing required and cost of money, so that in no event shall all of the works contemplated by this contract cost the district more than they would have cost the district had they all been constructed by the United States under the terms of this contract. In the event of failure of the parties to agree as to the reasonable value to the district of the works which the district elects to use, the same shall be determined as provided in article twenty-seven (27) hereof.

(b) The district as a whole is obligated to pay to the United States the full amount herein agreed upon regardless of the default or failure of any tract in the district, or of any landowner in the district, in the payment of the assessments levied by the district against such tract or landowner, and the district shall, when necessary, levy and collect appropriate assessments to make up for the default or delinquency of any tract of land or of any landowner in the payment of assessments, so that in any event, and regardless of any defaults or delinquencies in the payment of any assessment or assessments, the amounts due or to become due the United States shall be paid to the United States by the district when due.

(c) The district shall be divided into units by the board of directors of the district. Said units shall be named, commencing with Imperial Unit, which unit shall comprise the lands of the district as of July 1, 1931. Each of the other units shall be as determined by the board of directors of the district and shall be described by legal description of the lands embraced therein or by designation of exterior boundaries or otherwise suitable for identification. Additional lands may be added to any unit herein or hereafter designated.

(d) The lands within each unit as hereinabove provided for will be benefited by the works to be constructed under this contract in the proportion that the area within such unit bears to the total area of the district and the costs of the said works, construction, and otherwise, shall be apportioned to and paid by the lands within each unit in that proportion. In levying assessments or other charges to meet the cost of the said works, the board of directors of the district shall take into

consideration payments to be made under this contract, with proper allowance for existing and anticipated delinquencies and redemptions, in order to provide sufficient funds to meet such payments as same become due and said board shall also take into account all sums expended or to be expended under the contract of October 23, 1918, for the right to connect with the Laguna Dam, the cost of all surveys and investigations and other expenditures properly chargeable as a part of the cost of the said works but which are not included as a part of the construction cost thereof reimbursable to the United States under this contract. While the cost of the said works and other expenditures above mentioned shall be apportioned to the various units according to their respective areas, it is understood that the assessments or other charges to be imposed upon the lands within each respective unit shall be on an ad valorem or other basis as now or may hereafter be provided by law for assessment or imposition of other charges upon lands within irrigation districts. Rates of assessment or schedule in the various units from year to year or from time to time may be different or unequal as between the various units. If the amount collected from the lands in any unit in any year shall be less than the amount apportioned to such unit for that year for such purpose, the deficit shall nevertheless be charged to that unit and any fund or funds of the district from which money may be taken to make up such deficit in order to provide for the payment in full of the obligations of the district, shall be entitled to reimbursement for such money from subsequent collections of unpaid assessments or charges in said unit or from the amounts received for the redemption of lands sold for delinquent assessments or charges, or from subsequent or additional levies made on the lands within that unit to provide for such reimbursement.

(e) In the event lands now or hereafter within Coachella Valley County Water District, a county water district organized and existing under the laws of the State of California, are included within Imperial Irrigation District, the said Coachella Valley County Water District shall have the privilege at its option, if, as, and when authorized to do so by law, to pay to Imperial Irrigation District the total amount of any annual and/or special assessments levied by the last-named district upon said lands or any installment of such assessments or any of the several individual assessments or installments thereof, in any case as the same become due and payable. The regular and lawful proceedings, rights, and remedies of the last-named district shall be in no manner impaired or affected by the provisions of this subarticle. The agreement in this subarticle contained is made expressly for the benefit of said Coachella Valley County Water District.

(f) If for any reason only a part of the works herein contemplated is constructed either by the United States or by the district, then the board of directors of the district shall, after public hearing, determine whether or not all of the lands in the district are benefited by the works constructed. If the board shall find and declare that any certain lands within the district are not benefited by such construction, then no assessments shall thereafter be levied upon such lands for the purpose of meeting the obligations under this contract; and, for the purpose of this subarticle, no land shall be regarded as benefited by the construction of such works until the works contemplated by this contract, as indicated on said Exhibit A, from which water would reasonably be obtained for such lands shall have been constructed.

(g) The district shall have the right to refuse water service to any lands within the district which may at any time be delinquent in the payment of any assessment levied for the purpose of carrying out the provisions of this contract.

CHANGES IN DISTRICT BOUNDARIES

ART. 11. After the date of this contract no change shall be made in the boundaries of the district, and the board of directors shall make no order changing the boundaries of the district unless and until the Secretary shall assent to such change in writing, and such assent shall have been filed with the board of directors of the district; provided, however, that such assent is hereby given for the inclusion of all of the lands indicated on Exhibit A referred to in article 34 hereof.

TERMS OF PAYMENT

ART. 12. The amount herein agreed to be paid to the United States shall be due and payable in not more than forty (40) annual installments, commencing with the calendar year next succeeding the year when notice of completion of all work provided for herein is given to the district or under the provisions of article 10 (a) hereof upon termination of work through failure of Congress to make necessary appropriations therefor. The first five of such annual installments shall each be one per centum (1%) of the amount herein agreed to be paid to the United States; the next ten of such installments shall each be two per centum (2%) of the amount herein agreed to be paid to the United States; and the remainder of such annual installments shall each be three per centum (3%) of the amount herein agreed to be paid to the United States. The sums payable annually as set forth above shall be divided into two equal semiannual payments, payable on March 1 and September 1 of each year; provided, however, that if notice of the completion of work is given to the district subsequent to September 1 of any year the first semiannual installment of charges hereunder shall be due and payable on March 1 of the second succeeding year.

OPERATION AND MAINTENANCE COSTS

ART. 13. Each agency other than the district for which capacity is provided in the works to be constructed hereunder shall bear such proportionate part of the cost of operation and maintenance (including repairs and replacements) of the component parts thereof and of the Laguna Dam as may be determined by the Secretary to be equitable and just, but not less than an amount in proportion to the total amount as are the relative capacities provided in each component part for such agency and for all other agencies, including the district. Each agency shall advance to the district, on or before January 1 of each year, its proportionate share of the estimated cost for that year of operation and maintenance in accordance with a notice to be issued by the district; provided, that payment shall in no event be due until thirty days after receipt of notice. Prior to March 1 of each year the district shall provide each agency with a statement showing in detail the costs for the previous year for operation and maintenance of the works on account of which such agency has made advances. Differences between actual costs and estimated costs shall be adjusted in next succeeding notices. Upon request of any agency both the ad-

vance notice of estimated costs and the subsequent statement of actual costs for each year shall be reviewed by the Secretary and his determination of proper charges shall be final. Such review shall not change the due date for advance payments as herein provided, and the cost of such review shall be borne equally by the requesting agency and the district. The district may, at its option, withhold the delivery of water from any agency until its proportionate share of the costs of operation and maintenance have been advanced or paid as in this article provided.

POWER POSSIBILITIES

ART. 14. As one of the considerations for the partial termination of the contract of October 23, 1918, as provided for in article sixteen (16) hereof, the power possibilities on the All-American Canal down to and including Syphon Drop with water carried for the benefit of the Yuma project as provided for in article fifteen (15) hereof, are hereby reserved to the United States. Subject to the foregoing provisions of this article and the participation by other agencies as provided for in article twenty-one (21) hereof, the district shall have the privilege at any time of utilizing by contract or otherwise such power possibilities as may exist upon said canal. The net proceeds as hereinafter defined in article thirty-two (32) hereof and as determined by the Secretary for each calendar year from any such power development shall be paid into the Colorado River Dam fund on March 1 of the next succeeding calendar year and be credited to the district on this contract until the district shall have paid thereby and/or otherwise an amount of money equivalent to that herein agreed to be paid to the United States. Thereafter such net power proceeds shall belong to the district. It is agreed that in the event the net power proceeds in any calendar year, creditable to the district, shall exceed the annual installment of charges payable under this contract during the then current calendar year, the excess of such net power proceeds shall be credited on the next succeeding unpaid installment to become due from the district under this contract.

DIVERSION AND DELIVERY OF WATER FOR YUMA PROJECT

ART. 15. As a further consideration for the partial termination of the contract of October 23, 1918, as provided in article sixteen (16) hereof, the district hereby agrees to divert at the Imperial Dam, and to transport and deliver at Syphon Drop and/or such intermediate points as may be designated by the Secretary, the available water to which the Yuma project (situated entirely within the United States and not exceeding in area 120,000 acres plus lands lying between the project levees and the Colorado River as such levees are located in 1931) is entitled, not exceeding two thousand (2,000) second-feet of water in the aggregate, or such part thereof as the Secretary may direct, for the use and benefit of said project, including the development of power at Syphon Drop, such water to be diverted, transported, and delivered continuously in so far as reasonable diligence will permit; provided, however, that water shall not be diverted, transported, or delivered for the Yuma project when the Secretary notifies the district that said project for any reason may not be entitled thereto; provided further, that the district shall divert, transport, and deliver such water in excess of requirements for irrigation or

potable purposes, as determined by the Secretary, on the Yuma project as so limited, only when such water is not required by the district for irrigation or potable purposes. The diversion, transportation, and delivery of water for the Yuma project as aforesaid shall be without expense to the United States or its successors in control of said project, as to capital investment required to provide facilities for such diversion and transportation of water, except such checks, turnouts and other structures required for delivery from said canal.

CONTRACT OF OCTOBER 23, 1918

ART. 16. That certain contract between the United States of America and the district, bearing date of October 23, 1918, providing for a connection with Laguna Dam is hereby terminated except as to the provisions of article nine (9) thereof, and as one of the considerations for the partial termination of said contract by the United States, the district hereby promises and agrees to make full payment to the United States of all unpaid installments of charges as provided in article nine (9) of said agreement, anything in said contract to the contrary notwithstanding. As an additional consideration for the partial termination of said contract of October 23, 1918, the district hereby promises and agrees to furnish to the United States or its successors in interest in the control, operation, and maintenance of the Yuma project, from any power development on the All-American Canal at or near Pilot Knob, up to but not to exceed four thousand horsepower of electrical energy for use by the agency in charge of project operations for irrigation and drainage pumping purposes and necessary incidental use on said Yuma project, such power to be furnished at cost (including overhead and general expense) plus ten per cent; provided, however, that the district shall not be required to furnish such power at or near Pilot Knob except at such times as all power feasible of development at Syphon Drop or developed elsewhere within a radius of 40 miles from the city of Yuma for the benefit of the Yuma project is being used for project operations as in this article specified.

DELIVERY OF WATER BY UNITED STATES

ART. 17. The United States shall, from storage available in the reservoir created by Hoover Dam, deliver to the district each year at a point in the Colorado River immediately above Imperial Dam, so much water as may be necessary to supply the district a total quantity, including all other waters diverted for use within the district from the Colorado River, in the amounts and with priorities in accordance with the recommendation of the Chief of the Division of Water Resources of the State of California, as follows (subject to availability thereof for use in California under the Colorado River compact and the Boulder Canyon project act):

The waters of the Colorado River available for use within the State of California under the Colorado River compact and the Boulder Canyon project act shall be apportioned to the respective interests below named and in amounts and with priorities therein named and set forth, as follows:

SECTION 1. A first priority to Palo Verde Irrigation District for beneficial use exclusively upon lands in said district as it now exists and upon lands between said district and the Colorado River, aggre-

gating (within and without said district) a gross area of 104,500 acres, such waters as may be required by said lands.

SEC. 2. A second priority to Yuma project of the United States Bureau of Reclamation for beneficial use upon not exceeding a gross area of 25,000 acres of land located in said project in California, such waters as may be required by said lands.

SEC. 3. A third priority (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the "Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District for beneficial consumptive use, 3,850,000 acre-feet of water per annum less the beneficial consumptive use under the priorities designated in sections 1 and 2 above. The rights designated (a) and (b) in this section are equal in priority. The total beneficial consumptive use under priorities stated in sections 1, 2, and 3 of this article shall not exceed 3,850,000 acre-feet of water per annum.

SEC. 4. A fourth priority to the Metropolitan Water District of Southern California and/or the City of Los Angeles for beneficial consumptive use, by themselves and/or others, on the coastal plain of Southern California, 550,000 acre-feet of water per annum.

SEC. 5. A fifth priority (a) to the Metropolitan Water District of Southern California and/or the City of Los Angeles for beneficial consumptive use by themselves and/or others, on the coastal plain of Southern California, 550,000 acre-feet of water per annum and (b) to the City of San Diego and/or County of San Diego for beneficial consumptive use, 112,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 6. A sixth priority (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the "Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District for beneficial consumptive use, 300,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 7. A seventh priority of all remaining water available for use within California for agricultural use in the Colorado River Basin in California, as said basin is designated on map No. 23000 of the Department of the Interior, Bureau of Reclamation.

SEC. 8. So far as the rights of the allottees named above are concerned, the Metropolitan Water District of Southern California and/or the City of Los Angeles shall have the exclusive right to withdraw and divert into its aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said district and/or said city (not exceeding at any one time 4,750,000 acre-feet in the aggregate) by reason of reduced diversions by said district and/or said city; provided, that accumulations shall be subject to such conditions as to accumulation, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion and his determination thereof shall be final; provided further, that the United States of America reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between said district and/or said city and such users resulting therefrom.

SEC 9. In addition, so far as the rights of the allottees named above are concerned, the City of San Diego and/or County of San Diego shall have the exclusive right to withdraw and divert into an aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said city and/or said county (not exceeding at any one time 250,000 acre-feet in the aggregate) by reason of reduced diversions by said city and/or said county; provided, that accumulations shall be subject to such conditions as to accumulations, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion, and his determination thereof shall be final; provided further, that the United States of America reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between the said city and/or said county and such users resulting therefrom.

SEC. 10. In no event shall the amounts allotted in this agreement to the Metropolitan Water District of Southern California and/or the City of Los Angeles be increased on account of inclusion of a supply for both said district and said city, and either or both may use said apportionments as may be agreed by and between said district and said city.

SEC. 11. In no event shall the amounts allotted in this agreement to the City of San Diego and/or to the County of San Diego be increased on account of inclusion of a supply for both said city and said county, and either or both may use said apportionments as may be agreed by and between said city and said county.

SEC. 12. The priorities hereinbefore set forth shall be in no wise affected by the relative dates of water contracts executed by the Secretary of the Interior with the various parties.

The Secretary reserves the right to, and the district agrees that he may, contract with any of the allottees above named in accordance with the above-stated recommendation, or, in the event that such recommendation as to Palo Verde Irrigation District is superseded by an agreement between all the above allottees or by a final judicial determination, to contract with the Palo Verde Irrigation District in accordance with such agreement or determination; provided, that priorities numbered fourth and fifth shall not thereby be disturbed.

As far as reasonable diligence will permit, said water shall be delivered as ordered by the district, and as reasonably required for potable and irrigation purposes within the boundaries of the district in the Imperial and Coachella Valleys in California. This contract is for permanent water services but is subject to the condition that Hoover Dam and Boulder Canyon Reservoir shall be used, first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and satisfaction of perfected rights in pursuance of Article VIII of the Colorado River compact; and, third, for power. This contract is made upon the express condition and with the express covenant that the district and the United States shall observe and be subject to and controlled by said Colorado River compact in the construction, management, and operation of Hoover Dam, Imperial Dam, All-American Canal, and other works, and the storage, diversion, delivery, and use of water for the generation of power, irrigation, and other purposes. The United States reserves the right to temporarily discontinue or reduce the amount

of water to be delivered for the purpose of investigation, inspection, maintenance, repairs, replacements, or installation of equipment and/or machinery at Hoover Dam, but as far as feasible the United States will give the district reasonable notice in advance of such temporary discontinuance or reduction. The United States, its officers, agents, and employees shall not be liable for damages when, for any reason whatsoever, suspension or reductions in delivery of water occur. This contract is without prejudice to any other or additional rights which the district may now have not inconsistent with the foregoing provisions of this article, or may hereafter acquire in or to the waters of the Colorado River. Nothing in this contract shall be construed to prevent the district from diverting water to the full capacity of the All-American Canal if and when water over and above the quantity apportioned to it hereunder is available, and no power development at Imperial and/or Laguna Dam shall be permitted to interfere with such diversion by the district, but, except as provided in article twenty-one (21), water shall not be diverted, transported, or carried by or through the works to be constructed hereunder for any agency other than the district, except by written consent of the Secretary.

MEASUREMENT OF WATER

ART. 18. The water which the district receives under the apportionment as provided in article seventeen (17) hereof shall be measured at such point or points on the canal as may be designated by the Secretary. Measuring and controlling devices shall be furnished and installed by the United States as a part of the work provided for herein, but shall be operated and maintained by and at the expense of the district. They shall be and remain at all times under the complete control of the United States, whose authorized representatives may at all times have access to them over the lands and rights of way of the district.

RECORD OF WATER DIVERTED

ART. 19. The district shall make full and complete written reports as directed by the Secretary, on forms to be supplied by the United States, of all water diverted from the Colorado River, and the disposition thereof. The records and data from which such reports are made shall be accessible to the United States on demand of the Secretary.

REFUSAL OF WATER IN CASE OF DEFAULT

ART. 20. The United States reserves the right to refuse to deliver water to the district in the event of default for a period of more than twelve (12) months in any payment due the United States under this contract, or, in the discretion of the Secretary, to reduce deliveries in such proportion as the amount in default by the district bears to the total amount due. It is understood, however, that the provisions of this article shall not relieve the district of its obligation to divert, transport, and deliver water for the use and benefit of the Yuma project as herein elsewhere provided, nor shall it relieve the district of its obligation hereunder to divert, transport, and deliver water for the use and benefit of other agencies with whom the United States may contract for the diversion, transportation, and delivery of water

through or by the works to be constructed under the terms hereof. The United States further reserves the right to forthwith assume control of all or any part of the works to be constructed hereunder and to care for, operate, and maintain the same, so long as the Secretary deems necessary or advisable, if, in his opinion, which shall be final and binding upon the parties hereto, the district does not carry out the terms and conditions of this contract to their full extent and meaning. In such event, the district's pro rata share of the actual cost of such care, operation, and maintenance by the United States shall be repaid to the United States, plus fifteen per centum (15%) to cover overhead and general expense, on March 1 of each year immediately succeeding the calendar year during which the works to be constructed hereunder are operated and maintained by the United States. Nothing herein contained shall relieve the district of the obligation to pay in any event all installments and penalties provided in this contract.

USE OF WORKS BY THE UNITED STATES AND OTHERS

ART. 21. The United States also reserves the right to, and the district agrees that it may, at any time prior to the transfer of constructed works to the district for operation and maintenance, increase the capacity of the said works and contract for such increased capacity with other agencies for the delivery of water for use in the United States; provided, however, that such other agencies shall not thereby be entitled to participate in power development on said All-American Canal, except at points where and to the extent that the water diverted and/or carried for them contributes to the development of power. In the event other agencies thus contract with the United States, each of such agencies shall assume such proportion of the total cost of said works to be used jointly by such agency and the district, including Laguna Dam, as the Secretary may determine to be equitable and just, but not less than the proportion that the capacity provided for such agency in such works bears to the total capacity thereof (except in that part thereof above Syphon Drop including Laguna Dam, in which part the proportion which such other agency shall assume shall be not less than the proportion that the capacity provided for such agency therein bears to the total capacity thereof less the capacity to be provided hereunder without cost to and for the Yuma project) and the district's financial obligations under this contract shall be adjusted accordingly. In no event shall construction costs chargeable to the district be increased by reason of additional capacity being provided for any such agency or agencies or contract or contracts having been made with same. Any such agency thus contracting shall also be required to reimburse the district in such amounts and at such times as the Secretary may determine to be equitable and just for payments theretofore made by the district for the right to use Laguna Dam.

TITLE TO REMAIN IN THE UNITED STATES

ART. 22. Title to the aforesaid Imperial Dam and All-American Canal to be constructed by the United States under the terms and conditions hereof shall be and remain in the United States notwithstanding transfer of the care, operation, and maintenance thereof to the district; provided, however, that the Secretary may, in his

discretion, when repayments to the United States of all moneys advanced shall have been made, transfer the title to said main canal and appurtenant structures, except the diversion dam and the main canal and appurtenant structures, down to and including Syphon Drop, to the district or other agencies of the United States having a beneficial interest therein in proportion to their respective capital investments under such form or organization as may be acceptable to him.

ASSESSMENT OF PUBLIC LAND

ART. 23. The following lands are hereby designated as subject to the provisions of the act of August 11, 1916 (39 Stat. 506), and the act of May 15, 1922 (42 Stat. 541):

(a) All unentered public lands and entered lands for which no final certificate has been issued, situate within the district at the date hereof; and when included within the district, unentered public lands and entered lands for which no final certificate has been issued, hereafter to be included within the district pursuant to this contract, all described in a statement marked Exhibit B attached hereto and by reference thereto made a part hereof; and

(b) Unentered public lands and entered lands for which no final certificate has been issued not so described but hereafter annexed to the district, upon the Secretary's consenting, in the case of such lands hereafter annexed to the district, to assessment hereunder of such added lands, which consent will be requested by resolution of the board of directors of the district and will be manifested by letter filed with the district, a copy of such letter to be filed also with the General Land Office, and a copy with the proper local land office.

Within a reasonable time, to be determined by the Secretary, from the date water is available for and can be delivered to any public lands within the boundaries of the district, such lands shall be opened to entry.

RULES AND REGULATIONS

ART. 24. There is reserved to the Secretary the right to prescribe and enforce rules and regulations not inconsistent with this contract, governing the diversion and delivery of water hereunder to the district and to other contractors. Such rules and regulations may be modified, revised, and/or extended from time to time after notice to the district and opportunity for it to be heard, as may be deemed proper, necessary or desirable by the Secretary to carry out the true intent and meaning of the law and of this contract, or amendments thereof, or to protect the interests of the United States. The district hereby agrees that in the operation and maintenance of the Imperial Dam and All-American Canal, all such rules and regulations will be fully adhered to.

INSPECTION BY THE UNITED STATES

ART. 25. The Secretary may cause to be made from time to time a reasonable inspection of the works constructed by the United States under the terms hereof to the end that he may ascertain whether the terms of this contract are being satisfactorily executed by the district. The actual expense of such inspection in any calendar year, as found by the Secretary, shall be paid by the district to the United States on March 1 of each year immediately following the year in which such inspection is made, and upon statement to be furnished by the

Secretary. The Secretary or his representative shall at all times have the right of ingress to and egress from all works of the district for the purpose of inspection, repairs, and maintenance of works of the United States, and for all other purposes.

ACCESS TO BOOKS AND RECORDS

ART. 26. The officials or designated representatives of the district shall have full and free access to the books and records of the United States, so far as they relate to the matters covered by this contract, with the right at any time during office hours to make copies of and from the same; and the Secretary shall have the same right in respect of the books and records of the district.

DISPUTES OR DISAGREEMENTS

ART. 27. Disputes or disagreements as to the interpretation or performance of the provisions of this contract, except as otherwise provided herein, shall be determined either by arbitration or court proceedings, the Secretary being authorized to act for the United States in such proceedings. Whenever a controversy arises out of this contract, and the parties hereto agree to submit the matter to arbitration, the district shall name one arbitrator and the Secretary shall name one arbitrator, and the two arbitrators thus chosen shall elect three other arbitrators, but in the event of their failure to name all or any of the three arbitrators, within thirty (30) days after their first meeting, such arbitrators not so elected, shall be named by the senior judge of the United States Circuit Court of Appeals for the Ninth Circuit. The decision of any three of such arbitrators shall be a valid and binding award of the arbitrators.

INTEREST AND PENALTIES

ART. 28. No interest shall be charged on any installments of charges due from the district hereunder except that on all such installments or any part thereof, which may remain unpaid by the district to the United States after the same become due, there shall be added to the amount unpaid a penalty of one-half of one per centum ($\frac{1}{2}\%$) and a like penalty of one-half of one per centum ($\frac{1}{2}\%$) of the amount unpaid shall be added on the first day of each month thereafter so long as such default shall continue.

AGREEMENT SUBJECT TO COLORADO RIVER COMPACT

ART. 29. This contract is made upon the express condition and with the express understanding that all rights based upon this contract shall be subject to and controlled by the Colorado River compact, being the compact or agreement signed at Santa Fe, N. Mex., November 24, 1922, pursuant to act of Congress approved August 19, 1921, entitled "An act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," which compact was approved by the Boulder Canyon project act.

APPLICATION OF RECLAMATION LAW

ART. 30. Except as provided by the Boulder Canyon project act, the reclamation law shall govern the construction, operation, and maintenance of the works to be constructed hereunder.

CONTRACT TO BE AUTHORIZED BY ELECTION AND
CONFIRMED BY COURT

ART. 31. The execution of this contract by the district shall be authorized by the qualified electors of the district at an election held for that purpose. Thereafter, without delay, the district shall prosecute to judgment proceedings in court for a judicial confirmation of the authorization and validity of this contract. The United States shall not be in any manner bound under the terms and conditions of this contract unless and until a confirmatory final judgment in such proceedings shall have been rendered, including final decision, or pending appellate action if ground for appeal be laid. The district shall without delay and at its own cost and expense furnish the United States for its files, copies of all proceedings relating to the election upon this contract and the confirmation proceedings in connection therewith, which said copies shall be properly certified by the clerk of the court in which confirmatory judgment is obtained.

METHOD OF DETERMINING NET POWER PROCEEDS

ART. 32. In determining the net proceeds for each calendar year from any power development on the All-American Canal, to be paid into the Colorado River Dam fund as provided in article fourteen (14) hereof, there shall be taken into consideration all items of cost of production of power, including but not necessarily limited to amortization of and interest on capital investment in power development, replacements, improvements, and operation and maintenance, if any. Any other proper factor of cost not here expressly enumerated may be taken into account in determining the net proceeds.

CONTINGENT UPON APPROPRIATIONS

ART. 33. This contract is subject to appropriations being made by Congress from year to year of moneys sufficient to do the work provided for herein, and to there being sufficient moneys available in the Colorado River Dam fund to permit allotments to be made for the performance of such work. No liability shall accrue against the United States, its officers, agents, or employees, by reason of sufficient moneys not being so appropriated nor on account of there not being sufficient moneys in the Colorado River Dam fund to permit of said allotments. If more than three years elapse after this contract becomes effective and before appropriations are available to permit the United States to make expenditures hereunder, the district may, at its option, upon giving sixty (60) days written notice to the Secretary, cancel this contract. Such option shall be expressed by vote of the electors of the district with the same formalities as required for the authorization of contracts with the United States.

INCLUSION OF LANDS

ART. 34. (a) In this article where the words "area to be included" are used such words shall be understood to mean those certain areas shown on Exhibit A and bounded by the lines indicated thereon as "Boundary of additional areas in proposed enlarged Imperial Irrigation District."

(b) The district agrees to change its boundaries within a reasonable time after the execution of this contract, in the manner provided by law, so as to include within the district the public lands of the United States in Imperial County lying south of the northerly boundary line of township eleven (11) south of the San Bernardino base line, and within the area to be included.

(c) The district further agrees to change its boundaries, if lawful petition or petitions therefor be presented to its board of directors prior to the first day of January, 1940, so as to include within the district any privately owned and/or entered lands for which final certificate has not been issued, in Imperial County, lying south of the northerly boundary line of township eleven (11) south of the San Bernardino base line, and within the area to be included.

(d) The district further agrees to change its boundaries, in the manner provided by law, so as to include within the district the lands lying north of the northerly boundary line of township eleven (11) south of the San Bernardino base line, and within the area to be included, if lawful petition or petitions sufficient in all respects for such inclusion be presented to its board of directors at any time prior to the expiration of thirty days from and after the date on which a confirmatory judgment, as required by article 31 hereof, declaring this contract in all respects valid and duly authorized, shall have become final; provided, however, that the district shall not change its boundaries so as to include any of said lands lying north of the northerly boundary line of said township eleven (11) south, unless the said petition or petitions so filed shall be sufficient to lawfully include in the aggregate not less than ninety (90%) per centum (the areas to be approved by the Secretary) of the said lands, exclusive of the Dos Palmas area and exclusive of Indian lands and public lands of the United States. Within a reasonable time after the inclusion of such lands pursuant to said petition or petitions the district further agrees to change its boundaries, in the manner provided by law, so as to also include within the district the public lands of the United States within the area to be included and lying north of the northerly boundary line of said township eleven (11) south.

(e) Whenever any of the lands within the area to be included are included within the district the inclusion thereof shall be made upon conditions substantially as hereinafter contained (filling blank spaces with appropriate unit names as may be required and other proper designations), and the Secretary, on behalf of the United States, hereby consents to such inclusion and conditions, which conditions are as follows:

CONDITION No. 1.—*Definitions*

In the following conditions, the word "district" shall mean Imperial Irrigation District; the word "board" shall mean the board of directors of Imperial Irrigation District; the words "All-American Canal Contract" shall mean that certain contract between the United States of America by Ray Lyman Wilbur, Secretary of the Interior, and Imperial Irrigation District, dated -----, and

(Date of this contract)

entitled "Contract for construction of diversion dam, main canal, and appurtenant structures and for delivery of water," authorized by the electors of Imperial Irrigation District at an election held-----;

(Date of this contract authorized)

and the words "distribution system" shall mean the secondary main canal and lateral system or systems, including all canals, pipe lines, structures, pumping plants, machinery, and incidental works necessary or convenient under the rules and regulations of Imperial Irrigation District for delivery of water for irrigation and domestic purposes from the All-American Canal, as the same is shown on Exhibit A attached to and made a part of said All-American Canal contract, as lands in ----- unit as such unit is hereinafter defined.

(Name)

CONDITION No. 2.—*Division into units*

For the purposes of these conditions and in compliance with the terms of the All-American Canal contract, the district shall be divided into units, commencing with Imperial unit, which unit shall comprise the lands within the district as of July 1, 1931, and such other lands as may at any time or from time to time be added thereto in the discretion of the board.

----- unit shall comprise -----
(Name)

(Here shall follow description or other designation of the unit involved as provided by article 10 (c) of the All-American Canal contract)

CONDITION No. 3.—*All-American Canal contract*

The lands within ----- unit shall be, in all respects, bound by all of the terms and conditions of the All-American Canal contract and particularly by article 10 thereof, and shall pay, as a unit obligation, the several amounts and in the manner and at the times provided for in said contract, as the board may determine; provided, that said lands in -----

(Name)

unit shall pay to the district, as a unit obligation, that proportion of the total sum paid by the district to the United States under that certain contract of October 23, 1918, between the United States and the district for the right to connect with Laguna Dam, prior to the payment of the first installment on said contract of October 23, 1918, for which said land shall be assessed, that the total area of ----- unit bears to the total area of the district at the

(Name)

date notice of completion of all work provided for in the All-American Canal contract shall be given, pursuant to article 12 thereof, to the district. Said sum shall be divided into ten annual installments, as nearly equal as may be practicable, and paid, commencing with the calendar year next succeeding the calendar year when such notice of completion shall be so given.

CONDITION No. 4.—*Distribution system*

The lands within ----- unit shall pay, as a unit obligation, the total capital cost of any distribution system which may be constructed by or under authority of the district, to serve the lands within said -----

(Name)

unit or any part thereof. When said distribution system, or any part thereof, is constructed, or an obligation therefor is incurred, said lands shall pay annually such sum or sums as may be necessary to meet the then current obligation therefor, whether for principal or interest or both, or otherwise. Said distribution system shall at all times be and remain the exclusive property of the district unless the district shall provide otherwise, in the discretion of the board. When funds for the construction of said distribution system are made available, the district shall construct or authorize the same to be constructed as the board may determine.

(Name)

CONDITION No. 5.—*Pumping costs*

The board shall provide by rule for the payment by the lands served of the cost of power required to pump water to or for the use of such lands.

CONDITION No. 6.—*Charges to be part of assessment*

Any and all charges against or upon the lands within -----
 unit provided for by the foregoing conditions unless otherwise collected from -----
 the lands within ----- unit shall be a part of, but in addition
 to, the annual assessment upon the said lands for other district purposes and
 payable in installments accordingly, and shall constitute an additional annual
 charge upon the land, and the board shall levy such assessment upon the said
 lands upon an ad valorem or other basis as now or hereafter provided by law, in
 an amount or in amounts sufficient to raise the several sums provided for from
 the said lands within ----- unit; provided, that for the pro-
 tection of the interests and security of the United States, pending completion of
 construction of the All-American Canal to such extent that water is available
 in said canal for use in ----- unit, the annual assessment upon
 the lands within said unit for district purposes shall be limited to raise only the
 just proportion chargeable to said unit for expenditures connected with or apply-
 ing to the All-American Canal and/or arising from expenditures made in or on
 behalf of said unit.

(f) In the event petition or petitions for inclusion, pursuant to this article, of any privately owned lands, or entered lands for which no final certificate has at the time been issued, lying south of the northerly boundary line of township eleven (11) south of the San Bernardino base line, and within the area to be included, be presented subsequent to the expiration of thirty days from and after the date on which a confirmatory judgment, as required by article 31 hereof, declaring this contract in all respects valid and duly authorized, shall have become final, then the district may, in the discretion of the board of directors, require, as a condition precedent to the granting of said petition or petitions and in addition to the other conditions above named, that the petitioners shall pay to the district such respective sums, as nearly as the same can be estimated (the amounts to be determined by the board), as the holders of title, or evidence of title, to the several parcels of land involved in said petition or petitions, and their grantors would have been required to pay to the district as assessments had such lands been included within the district at the expiration of said thirty-day period, or such portion of said sum as the board of directors may at the time determine. The provisions of this subarticle shall also apply to all lands lying north of the northerly boundary line of said township eleven (11) south, and within the area to be included, provided the ninety per centum (90%) petition required by subarticle (d) of this article is filed prior to the expiration of said thirty-day period.

(g) In the event the petition or petitions for inclusion of the said lands lying north of the northerly boundary line of said township eleven (11) south of the San Bernardino base line, as in subarticle (d) above provided are not made and filed with the board of directors of the district prior to the expiration of thirty days from and after the date on which a confirmatory judgment, as required by article 31 hereof, declaring this contract in all respects valid and duly authorized, shall have become final, as hereinabove provided, then said lands shall not thereafter be included within the district under the provisions of this contract and the works referred to in this contract north of the northerly boundary line of said township eleven (11) south of the San Bernardino base line shall not be constructed under this contract, and the district shall be relieved from all responsibility therefor,

anything in this contract to the contrary notwithstanding, and the capacities in the works to be constructed under this contract shall be reduced accordingly.

(h) Nothing contained in this contract shall impair any right or remedy of any person entitled to object or protest against the inclusion within the district of any particular tract or tracts of land, or the conditions imposed by the board of directors of the district on the inclusion of any particular tract or tracts, nor impair the power of the board to hear and determine any such objections or protests, but if in the opinion of the Secretary such determination by the board substantially impairs the interests of, or security otherwise available to, the United States under this contract, then and in such event the United States shall be under no obligation to proceed further under this contract. In the event any petition or petitions be filed for the inclusion within the district of any lands within the area to be included and, after the conditions set out in subarticle (e) of this article or conditions less burdensome, are imposed thereon, a sufficient majority statement or statements in writing be filed objecting to the inclusion of such lands with the conditions imposed thereon, so that the board of directors is required to dismiss such petition or petitions, then it shall be regarded as if such petition or petitions had not been filed.

PRIORITY OF CLAIMS OF THE UNITED STATES

ART. 36. Claims of the United States arising out of this contract shall have priority over all others, secured and unsecured.

RIGHTS RESERVED UNDER SECTION 3737 REVISED STATUTES

ART. 36. All rights of action for breach of any of the provisions of this contract are reserved to the United States as provided in section 3737 of the Revised Statutes of the United States.

REMEDIES UNDER CONTRACT NOT EXCLUSIVE

ART. 37. Nothing contained in this contract shall be construed as in any manner abridging, limiting, or depriving the United States or the district of any means of enforcing any remedy either at law or in equity for the breach of any of the provisions hereof which it would otherwise have. The waiver of a breach of any of the provisions of this contract shall not be deemed to be a waiver of any other provision hereof or of a subsequent breach of such provision.

INTEREST IN CONTRACT NOT TRANSFERABLE

ART. 38. No interest in this contract is transferable by the district to any other party, and any such attempted transfer shall cause this contract to become subject to annulment at the option of the United States.

MEMBER OF CONGRESS CLAUSE

ART. 39. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom. Nothing, however, herein contained shall be construed to extend to this contract if made with a corporation for its general benefit.

In witness whereof the parties hereto have caused this contract to be executed the day and year first above written.

THE UNITED STATES OF AMERICA,
Attest: By RAY LYMAN WILBUR,
NORTHCUTT ELY. *Secretary of the Interior.*
ELWOOD MEAD.

IMPERIAL IRRIGATION DISTRICT,
By JOHN L. DUBOIS,
President.

[APPENDIX 14]

BOULDER CANYON PROJECT
PROPOSED CONTRACT FOR DELIVERY OF WATER

THE UNITED STATES
AND
THE CITY OF SAN DIEGO

[Approved by the Secretary February 7, 1933]

347

CONTRACT FOR DELIVERY OF WATER

Article

1. Preamble.
- 2-6. Explanatory recitals.
7. Delivery of water by United States.
8. Receipt of water by city.
9. Measurement of water.
10. Record of water diverted.
11. Charge for delivery of water.
12. Monthly payments and penalties.
13. Refusal of water in case of default.
14. Inspection by the United States.
15. Disputes or disagreements.
16. Rules and regulations.
17. Agreement subject to Colorado River compact.
18. Priority of claims of the United States.
19. Contingent upon appropriations.
20. Rights reserved under section 3737, Revised Statutes.
21. Remedies under contract not exclusive.
22. Interest in contract not transferable.
23. Member of Congress clause.

[PROPOSED] CONTRACT FOR DELIVERY OF WATER

(Approved by the Secretary February 7, 1933)

(1) This contract, made this _____ day of _____, nineteen hundred thirty-three, pursuant to the act of Congress approved June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto all of which acts are commonly known and referred to as the reclamation law, and particularly pursuant to the act of Congress approved December 21, 1928 (45 Stat. 1057), designated the Boulder Canyon project act, between the United States of America hereinafter referred to as the United States, acting for this purpose by Ray Lyman Wilbur, Secretary of the Interior hereinafter styled the Secretary, and the City of San Diego, a municipal corporation of the State of California, hereinafter styled the city, organized under a freeholders' charter.

Witnesseth:

EXPLANATORY RECITALS

(2) Whereas, for the purpose of controlling the floods, improving navigation, and regulating the flow of the Colorado River, providing for storage and for the delivery of the stored waters for reclamation of public lands and other beneficial uses exclusively within the United States, the Secretary subject to the terms of the Colorado River compact is authorized to construct, operate, and maintain a dam and incidental works in the main stream of the Colorado River at Black Canyon or Boulder Canyon, adequate to create a storage reservoir of a capacity of not less than twenty million acre-feet of water, and a main canal and appurtenant structures located entirely within the United States connecting the Laguna Dam or other suitable diversion dam with the Imperial and Coachella Valleys in California; and

(3) Whereas, the United States contemplates entering into an agreement with Imperial Irrigation District, an irrigation district organized and existing under and by virtue of the laws of the State of California, providing among other things, for the construction of a main canal and appurtenant structures, authorized as aforesaid, and reserving under conditions to be therein stated, the right to increase the capacity of said works and to contract for such increased capacity with other agencies for the delivery of water for use within the United States; and

(4) Whereas, the United States and the city contemplate hereafter entering into a contract by which provision will be made for increasing, for the city's benefit and at its cost, the capacity of the main canal and appurtenant works to be constructed for Imperial Irrigation District, as aforesaid; and

(5) Whereas, the city is desirous of entering into a contract for the delivery to it of water from Boulder Canyon Reservoir;

(6) Now, therefore, in consideration of the mutual covenants herein contained, the parties hereto agree as follows, to wit:

DELIVERY OF WATER BY UNITED STATES

(7) The United States shall, from storage available in the reservoir created by Hoover Dam, deliver to the city each year at a point in the Colorado River immediately above Imperial Dam, so much water as may be necessary to supply the city a total quantity, including all other waters diverted by the city from the Colorado River, in the amounts and with priorities in accordance with the recommendation of the Chief of the Division of Water Resources of the State of California, as follows (subject to the availability thereof for use in California under the Colorado River compact and the Boulder Canyon project act):

The waters of the Colorado River available for use within the State of California under the Colorado River compact and the Boulder Canyon project act shall be apportioned to the respective interests below named and in amounts and with priorities therein named and set forth, as follows:

SECTION 1. A first priority to Palo Verde Irrigation District for beneficial use exclusively upon lands in said district as it now exists and upon lands between said district and the Colorado River, aggregating (within and without said district) a gross area of 104,500 acres, such waters as may be required by said lands.

SEC. 2. A second priority to Yuma project of United States Bureau of Reclamation for beneficial use upon not exceeding a gross area of 25,000 acres of land located in said project in California, such waters as may be required by said lands.

SEC. 3. A third priority, (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the "Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District, for beneficial consumptive use, 3,850,000 acre-feet of water per annum less the beneficial consumptive use under the priorities designated in sections 1 and 2 above. The rights designated (a) and (b) in this section are equal in priority. The total beneficial consumptive use under priorities stated in sections 1, 2, and 3 of this article shall not exceed 3,850,000 acre-feet of water per annum.

SEC. 4. A fourth priority to the Metropolitan Water District of Southern California and/or the City of Los Angeles, for beneficial consumptive use, by themselves and/or others, on the coastal plain of Southern California, 550,000 acre-feet of water per annum.

SEC. 5. A fifth priority, (a) to the Metropolitan Water District of Southern California and/or the City of Los Angeles, for beneficial consumptive use, by themselves and/or others, on the coastal plain of Southern California, 550,000 acre-feet of water per annum, and (b) to the City of San Diego and/or County of San Diego, for beneficial consumptive use, 112,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 6. A sixth priority, (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the

"Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District, for beneficial consumptive use, 300,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 7. A seventh priority of all remaining water available for use within California, for agricultural use in the Colorado River Basin in California, as said basin is designated on map No. 23000 of the Department of the Interior, Bureau of Reclamation.

SEC. 8. So far as the rights of the allottees named above are concerned, the Metropolitan Water District of Southern California and/or the City of Los Angeles shall have the exclusive right to withdraw and divert into its aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said district and/or said city (not exceeding at any one time 4,750,000 acre-feet in the aggregate) by reason of reduced diversions by said district and/or said city; provided, that accumulations shall be subject to such conditions as to accumulation, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion, and his determination thereof shall be final; provided further, that the United States of American reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between said district and/or said city and such users resulting therefrom.

SEC. 9. In addition, so far as the rights of the allottees named above are concerned, the City of San Diego and/or County of San Diego shall have the exclusive right to withdraw and divert into an aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said city and/or said county (not exceeding at any one time 250,000 acre-feet in the aggregate) by reason of reduced diversions by said city and/or said county; provided, that accumulations shall be subject to such conditions as to accumulation, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion, and his determination thereof shall be final; provided further, that the United States of America reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between the said city and/or said county and such users resulting therefrom.

SEC. 10. In no event shall the amounts allotted in this agreement to the Metropolitan Water District of Southern California and/or the City of Los Angeles be increased on account of inclusion of a supply for both said district and said city, and either or both may use said apportionments as may be agreed by and between said district and said city.

SEC. 11. In no event shall the amounts allotted in this agreement to the City of San Diego and/or to the County of San Diego be increased on account of inclusion of a supply for both said city and said county, and either or both may use said apportionments as may be agreed by and between said city and said county.

SEC. 12. The priorities hereinbefore set forth shall be in nowise affected by the relative dates of water contracts executed by the Secretary of the Interior with the various parties.

The Secretary reserves the right to, and the district agrees that he may, contract with any of the allottees above named in accordance with the above-stated recommendation, or, in the event that such recommendation as to Palo Verde Irrigation District is superseded

by an agreement between all the above allottees or by a final judicial determination, to contract with the Palo Verde Irrigation District in accordance with such agreement or determination; provided, that priorities numbered fourth and fifth shall not thereby be disturbed.

Said water shall be delivered continuously as far as reasonable diligence will permit, but the United States shall not be obligated to deliver water to the city when for any reason such delivery would interfere with the use of Hoover Dam and Boulder Canyon Reservoir for river regulation, improvement of navigation, flood control, and/or satisfaction of perfected rights in or to the waters of the Colorado River or its tributaries, in pursuance of Article VIII of the Colorado River compact, and this contract is made upon the express condition and with the express covenant that the right of the city to waters of the Colorado River or its tributaries is subject to and controlled by the Colorado River compact. The United States reserves the right to discontinue or temporarily reduce the amount of water to be delivered for the purpose of investigation, inspection, maintenance, repairs, replacements, or installation of equipment and/or machinery at Hoover Dam, but so far as feasible the United States will give the city reasonable notice in advance of such temporary discontinuance or reduction. The United States, its officers, agents, and employees shall not be liable for damages when, for any reason whatsoever, suspensions or reductions in delivery of water occur.

Deliveries hereunder shall be in satisfaction of the allocation to the City and the County of San Diego, and shall be used within the county as the city and the county may agree, or as the State of California may allocate in the event of disagreement between the city and the county.

This contract is for permanent service, but is made subject to the express covenant and condition that in event water for the city is not taken or diverted by the city hereunder for district purposes within a period of ten (10) years from and after completion of Hoover Dam as announced by the Secretary, it may in such event, upon the written order of the Secretary, and after hearing, become null and void and of no effect.

RECEIPT OF WATER BY CITY

(8) The city shall receive the water to be delivered to it by the United States under the terms hereof at the point of delivery above stated, and shall perform all acts required by law or custom in order to maintain its control over such water and to secure and maintain its lawful and proper diversion from the Colorado River.

MEASUREMENT OF WATER

(9) The water to be delivered hereunder shall be measured by such measuring and controlling devices or such automatic gages, or both, as shall be satisfactory to the Secretary. Said measuring and controlling devices or automatic gages shall be furnished, installed, and maintained by and at the expense of the city, but they shall be and remain at all times under the complete control of the United States, whose authorized representatives may at all times have access to them over the lands and rights of way of the city.

RECORD OF WATER DIVERTED

(10) The city shall make full and complete written monthly reports as directed by the Secretary, on forms to be supplied by the United States, of all water diverted from the Colorado River. Such reports shall be made by the fifth day of the month immediately succeeding the month in which the water is diverted, and the records and data from which such reports are made shall be accessible to the United States on demand of the Secretary.

CHARGE FOR DELIVERY OF WATER

(11) A charge of twenty-five cents (\$0.25) per acre-foot shall be made for water delivered to the city hereunder during the Hoover Dam cost repayment period.

MONTHLY PAYMENTS AND PENALTIES

(12) The city shall pay monthly for all water delivered to it hereunder, or diverted by it from the Colorado River, in accordance with the rate herein in article eleven (11) established. Payments shall be due on the first of the second month immediately succeeding the month in which water is delivered and/or diverted. If such charges are not paid when due, a penalty of one per centum (1%) of the amount unpaid shall be added thereto, and thereafter an additional penalty of one per centum (1%) of the amount unpaid shall be added on the first day of each calendar month during such delinquency.

REFUSAL OF WATER IN CASE OF DEFAULT

(13) The United States reserves the right to refuse to deliver water to the city in the event of default for a period of more than twelve (12) months in any payment due or to become due the United States under this contract.

INSPECTION BY THE UNITED STATES

(14) The Secretary or his representatives shall at all times have the right of ingress to and egress from all works of the city for the purpose of inspection, repairs, and maintenance of works of the United States, and for all other proper purposes. The Secretary or his representatives shall also have free access at all reasonable times to the books and records of the city relating to the diversion and distribution of water delivered to it hereunder with the right at any time during office hours to make copies of or from the same.

DISPUTES OR DISAGREEMENTS

(15) Disputes or disagreements as to the interpretation or performance of the provisions of this contract shall be determined either by arbitration or court proceedings, the Secretary of the Interior being authorized to act for the United States in such proceedings. Whenever a controversy arises out of this contract, and the parties hereto agree to submit the matter to arbitration the city shall name one arbitrator and the Secretary shall name one arbitrator, and the two arbitrators thus chosen shall elect three other arbitrators, but in

the event of their failure to name all or any of the three arbitrators within five (5) days after their first meeting, such arbitrators not so elected shall be named by the senior judge of the United States Circuit Court of Appeals for the Ninth Circuit. The decision of any three of such arbitrators shall be a valid and binding award of the arbitrators.

RULES AND REGULATIONS

(16) There is reserved to the Secretary the right to prescribe and enforce rules and regulations governing the delivery and diversion of water hereunder. Such rules and regulations may be modified, revised, and/or extended from time to time after notice to the city and opportunity for it to be heard, as may be deemed proper, necessary, or desirable by the Secretary to carry out the true intent and meaning of the law and of this contract, or amendments hereof, or to protect the interests of the United States. The city hereby agrees that in the operation and maintenance of its diversion works and aqueduct, all such rules and regulations will be fully adhered to.

AGREEMENT SUBJECT TO COLORADO RIVER COMPACT

(17) This contract is made upon the express condition and with the express understanding that all rights hereunder shall be subject to and controlled by the Colorado River compact, being the compact or agreement signed at Santa Fe, N. Mex., November 24, 1922, pursuant to act of Congress approved August 19, 1921, entitled "An act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," which compact was approved in section 13 (a) of the Boulder Canyon project act.

PRIORITY OF CLAIMS OF THE UNITED STATES

(18) Claims of the United States arising out of this contract shall have priority over all others, secured or unsecured.

CONTINGENT UPON APPROPRIATIONS

(19) This contract is subject to appropriations being made by Congress from year to year of moneys sufficient to do the work provided for herein, and to there being sufficient moneys available in the Colorado River Dam fund to permit allotments to be made for the performance of such work. No liability shall accrue against the United States, its officers, agents, or employees, by reason of sufficient moneys not being so appropriated nor on account of there not being sufficient moneys in the Colorado River Dam fund to permit of said allotments. This agreement is also subject to the condition that if for any reason construction of Hoover Dam is not prosecuted to completion with reasonable diligence, then and in such event either party hereto may terminate its obligations hereunder upon one (1) year's written notice to the other party hereto.

RIGHTS RESERVED UNDER SECTION 3737 REVISED STATUTES

(20) All rights of action for breach of any of the provisions of this contract are reserved to the United States as provided in section 3737 of the Revised Statutes of the United States.

REMEDIES UNDER CONTRACT NOT EXCLUSIVE

(21) Nothing contained in this contract shall be construed as in any manner abridging, limiting, or depriving the United States of any means of enforcing any remedy either at law or in equity for the breach of any of the provisions hereof which it would otherwise have.

INTEREST IN CONTRACT NOT TRANSFERABLE

(22) No interest in this agreement is transferable, and no sublease shall be made by the city without the written consent of the Secretary, and any such attempted transfer or sublease shall cause this contract to become subject to annulment at the option of the United States.

MEMBER OF CONGRESS CLAUSE

(23) No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom. Nothing, however, herein contained shall be construed to extend to this contract if made with a corporation for its general benefit.

In witness whereof, the parties hereto have caused this contract to be executed the day and year first above written.

THE UNITED STATES OF AMERICA,
By RAY LYMAN WILBUR,
Secretary of the Interior.

Attest:

NORTHCUTT ELY.

THE CITY OF SAN DIEGO,
By _____,

Attest:

_____,
City Clerk.

Approved as to form February 7, 1933.

RAY LYMAN WILBUR,
Secretary of the Interior.

As evidence of its approval of the foregoing contract between the United States and the city, the County of San Diego has caused the signature of the president of its board of supervisors to be affixed thereto.

THE BOARD OF SUPERVISORS OF
SAN DIEGO COUNTY,
By _____

[APPENDIX 15]

PROPOSED CONTRACT
FOR DELIVERY OF WATER

UNITED STATES AND PALO VERDE
IRRIGATION DISTRICT

[Approved by the Secretary February 7, 1933]

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CONTRACT FOR DELIVERY OF WATER

Article

1. Preamble.
- 2-5. Explanatory recitals.
6. Delivery of water by the United States.
7. Receipt of water by district.
8. Measurement of water.
9. Record of water diverted.
10. No charge for delivery of water.
11. Inspection by the United States.
12. Disputes or disagreements.
13. Rules and regulations.
14. Agreement subject to Colorado River compact.
15. Priority of claims of the United States.
16. Contingent upon appropriations.
17. Rights reserved under section 3737, Revised Statutes.
18. Remedies under contract not exclusive.
19. Interest in contract not transferable.
20. Member of Congress clause.

[PROPOSED] CONTRACT FOR DELIVERY OF WATER

(Approved by the Secretary, February 7, 1933)

(1) This contract, made this — day of —, nineteen hundred thirty-three, pursuant to the act of Congress approved June 17, 1902 (32 Stat., 388), and acts amendatory thereof or supplementary thereto, all of which acts are commonly known and referred to as the reclamation law, and particularly pursuant to the act of Congress approved December 21, 1928 (45 Stat., 1057), designated the Boulder Canyon project act, between the United States of America, hereinafter referred to as the United States, acting for this purpose by Ray Lyman Wilbur, Secretary of the Interior, hereinafter styled the Secretary, and Palo Verde Irrigation District, an irrigation district created, organized, and existing under and by virtue of an act of the Legislature of the State of California approved June 21, 1923 (ch. 452, Statutes of California, 1923), as amended, known as and designated "Palo Verde Irrigation District Act," with its principal office at Blythe, Riverside County, Calif., hereinafter referred to as the district.

Witnesseth:

EXPLANATORY RECITALS

(2) Whereas, for the purpose of controlling the floods, improving navigation, and regulating the flow of the Colorado River, providing for storage and for the delivery of the stored waters for reclamation of public lands and other beneficial uses exclusively within the United States, the Secretary, subject to the terms of the Colorado River compact, is authorized to construct, operate, and maintain a dam and incidental works in the main stream of the Colorado River at Black Canyon or Boulder Canyon, adequate to create a storage reservoir of a capacity of not less than twenty million acre-feet of water; and

(3) Whereas, after full consideration of the advantages of both the Black Canyon and Boulder Canyon dam sites, the Secretary has determined upon Black Canyon as the site of the aforesaid dam, hereinafter styled the Hoover Dam, creating thereby a reservoir to be hereinafter styled the Boulder Canyon Reservoir; and

(4) Whereas, the district is desirous of entering into a contract for the delivery to it of water from Boulder Canyon Reservoir; and it is to the mutual interest of the parties hereto that such contract be executed and the rights of the district in and to waters of the river be hereby defined.

(5) Now, therefore, in consideration of the mutual covenants herein contained, the parties hereto agree as follows, to wit:

DELIVERY OF WATER BY UNITED STATES

(6) The United States shall, from storage available in the Boulder Canyon Reservoir, deliver to the district each year at a point in the Colorado River immediately above the district's point of diversion known as Blythe Intake, (or as relocated within two miles of the present intake) so much water as may be necessary to supply the district a total quantity, including all other waters diverted for use

of the district from the Colorado River, in the amounts and with priorities in accordance with the recommendation of the chief of the Division of Water Resources of the State of California, as follows (subject to availability thereof for use in California under the Colorado River compact and the Boulder Canyon project act):

The waters of the Colorado River available for use within the State of California under the Colorado River compact and the Boulder Canyon project act shall be apportioned to the respective interests below named and in amounts and with priorities therein named and set forth, as follows:

SECTION 1. A first priority to Palo Verde Irrigation District for beneficial use exclusively upon lands in said district as it now exists and upon lands between said district and the Colorado River, aggregating (within and without said district) a gross area of 104,500 acres, such waters as may be required by said lands.

SEC. 2. A second priority to Yuma project of the United States Bureau of Reclamation for beneficial use upon not exceeding a gross area of 25,000 acres of land located in said project in California, such waters as may be required by said lands.

SEC. 3. A third priority (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the "Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District, for beneficial consumptive use, 3,850,000 acre-feet of water per annum less the beneficial consumptive use under the priorities designated in sections 1 and 2 above. The rights designated (a) and (b) in this section are equal in priority. The total beneficial consumptive use under priorities stated in sections 1, 2, and 3 of this article shall not exceed 3,850,000 acre-feet of water per annum.

SEC. 4. A fourth priority to the Metropolitan Water District of Southern California and/or the City of Los Angeles, for beneficial consumptive use, by themselves and/or others, on the Coastal Plain of Southern California, 550,000 acre-feet of water per annum.

SEC. 5. A fifth priority (a) to the Metropolitan Water District of Southern California and/or the City of Los Angeles, for beneficial consumptive use, by themselves and/or others, on the Coastal Plain of Southern California, 550,000 acre-feet of water per annum, and (b) to the City of San Diego and/or County of San Diego, for beneficial consumptive use, 112,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 6. A sixth priority (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the "Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District, for beneficial consumptive use, 300,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 7. A seventh priority of all remaining water available for use within California, for agricultural use in the Colorado River Basin in California, as said basin is designated on Map No. 23000 of the Department of the Interior, Bureau of Reclamation.

SEC. 8. So far as the rights of the allottees named above are concerned, the Metropolitan Water District of Southern California and/or the City of Los Angeles shall have the exclusive right to withdraw and

divert into its aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said district and/or said city (not exceeding at any one time 4,750,000 acre-feet in the aggregate) by reason of reducing diversions by said district and/or said city; provided, that accumulations shall be subject to such conditions as to accumulation, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion, and his determination thereof shall be final; provided further, that the United States of America reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between said district and/or said city and such users resulting therefrom.

SEC. 9. In addition, so far as the rights of the allottees named above are concerned, the City of San Diego and/or County of San Diego shall have the exclusive right to withdraw and divert into an aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said city and/or said county (not exceeding at any one time 250,000 acre-feet in the aggregate) by reason of reduced diversions by said city and/or said county; provided, that accumulations shall be subject to such conditions as to accumulations, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion, and his determination thereof shall be final; provided further, that the United States of America reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between the said city and/or said county and such users resulting therefrom.

SEC. 10. In no event shall the amounts allotted in this agreement to the Metropolitan Water District of Southern California and/or the City of Los Angeles be increased on account of inclusion of a supply for both said district and said city, and either or both may use said apportionments as may be agreed by and between said district and said city.

SEC. 11. In no event shall the amounts allotted in this agreement to the City of San Diego and/or to the County of San Diego be increased on account of inclusion of a supply for both said city and said county, and either or both may use said apportionments as may be agreed by and between said city and said county.

SEC. 12. The priorities hereinbefore set forth shall be in no wise affected by the relative dates of water contracts executed by the Secretary of the Interior with the various parties.

The Secretary reserves the right to, and the district agrees that he may, contract with any of the allottees above named in accordance with the above stated recommendation. The district reserves the right to establish, at any time, by judicial determination, its rights to divert and/or use water from the Colorado River. In the event the above stated recommendation as to the district is superseded by an agreement between all the above allottees or by a final judicial determination, the parties hereto reserve the right to further contract in accordance with such agreement or such judicial determination; provided, that priorities numbered fourth and fifth shall not thereby be disturbed.

As far as reasonable diligence will permit said water shall be delivered as ordered by the district, and as reasonably required for potable and irrigation purposes within the areas for which the district

is allotted water as described in the above stated recommendation. This contract is for permanent water service, but is subject to the condition that Hoover Dam and Boulder Canyon Reservoir shall be used—first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and satisfaction of perfected rights in pursuance of Article VIII of the Colorado River compact; and third, for power. This contract is made upon the express condition and with the express covenant that the district and the United States shall observe and be subject to, and controlled by said Colorado River compact in the construction, management and operation of Hoover Dam, and other works and the storage, diversion, delivery and use of water for the generation of power, irrigation, and other purposes. The United States reserves the right to temporarily discontinue or reduce the amount of water to be delivered for the purpose of investigation, inspection, maintenance, repairs, replacements or installation of equipment and/or machinery at Hoover Dam, but as far as feasible the United States will give the district reasonable notice in advance of such temporary discontinuance or reduction. The United States, its officers, agents and employees, shall not be liable for damages when, for any reason whatsoever, suspension or reductions in delivery of water occur. This contract neither prejudices nor admits any claim of the district on account of alleged changes in elevation of the river bed howsoever caused, or the effect of such alleged changes on the district's diversion of water delivered hereunder. This contract is without prejudice to any other or additional rights which the district may now have not inconsistent with the foregoing provisions of this article, or may hereafter acquire in or to the waters of the Colorado River.

RECEIPT OF WATER BY DISTRICT

(7) The district shall receive the water to be delivered to it by the United States under the terms hereof at the point of delivery above stated, and shall at its own expense convey such water to its distribution system, and shall perform all acts required by law or custom in order to maintain its control over such water and to secure and maintain its lawful and proper diversion from the Colorado River.

MEASUREMENT OF WATER

(8) The water to be delivered hereunder shall be measured at Blythe Intake by such measuring and controlling devices or such automatic gages or both, as shall be satisfactory to the Secretary. Said measuring and controlling devices, or automatic gages, shall be furnished, installed, and maintained by and at the expense of the district, but they shall be and remain at all times under the complete control of the United States, whose authorized representatives may at all times have access to them over the lands and rights of way of the district.

RECORD OF WATER DIVERTED

(9) The district shall make full and complete written reports as directed by the Secretary, on forms to be supplied by the United States, of all water diverted from the Colorado River, and the disposition thereof. The records and data from which such reports are made shall be accessible to the United States on demand of the Secretary.

NO CHARGE FOR DELIVERY OF WATER

(10) The district shall not be required to pay to the United States any tolls, rates, or charges of any kind for or on account of the storage or delivery of water hereunder.

INSPECTION BY THE UNITED STATES

(11) The Secretary or his representatives shall at all times have the right of ingress to and egress from all works of the district for the purpose of inspection, repairs, and maintenance of works of the United States, and for all other proper purposes. The Secretary or his representatives shall also have free access at all reasonable times to the books and records of the district relating to the diversion and distribution of water delivered to it hereunder with the right at any time during office hours to make copies of or from the same.

DISPUTES OR DISAGREEMENTS

(12) Disputes or disagreements as to the interpretation or performance of the provisions of this contract shall be determined either by arbitration or court proceedings, the Secretary being authorized to act for the United States in such proceedings. Whenever a controversy arises out of this contract, and the parties hereto agree to submit the matter to arbitration, the district shall name one arbitrator and the Secretary shall name one arbitrator, and the two arbitrators thus chosen shall elect three other arbitrators, but in the event of their failure to name all or any of the three arbitrators within thirty (30) days after their first meeting, such arbitrators not so elected, shall be named by the Senior Judge of the United States Circuit Court of Appeals for the Ninth Circuit. The decision of any three of such arbitrators shall be a valid and binding award of the arbitrators.

RULES AND REGULATIONS

(13) There is reserved to the Secretary the right to prescribe and enforce rules and regulations not inconsistent with this contract, governing the diversion and delivery of water hereunder to the district and to other contractors. Such rules and regulations may be modified, revised and/or extended from time to time after notice to the district and opportunity for it to be heard, as may be deemed proper, necessary, or desirable by the Secretary to carry out the true intent and meaning of the law and of this contract, or amendments thereof, or to protect the interests of the United States. The district hereby agrees that in the operation and maintenance of its diversion works at Blythe Intake, all such rules and regulations will be fully adhered to.

AGREEMENT SUBJECT TO COLORADO RIVER COMPACT

(14) This contract is made upon the express condition and with the express understanding that all rights based upon this contract shall be subject to and controlled by the Colorado River compact, being the compact or agreement signed at Santa Fe, New Mexico, November 24, 1922, pursuant to act of Congress approved August 19, 1921, entitled "An act to permit a compact or agreement between the States

of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," which compact was approved by the Boulder Canyon project act.

PRIORITY OF CLAIMS OF THE UNITED STATES

(15) Claims of the United States arising out of this contract shall have priority over all others, secured or unsecured.

CONTINGENT UPON APPROPRIATIONS

(16) This contract is subject to appropriations being made by Congress from year to year of moneys sufficient to do the work contemplated hereby, and to there being sufficient moneys available in the Colorado River Dam fund to permit allotments to be made for the performance of such work. No liability shall accrue against the United States, its officers, agents, or employees, by reason of sufficient moneys not being so appropriated nor on account of there not being sufficient moneys in the Colorado River Dam fund to permit of said allotments. This agreement is also subject to the condition that if for any reason construction of Hoover Dam is not prosecuted to completion with reasonable diligence, then and in such event either party hereto may terminate its obligations hereunder upon one (1) year's written notice to the other party hereto.

RIGHTS RESERVED UNDER SECTION 3737 REVISED STATUTES

(17) All rights of action for breach of any of the provisions of this contract are reserved to the United States as provided in section 3737 of the Revised Statutes of the United States.

REMEDIES UNDER CONTRACT NOT EXCLUSIVE

(18) Nothing contained in this contract shall be construed as in any manner abridging, limiting, or depriving the United States or the district of any means of enforcing any remedy either at law or in equity for the breach of any of the provisions hereof which it would otherwise have. The waiver of a breach of any of the provisions of this contract shall not be deemed to be a waiver of any other provision hereof or of a subsequent breach of such provision.

INTEREST IN CONTRACT NOT TRANSFERABLE

(19) No interest in this agreement is transferable, and no sublease shall be made by the district without the written consent of the Secretary, and any such attempted transfer or sublease shall cause this contract to become subject to annulment, at the option of the United States.

MEMBER OF CONGRESS CLAUSE

(20) No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom. Nothing, however, herein contained shall be construed to extend to this contract if made with a corporation for its general benefit.

In witness whereof, the parties hereto have caused this contract to be executed the day and year first above written.

THE UNITED STATES OF AMERICA,
By RAY LYMAN WILBUR,
Secretary of the Interior.

Attest:
NORTHCUTT ELY.

PALO VERDE IRRIGATION DISTRICT,
By _____,
President.

Attest:
_____,
Secretary.

Approved as to form February 7, 1933.

RAY LYMAN WILBUR,
Secretary of the Interior.

[APPENDIX 16]

BOULDER CANYON PROJECT

REGULATIONS FOR DELIVERY OF WATER IN ARIZONA

February 7, 1933

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BOULDER CANYON PROJECT

REGULATIONS: DELIVERY OF WATER IN ARIZONA

I

These regulations are promulgated to further the peaceful enjoyment by Arizona, California, and Nevada of the waters of the Colorado River. They state the form of a water-delivery contract which the United States will enter into with the State of Arizona, subject to certain conditions stated below.

II

The authorization for a contract provided in these regulations shall remain in force only for so long a period as the State of Arizona, and claimants to the use of water therein, do not interfere, by litigation or otherwise, with diversions of other holders, present and future, of water contracts with the United States and with diversion works constructed by or for them or the United States. In the event of such interference these regulations and the authorization herein contained shall thereupon become void.

III

The United States, subject to the foregoing conditions, will enter into a contract with the State of Arizona in substantially the form stated in Exhibit A, hereto annexed as a part hereof.

FEBRUARY 7, 1933.

RAY LYMAN WILBUR,
Secretary of the Interior.

EXHIBIT A

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

BOULDER CANYON PROJECT

CONTRACT FOR DELIVERY OF WATER

This contract, made this — day of —, 1933, pursuant to the act of Congress approved June 17, 1902 (32 Stat. 388), and acts amendatory thereof and supplemental thereto, all of which acts are commonly known and referred to as the Reclamation Law, and particularly pursuant to the act of Congress approved December 21, 1928 (45 Stat. 1057), designated the Boulder Canyon project act, between the United States of America, hereinafter referred to as the United States, acting for this purpose by Ray Lyman Wilbur, Secretary of the Interior, hereinafter styled the Secretary, and the State of Arizona, acting for this purpose by — — —

Witnesseth:

EXPLANATORY RECITALS

Whereas, pursuant to the direction of the said Boulder Canyon project act, the Secretary has caused to be let a contract for the con-

struction of a dam, known and referred to hereinafter as Hoover Dam, in the main stream of the Colorado River at Black Canyon and said dam will create at the date of completion a storage reservoir having a maximum water-surface elevation at about one thousand two hundred and twenty-nine (1,229) feet above sea level (U. S. Geological Survey datum) and a capacity of about 30,500,000 acre-feet, and

3. Whereas, the Secretary is required by the said Boulder Canyon project act to use said dam and the reservoir created thereby first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic use, and the satisfaction of perfected rights in pursuance of Article VIII, of the Colorado River compact, and third, for power; and

4. Whereas, said Boulder Canyon project act authorizes the Secretary, under such general regulations as he may prescribe, to contract for the storage of water in said reservoir and for delivery thereof at such points on the river as may be agreed upon, and provides further, that no person shall have or be entitled to have the use for any purpose of the water stored as aforesaid, except by contract made as therein stated; and

5. Whereas, the Secretary has heretofore promulgated regulations dated April 23, 1930, amended September 28, 1931, authorizing the execution of certain other water delivery contracts, and it is the desire of the parties to this agreement to contract for the storage of waters for use on lands in Arizona, and to assure the peaceful and uninterrupted performance of all such contracts, including this; and

6. Whereas, by direction of Congress, water has been reserved and appropriated for lands within the Colorado River Indian Reservation in Arizona, unaffected by the Colorado River compact by virtue of Article VII thereof; and

7. Whereas, the United States and the State of Arizona, contemplating the future construction of other reclamation projects and desiring to avoid claims by foreign water users to waters stored by Hoover Dam to the detriment of said projects, desire to provide for the storage of certain quantities of water for the benefit of lands in Arizona without prejudice to whatever right the parties may have hereafter to contract as to additional quantities of water; and

8. Whereas, the diversion works in the Colorado River contemplated for certain of the contractors under said regulations of April 23, 1930, amended September 28, 1931, particularly the proposed Imperial Dam, and the proposed dam for the Metropolitan Water District of Southern California near Parker, will be of service for delivery of waters covered by this contract, and it is essential to the purpose of this contract that the building of said works, when approved by the United States, shall not be interfered with;

9. Now, therefore, in consideration of the mutual covenants herein contained, the parties hereto agree as follows, to wit:

DELIVERY OF WATER BY THE UNITED STATES

10. From storage available in the reservoir created by Hoover Dam, the United States will deliver under this contract each year at points of diversion hereinafter referred to on the Colorado River so much available water as may be necessary to enable the beneficial consumptive use in Arizona of not to exceed two million, eight

hundred thousand (2,800,000) acre-feet annually by all diversions effected from the Colorado River and its tributaries below Lee Ferry (but in addition to all uses from waters of the Gila River and its tributaries), subject to the following provisions:

(a) This contract is without prejudice to the claims of the State of Arizona and States in the Upper Basin as to their respective rights in and to waters of the Colorado River, and relates only to water physically available for delivery in the Lower Basin under the terms hereof.

(b) The United States does not undertake by this contract to deliver water above Hoover Dam; but the obligation to deliver water below Hoover Dam shall be diminished to the extent that consumptive uses in Arizona effected by diversions from the Colorado River and its tributaries below Lee Ferry diminish the inflow to the reservoir.

(c) It is recognized by the parties hereto that differences of opinion may exist between the State of Arizona and other contractors as to what part of the water contracted for by each falls within Article III (a) of the Colorado River compact, what part within Article III (b) thereof, what part is surplus water under said compact, what part is unaffected by said compact, and what part is affected by various provisions of section 4 (a) of the Boulder Canyon project act. Accordingly, while the United States undertakes to supply, from the regulated discharge of Hoover Dam, waters in quantities stated by this contract as well as contracts heretofore or hereafter made pursuant to regulations of April 23, 1930, amended September 28, 1931, this contract is without prejudice to relative claims of priorities as between the State of Arizona and other contractors with the United States, and shall not otherwise impair any contract heretofore authorized by said regulations.

(d) This contract is without prejudice to the right of the United States to make further disposition of water available for use in the Lower Colorado River Basin not heretofore allocated by regulations nor herein contracted for, or to the respective claims of the States of Arizona, New Mexico, Utah, California, and Nevada, and of Mexico, to such additional water.

(e) The water provided for in this contract shall be delivered continuously, so far as reasonable diligence will permit, to the extent such water is beneficially used for irrigation and domestic purposes. The United States reserves the right to discontinue or temporarily reduce the amount of water to be delivered for the purpose of investigation, inspection, maintenance, repairs, replacement or installation of equipment and/or machinery at Hoover Dam, but so far as feasible will give reasonable notice in advance of such temporary discontinuance or reduction. The United States, its officers, agents and employees shall not be liable for damages when for any reason whatsoever suspensions or reductions in delivery of water occur.

SUBORDINATE CONTRACTS AUTHORIZED

11. Deliveries of water subject to the terms of this contract may be made for lands within any Indian Reservation in Arizona, and to any individual, irrigation district, corporation, or any political subdivision of the State of Arizona, which may qualify under the Reclamation Law or other Federal statute. Contracts with such water users

for such deliveries, subject to the terms of this contract, may be made by the Secretary in his discretion. Such contracts and deliveries made thereunder shall be deemed as made in discharge, *pro tanto*, of the obligations of this contract.

POINTS OF DIVERSION: MEASUREMENT OF WATER

12. The water to be delivered under this contract shall be measured at the points of diversion, or elsewhere as the Secretary may direct, by measuring and controlling devices or automatic gages approved by the Secretary, which, however, shall be furnished, installed, and maintained by the States of Arizona, or the users of water. Said measuring and controlling devices or automatic gages shall be subject to the inspection of the United States, whose authorized representatives may at all times have access to them, and any deficiencies or inaccuracies found shall be promptly corrected. The United States shall be under no obligation to deliver any water which may be diverted at points at which such devices are not maintained, but in the event that diversions are made at points where measuring and controlling devices or automatic gages are not maintained in accordance with this contract, the Secretary shall estimate the quantity of the diversions and his determination shall be final.

RECORDS OF WATER DELIVERIES

13. The State of Arizona shall cause to be made by water users or otherwise monthly reports on forms to be supplied by the United States of all water diverted from the Colorado River. Such reports shall be made by the fifth day of the month immediately succeeding the month in which the water is delivered.

NO CHARGES FOR DELIVERY OF WATER

14. No charge shall be made for water or for the use, storage, or delivery of water for irrigation, or water for potable purposes, in Arizona.

NO ARIZONA DIVERSIONS TO BE MADE EXCEPT PURSUANT HERETO: DIVERSIONS IN OTHER STATES

15. It is the object of this contract to assure to those (including the State of Arizona) who have contracted or may hereafter contract with the United States for delivery of waters stored by Hoover Dam, the quiet performance of their respective contracts. It is accordingly agreed that:

(a) The State of Arizona will hereafter grant no permits for, nor otherwise authorize, uses of the waters of the Colorado River and its tributaries (other than the Gila River and its tributaries), except subject to the terms of this contract.

(b) The State of Arizona and its permittees will not interfere, by litigation or otherwise, with deliveries of water under any contract between the United States and water users in the State of Nevada, or any contract made pursuant to regulations dated April 23, 1930, amended September 28, 1931, nor with the construction of diversion works by or for the holder thereof, nor with diversions or other uses affected by such works; unless and until such contractor interferes, by litigation or otherwise, with the enjoyment of this contract. But

in the event of such interference by any other such contractor with the enjoyment of this contract, the State may, at its election, either rely on this contract, or assert all rights which the State or any water user therein would have had against such party if this contract had not been made.

(c) Breach by the State of any of the provisions of this article shall entitle the United States at its option to cancel this contract and any or all subordinate contracts referred to in Article XI.

DURATION OF CONTRACT

16. This contract is for permanent service, subject to the provisions contained in the preceding article.

DISPUTES AND DISAGREEMENTS

17. Whenever a controversy arises out of this contract, and if the parties hereto then agree to submit the matter to arbitration, the State of Arizona shall name one arbitrator and the Secretary shall name one arbitrator, and the two arbitrators thus chosen shall elect three other arbitrators within fifteen (15) days after their first meeting, but in the event of their failure to name all or any of the three arbitrators within thirty (30) days after their first meeting, such arbitrators, not so elected, shall be named by the Senior Judge of the United States Circuit Court of Appeals for the Ninth Circuit. The decision of any three of the five shall be a valid and binding award.

RULES AND REGULATIONS

18. The Secretary may prescribe and enforce rules and regulations governing the delivery and diversion of water hereunder, but such rules and regulations shall be promulgated, modified, revised, and/or extended from time to time only after notice to the State of Arizona and opportunity for it to be heard.

AGREEMENT SUBJECT TO COLORADO RIVER COMPACT

19. As required by section 13 (c) of the Boulder Canyon project act, this contract is made upon the express condition and with the express understanding that all rights hereunder shall be subject to and controlled by the Colorado River compact, being the compact or agreement signed at Santa Fe, New Mexico, November 24, 1922, pursuant to act of Congress approved August 19, 1921, entitled 'An act to permit a compact, or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes,' as approved by the Boulder Canyon project act, but is without prejudice to the respective contentions of the State of Arizona and of the parties to said compact, as to interpretation thereof.

EFFECTIVE DATE OF CONTRACT

20. This contract shall take effect when an act of the legislature of Arizona ratifying it shall have become effective, but within two years of the date hereof.

INTEREST IN CONTRACT NOT TRANSFERABLE

21. No interest in or under this contract shall be transferable by either party without the written consent of the other.

MEMBER OF CONGRESS CLAUSE

22. No Member of or Delegate to Congress or Resident Commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom. Nothing, however, herein contained shall be considered to extend to this contract if made with a corporation for its general benefit.

In witness whereof, the parties hereto have caused this contract to be executed the day and year first above written.

THE UNITED STATES OF AMERICA,
By RAY LYMAN WILBUR,
Secretary of the Interior.
THE STATE OF ARIZONA,

By _____

Approved as to form, February 7, 1933:

RAY LYMAN WILBUR, *Secretary of the Interior.*

ATTEST:

The foregoing contract was ratified by act of the legislature of Arizona which became effective ———, 193—, true copy of which is hereto annexed.

_____,
Secretary of the State of Arizona.

III. LEGISLATION AND ORDERS

17. Legislation authorizing the Colorado River compact.
18. The Colorado River compact.
19. Analysis of the Colorado River compact.
20. The Boulder Canyon project act, annotated.
21. Rejected amendments to the Boulder Canyon project act.
22. The President's proclamation of June 25, 1929.
23. The appropriation acts.
24. Order to commence construction.
25. Order naming the dam Hoover Dam.
26. Cession of jurisdiction by Nevada and acceptance by United States.
27. Executive order establishing the reservoir as a bird refuge.
28. Proposed legislation for establishing Boulder Canyon National Reservation.

[APPENDIX 17]

THE STATUTES AUTHORIZING
THE COLORADO RIVER COMPACT
ACT OF AUGUST 19, 1921 (42 STAT. 171)

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THE ACT OF CONGRESS AUTHORIZING THE COLORADO RIVER COMPACT

An act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes. (Act August 19, 1921, ch. 72, 42 Stat. 171.)

[Sec. 1. Preamble—Apportionment of waters—Federal representative to be appointed—Expenses—Approval.]—Whereas the Colorado River and its several tributaries rise within and flow through or from the boundaries between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming; and

Whereas, the territory included within the drainage area of the said stream and its tributaries is largely arid and in small part irrigated, and the present and future development necessities and general welfare of each of said States and of the United States require the further use of the waters of said streams for irrigation and other beneficial purposes, and that future litigation and conflict respecting the use and distribution of said waters should be avoided and settled by compact between said States; and

Whereas, the said States, by appropriate legislation, have authorized the governors thereof to appoint commissioners to represent said States for the purpose of entering into a compact or agreement between said States respecting the future utilization and disposition of the waters of the Colorado River and of the streams tributary thereto; and

Whereas, the governors of said several States have named and appointed their respective commissioners for the purposes aforesaid, and have presented their resolution to the President of the United States requesting the appointment of a representative on behalf of the United States to participate in said negotiations and to represent the interests of the United States: Now, therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That consent of Congress is hereby given to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming to negotiate and enter into a compact or agreement not later than January 1, 1923, providing for an equitable division and apportionment among said States of the water supply of the Colorado River and of the streams tributary thereto, upon condition that a suitable person, who shall be appointed by the President of the United States, shall participate in said negotiations, as the representative of and for the protection of the interests of the United States, and shall make report to Congress of the proceedings and of any compact or agreement entered into, and the sum of \$10,000, or so much thereof as may be necessary, is hereby authorized to be appropriated to pay the salary and expenses of the representative of the United States appointed hereunder: *Provided*, That any such compact or agreement shall not be binding or obligatory upon any of the parties thereto unless and until the same shall have been approved by the legislature of each of said States and by the Congress of the United States. (42 Stat. 171.)

Sec. 2. [Right to amend reserved.]—That the right to alter, amend, or repeal this act is herewith expressly reserved. (42 Stat. 172.)

The citations to the various Statutes authorizing and ratifying the Colorado River compact are as follows:

AUTHORIZED

- ARIZONA: Act of March 5, 1921; Arizona Session Laws 1921, chapter 46, page 53.
CALIFORNIA: Act of May 12, 1921; Statutes of California, 1921, chapter 88, pages 85; 86. See also Laws of 1925, chapter 33.
COLORADO: Act of April 2, 1921; Laws of Colorado, 1921, chapter 246, pages 811-815.
NEVADA: Act of March 21, 1921; Laws of Nevada, 1920-21, chapter 115, pages 190, 191.
NEW MEXICO: Act of March 11, 1921; Laws of New Mexico, 1921, chapter 121, pages 217-220.
UTAH: Act of March 14, 1921; Laws of Utah, 1919-1921, chapter 68, page 184.
WYOMING: Act of February 22, 1921; Laws of Wyoming, 1921; chapter 120, pages 166, 167.
UNITED STATES: Act of August 19, 1921 (42 Stat. 171).

RATIFIED

- ARIZONA: ———.
CALIFORNIA: Act of January 10, 1929; Statutes of California, 1929; chapter 1, as supplemented March 4, 1929, chapter 15, 16. See Statutes of 1925, chapter 33.
COLORADO: Act of February 26, 1925; Session Laws of 1925, chapter 177.
NEVADA: Act of March 18, 1925; Statutes of 1925, chapter 96.
NEW MEXICO: Act of March 17, 1925; Laws of 1925, chapter 78.
UTAH: Laws of Utah, 1923, chapter 5; act of February 26, 1927; act of March 6, 1929, Laws of 1929, chapter 31.
WYOMING: Act of February 25, 1925; Session Laws of 1925, chapter 82.
UNITED STATES: Act of December 21, 1928. (45 Stat. 1057-1066), ratifies compact and authorizes various other agreements between States.

[APPENDIX 18]

THE COLORADO RIVER COMPACT

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COLORADO RIVER COMPACT, SIGNED AT SANTA FE,
N. MEX., NOVEMBER 24, 1922

The States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, having resolved to enter into a compact under, the act of the Congress of the United States of America approved August 19, 1921 (42 Stat. L., p. 171), and the acts of the legislatures of the said States, have through their governors appointed as their commissioners: W. S. Norviel for the State of Arizona, W. F. McClure for the State of California, Delph E. Carpenter for the State of Colorado, J. G. Scrugham for the State of Nevada, Stephen B. Davis, jr., for the State of New Mexico, R. E. Caldwell for the State of Utah, Frank C. Emerson for the State of Wyoming, who, after negotiations participated in by Herbert Hoover, appointed by the President as the representative of the United States of America, have agreed upon the following articles:

ARTICLE I. The major purposes of this compact are to provide for the equitable division and apportionment of the use of the waters of the Colorado River system; to establish the relative importance of different beneficial uses of water; to promote interstate comity; to remove causes of present and future controversies and to secure the expeditious agricultural and industrial development of the Colorado River Basin, the storage of its waters, and the protection of life and property from floods. To these ends the Colorado River Basin is divided into two basins and an apportionment of the use of part of the water of the Colorado River system is made to each of them with the provision that further equitable apportionments may be made.

ART. II. As used in this compact—

(a) The term "Colorado River system" means that portion of the Colorado River and its tributaries within the United States of America.

(b) The term "Colorado River Basin" means all of the drainage area of the Colorado River system and all other territory within the United States of America to which the waters of the Colorado River system shall be beneficially applied.

(c) The term "States of the upper division" means the States of Colorado, New Mexico, Utah, and Wyoming.

(d) The term "States of the lower division" means the States of Arizona, California, and Nevada.

(e) The term "Lee Ferry" means a point in the main stream of the Colorado River 1 mile below the mouth of the Paria River.

(f) The term "Upper Basin" means those parts of the States of Arizona, Colorado, New Mexico, Utah, and Wyoming within and from which waters naturally drain into the Colorado River system above Lee Ferry, and also all parts of said States located without the drainage area of the Colorado River system which are now or shall hereafter be beneficially served by waters diverted from the system above Lee Ferry.

(g) The term "Lower Basin" means those parts of the States of Arizona, California, Nevada, New Mexico, and Utah within and from which waters naturally drain into the Colorado River system below

Lee Ferry, and also all parts of said States located without the drainage area of the Colorado River system which are now or shall hereafter be beneficially served by waters diverted from the system below Lee Ferry.

(*h*) The term "domestic use" shall include the use of water for household, stock, municipal, mining, milling, industrial, and other like purposes, but shall exclude the generation of electrical power.

ART. III. (*a*) There is hereby apportioned from the Colorado River system in perpetuity to the upper basin and to the lower basin, respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the supply of any rights which may now exist.

(*b*) In addition to the apportionment in paragraph (*a*), the lower basin is hereby given the right to increase its beneficial consumptive use of such waters by 1,000,000 acre-feet per annum.

(*c*) If, as a matter of international comity, the United States of America shall hereafter recognize in the United States of Mexico any right to the use of any waters of the Colorado River system, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (*a*) and (*b*); and if such surplus shall prove insufficient for this purpose, then, the burden of such deficiency shall be equally borne by the upper basin and the lower basin, and whenever necessary the States of the upper division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (*d*).

(*d*) The States of the upper division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years reckoned in continuing progressive series beginning with the first day of October next succeeding the ratification of this compact.

(*e*) The States of the upper division shall not withhold water, and the States of the lower division shall not require the delivery of water, which can not reasonably be applied to domestic and agricultural uses.

(*f*) Further equitable apportionment of the beneficial uses of the waters of the Colorado River system unapportioned by paragraphs (*a*), (*b*), and (*c*) may be made in the manner provided in paragraph (*g*) at any time after October 1, 1963, if and when either basin shall have reached its total beneficial consumptive use as set out in paragraphs (*a*) and (*b*).

(*g*) In the event of a desire for a further apportionment as provided in paragraph (*f*) any two signatory States, acting through their governors, may give joint notice of such desire to the governors of the other signatory States and to the President of the United States of America, and it shall be the duty of the governors of the signatory States and of the President of the United States of America forthwith to appoint representatives, whose duty it shall be to divide and apportion equitably between the upper basin and lower basin the beneficial use of the unapportioned water of the Colorado River system as mentioned in paragraph (*f*), subject to the legislative ratification of the signatory States and the Congress of the United States of America.

ART. IV. (*a*) Inasmuch as the Colorado River has ceased to be navigable for commerce and the reservation of its waters for navigation

would seriously limit the development of its basin, the use of its waters for purposes of navigation shall be subservient to the uses of such waters for domestic, agricultural, and power purposes. If the Congress shall not consent to this paragraph, the other provisions of this compact shall nevertheless remain binding.

(b) Subject to the provisions of this compact, water of the Colorado River system may be impounded and used for the generation of electrical power, but such impounding and use shall be subservient to the use and consumption of such water for agricultural and domestic purposes and shall not interfere with or prevent use for such dominant purposes.

(c) The provisions of this article shall not apply to or interfere with the regulation and control by any State within its boundaries of the appropriation, use, and distribution of water.

ART. V. The chief official of each signatory State charged with the administration of water rights, together with the Director of the United States Reclamation Service and the Director of the United States Geological Survey, shall cooperate, *ex officio*—

(a) To promote the systematic determination and coordination of the facts as to flow, appropriation, consumption, and use of water in the Colorado River Basin, and the interchange of available information in such matters.

(b) To secure the ascertainment and publication of the annual flow of the Colorado River at Lee Ferry.

(c) To perform such other duties as may be assigned by mutual consent of the signatories from time to time.

ART. VI. Should any claim or controversy arise between any two or more of the signatory States: (a) With respect to the waters of the Colorado River system not covered by the terms of this compact; (b) over the meaning or performance of any of the terms of this compact; (c) as to the allocation of the burdens incident to the performance of any article of this compact or the delivery of waters as herein provided; (d) as to the construction or operation of works within the Colorado River Basin to be situated in two or more States, or to be constructed in one State for the benefit of another State; or (e) as to the diversion of water in one State for the benefit of another State, the governors of the States affected upon the request of one of them, shall forthwith appoint commissioners with power to consider and adjust such claim or controversy, subject to ratification by the legislatures of the States so affected.

Nothing herein contained shall prevent the adjustment of any such claim or controversy by any present method or by direct future legislative action of the interested States.

ART. VII. Nothing in this compact shall be construed as affecting the obligations of the United States of America to Indian tribes.

ART. VIII. Present perfected rights to the beneficial use of waters of the Colorado River system are unimpaired by this contract. Whenever storage capacity of 5,000,000 acre-feet shall have been provided on the main Colorado River within or for the benefit of the lower basin, then claims of such rights, if any, by appropriators or users of water in the lower basin against appropriators or users of water in the upper basin shall attach to and be satisfied from water that may be stored not in conflict with Article III.

All other rights to beneficial use of waters of the Colorado River system shall be satisfied solely from the water apportioned to that basin in which they are situate.

ART. IX. Nothing in this compact shall be construed to limit or prevent any State from instituting or maintaining any action or proceeding, legal or equitable, for the protection of any right under this compact or the enforcement of any of the provisions.

ART. X. This compact may be terminated at any time by the unanimous agreement of the signatory States. In the event of such termination, all rights established under it shall continue unimpaired.

ART. XI. This compact shall become binding and obligatory when it shall have been approved by the legislatures of each of the signatory States and by the Congress of the United States. Notice of approval by the legislatures shall be given by the governor of each signatory State to the governors of the other signatory States and to the President of the United States, and the President of the United States is requested to give notice to the governors of the signatory States of approval by the Congress of the United States.

In witness whereof the commissioners have signed this compact in a single original, which shall be deposited in the archives of the Department of State of the United States of America and of which a duly certified copy shall be forwarded to the governor of each of the signatory States.

Done at the city of Santa Fe, N. Mex., this 24th day of November, A. D. 1922.

W. S. NORVIEL.
W. F. McCLURE.
DELPH E. CARPENTER.
J. G. SCRUGHAM.
STEPHEN B. DAVIS, Jr.
R. E. CALDWELL.
FRANK C. EMERSON.

Approved:
HERBERT HOOVER.

[APPENDIX 19]

ANALYSIS OF THE COLORADO
RIVER COMPACT

[CORRESPONDENCE
BETWEEN HON. HERBERT HOOVER
AND HON. CARL HAYDEN]

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ANALYSIS OF THE COLORADO RIVER COMPACT

Extension of remarks of Hon. Carl Hayden in House of Representatives, Tuesday, January 30, 1923, Congressional Record, page 2710.

DEPARTMENT OF COMMERCE,
OFFICE OF THE SECRETARY,
Washington, January 21, 1923.

HON. CARL HAYDEN,
House of Representatives, Washington, D. C.

MY DEAR MR. HAYDEN:

Referring to your letter of January 9 addressed to the Secretary, inclosing questionnaire on the Colorado River compact, I am requested by Mr. Hoover to forward to you his answers to the questions which you propounded.

Very truly yours,

CLARENCE C. STETSON,
Executive Secretary, Colorado River Commission.

Question 1. What was the reason for dividing the drainage area of the Colorado River and its tributaries into two basins, as provided in Article II of the Colorado River compact?

The reasons were:

(a) The commission, upon analysis, found that the causes of present friction and of major future disputes lay between the lower basin States and the upper basin States, and that very little likelihood of friction lay between the States within each basin; that the delays to development at the present time are wholly interbasinal disputes; and that major development is not likely to be impeded by disputes between the States within each basin. And, in any event, the compact provides machinery for such settlements.

(b) The drainage area falls into two basins naturally, from a geographical, hydrographical, and an economic point of view. They are separated by over 500 miles of barren canyon which serves as the neck of the funnel, into which the drainage area comprised in the upper basin pours its waters, and these waters again spread over the lands of the lower basin.

(c) The climate of the two basins is different; that of the upper basin being, generally speaking, temperate, while that of the lower basin ranges from semitropical to tropical. The growing seasons, the crops, and the quantity of water consumed per acre are therefore different.

(d) The economic conditions in the two basins are entirely different. The upper basin will be slower of development than the lower basin. The upper basin will secure its waters more by diversion than by storage, whereas the development of the lower basin is practically altogether a storage problem.

(e) The major friction at the present moment is over the water rights which might be established by the erection of adequate storage in the lower basin, as prejudicing the situation in the upper basin, and regardless of legal rights in either case. The States are now divided

into two groups in opposition to each other legislatively, with little hope of the cohesion that is necessary before Federal aid can ever be secured.

The use of the group method of division was therefore adopted both from necessity, as being the only practical one, and from advisability, being dictated by the conditions existing in the entire basin.

Question 2. Was the apportionment in Article III of the compact between the upper and lower basins arbitrary or was it based on the actual requirements of each basin?

The apportionment was not arbitrary. It was based on a careful consideration of respective needs of the two basins. The data available was the estimates provided by the Reclamation Service, which follow, showing the total new and old acreage in the two basins, including not only all existing projects but all projects considered economically feasible and also those of doubtful feasibility and intended to cover every prospective development during the next 75 years. The commissioners and engineering staffs of the different States varied somewhat from the basic estimates of the Reclamation Service, and some compromise from these figures was agreed to by the commission to compensate in different directions. This was particularly the case with regard to the estimated consumption of water per acre. It will be noted that the total acreage in the lower basin, present and prospective, is given as 2,127,000, whereas that in the upper basin is given as 4,000,000. Therefore the amount of water depends partly on the consumption assumed per acre, and after general consideration an addition was made in each case to cover any possible mischances of calculation, the general addition being about 30 per cent more than the probable use.

Table of Colorado River acreage

	Acreage irrigated 1920	New acreage	Total acreage
Lower Basin—			
Arizona.....	507, 000	640, 000	1, 147, 000
California.....	450, 000	490, 000	940, 000
Nevada.....	5, 000	35, 000	40, 000
Total.....	962, 000	1, 165, 000	2, 127, 000
Upper Basin—			
Colorado.....	740, 000	1, 018, 000	1, 758, 000
New Mexico.....	34, 000	483, 000	517, 000
Utah.....	359, 000	456, 000	815, 000
Wyoming.....	367, 000	543, 000	910, 000
Total.....	1, 500, 000	2, 500, 000	4, 000, 000

Question 3. Why was 40 years fixed as the time for a future apportionment of the surplus water of the Colorado River?

There was a decided conflict between the States over the period to be fixed in this paragraph, based chiefly on their ideas as to rapidity of development and actual use of the water. Some desired a shorter and some a longer time. Suggestions were made varying from 20 to 60 years. The 40-year period was finally arrived at as a common

point of agreement. Judging by experience under other projects—the Imperial Valley and Salt River Valley, for instance—the full development of contemplated construction, as shown in the table following question 2, will take a much longer time than the one fixed.

Question 4. Why was the term "Colorado River system" used in paragraph (a) of Article III, wherein 7,500,000 acre-feet of water is apportioned to the upper and lower basins, respectively?

This term is defined in Article II as covering the entire river and its tributaries in the United States. No other term could be used, as the duty of the commission was to divide all the water of the river. It serves to make it clear that this was what the commission intended to do and prevents any State from contending that, since a certain tributary rises and empties within its boundaries and is therefore not an interstate stream, it may use its waters without reference to the terms of the compact. The plan covers all the waters of the river and all its tributaries, and the term referred to leaves that situation beyond doubt.

Question 5. Why is the basis of division changed from the "Colorado River system" to the "river at Lee Ferry" in paragraph (d) of Article III, the period of time extended to 10 years, and the number of acre-feet multiplied by 10?

(a) I do not think there is any change in the basis of division as the result of the difference in language in Articles III (a) and III (b). The two mean the same. By reference to Article II (f) it will be seen that Lee Ferry, referred to in III (d), is the determining point in the creation of the two basins specified in III (a). The use of this term makes it plain that the 75,000,000 acre-feet are to be delivered in the main channel of the river above the various tributaries which contribute water below.

(b) The agreement as to the flow of 75,000,000 acre-feet at Lee Ferry during each 10-year period fixes a definite quantity of water which must pass that point. Under III (a) each basin is entitled to the use of 7,500,000 acre-feet annually. Judging by past records, there will always be sufficient flow in the river to supply these quantities, but in the improbable event of a deficiency the lower basin has the first call on the water up to a total use of 75,000,000 acre-feet each 10 years. While there was in the commission a firm belief that no such shortage will ever occur, still this provision was adopted as a matter of caution. The period of 10 years was fixed as a basis of measurement, as being long enough to allow equalization between years of high and low flow and as representing a basis fair to both divisions.

Question 6. Are the 1,000,000 additional acre-feet of water apportioned to the lower basin in paragraph (b) of Article III supposed to be obtained from the Colorado River or solely from the tributaries of that stream within the State of Arizona?

The use of the words "such waters" in this paragraph clearly refers to waters from the Colorado River system, and the extra 1,000,000 acre-feet provided for can therefore be taken from the main river or from any of its tributaries.

Question 7. If more than 1,000,000 acre-feet of water are beneficially used and consumed annually on the tributaries of the Colorado River in

Arizona, will the excess above that amount be charged against the 75,000,000 acre-feet of water to be delivered at Lee Ferry during any 10-year period, as provided in paragraph (d) of Article III? In other words, will the use of any amount of water from the tributaries of the Colorado below Lee Ferry in any way relieve the States of the upper division from their obligation not to cause the flow of the river to be depleted below 75,000,000 acre-feet in any period of 10 consecutive years?

I can see no connection between the use of waters in Arizona from Colorado River tributaries and the obligation of the upper States to deliver the 75,000,000 acre-feet each 10 years at Lee Ferry. Their undertaking in this respect is separate and independent and without reference to place of use or quantity of water obtained from any other source. On the face of this paragraph this amount of water must be delivered even though not used at all. The obligation certainly can not be diminished by the fact that Arizona obtains other water from another source. The contract is to deliver a definite amount of water at a definite point above the inflow of various important tributaries, and I find nothing in the compact which modifies this obligation, except the general limitation as to use, which is hereafter referred to.

Question 8. As a matter of fact more than 1,000,000 acre-feet of water from the tributaries of the Colorado below Lee Ferry are now being beneficially used and consumed within the State of Arizona. Will the excess above that amount be accounted for as a part of the 7,500,000 acre-feet first apportioned to the lower basin from the waters of the "Colorado River system" as provided in paragraph (a) of Article III?

By the provisions of paragraphs (a) and (b), Article III, the lower basin is entitled to the use of a total of 8,500,000 acre-feet per annum from the entire Colorado River system, the main river and its tributaries. All use of water in that basin, including the waters of tributaries entering the river below Lee Ferry, must be included within this quantity. The relation is reciprocal. Water used from these tributaries falls within the 8,500,000 acre-feet quota. Water obtained from them does not come within the 75,000,000 acre-feet 10-year period flow delivered at Lee Ferry, but remains available for use over and above that amount.

Question 9. Does paragraph (c) of Article III contemplate a treaty between the United States and the Republic of Mexico under which one-half of a deficiency of water for the irrigation of lands in Mexico shall be supplied from reservoirs in Arizona?

No. Paragraph (c) of Article III does not contemplate any treaty. It recognizes the possibility that a treaty may, at some time, be made and that under it Mexico may become entitled to the use of some water, and divides the burden in such an event, but the quantity to which that country may become entitled and the manner, terms, and conditions upon which such use may depend, can not be foreseen.

It is a certainty that no such treaty will be negotiated and ratified which is unfair to the United States or any State or detrimental to their interests. To discuss whether or not a treaty might be made under which Mexico might be permitted to receive water impounded in a reservoir which may be constructed is to indulge in speculation, but it is safe to say that if such a situation should result it will be only under conditions fair and satisfactory to all parties concerned.

Question 10. What is the estimated quantity of water which constitutes the undivided surplus of the annual flow of the Colorado River, and may the compact be construed to mean that no part of this surplus can be beneficially used or consumed in either the upper or the lower basins until 1963, so that the entire quantity above the apportionment must flow into Mexico, where it may be used for irrigation and thus create a prior right to water which the United States would be bound to recognize at the end of the 40-year period?

(a) The unapportioned surplus is estimated at from 4,000,000 to 6,000,000 acre-feet, but may be taken as approximately 5,000,000 acre-feet.

(b) The right to the use of unapportioned or surplus water is not covered by the compact. The question can not arise until all the waters apportioned are appropriated and used, and this will not be until after the lapse of a long period of time, perhaps 75 years. Assuming that each basin should reach the limit of its allotment and there should still be water unapportioned, in my opinion such water could be taken and used in either basin under the ordinary rules governing appropriations, and such appropriations would doubtless receive formal recognition by the commission at the end of the 40-year period. There is certainly nothing in the compact which requires any water whatever to run unused to Mexico, or which recognizes any Mexican rights, the only reference to that situation being the expression of the realization that some such rights may perhaps in the future be established by treaty. As I understand the matter, the United States is not "bound to recognize" any such rights of a foreign country unless based upon treaty stipulations.

Question 11. Is there any possibility that water stored by dams in the tributaries of the Colorado River in Arizona, such as the Roosevelt Reservoir, on the Salt River, or the San Carlos Reservoir, on the Gila, might under the terms of such a treaty, be released for use in Mexico to the injury of the water users of the projects for whose benefit such dams were constructed?

I can not conceive of the making or the ratification of a treaty which would have such an effect. If it were possible to believe that the Federal Government would treat its own citizens with such absolute disregard of their property and rights, I presume that they would receive ample protection, even as against the Government, under the provisions of the Federal Constitution.

It must be remembered that the United States now has a large financial interest in the projects already constructed. It is not to be presumed that action will be taken detrimental to these interests. Furthermore, each of the seven States directly concerned has two Members of the Senate, by which any treaty proposed must be ratified.

Question 12. Is it true, as has been asserted, that, if the Colorado River compact be approved, the water which should reclaim 2,500,000 acres of land in Arizona will go to Mexico and there irrigate a vast area owned by American speculators who will cultivate the same with Asiatic coolie labor and raise cheap crops in competition with Arizona and California farmers?

If such assertions have been made, there is absolutely nothing in the compact upon which they can be based. They are the result solely of unrestrained and unfounded imagination. As already stated, there

is no reference in the compact to any rights of any persons in Mexico; none are created and none are recognized. That entire question, if it ever arises, must be dealt with by the Federal Government in the exercise of its treaty-making power. Such a subject was beyond the purview of the acts creating the commission, and it was intentionally omitted from the compact.

Question 13. Objection has been made to paragraph (d) of Article III in that it authorizes the withholding of an indefinite amount of water by the States of the upper division during a drought which might extend over two or three years. If the drought should be broken by heavy rains the ensuing floods would provide the total of 75,000,000 acre-feet within the 10 years, but water would be denied to the lower basin when worst needed and oversupplied when not needed. In your opinion, does this provision of the compact seriously menace the proper and maximum development of irrigation projects in the lower basin?

In my opinion, the provision about which you ask does not menace the proper and maximum development of irrigation projects in the lower basin.

The future development of the Colorado River Basin is dependent wholly upon the creation of storage. The lower States have certainly reached the limit of development by the direct diversion of the flow of the river. Reservoirs are imperative. They must be of sufficient size not merely to equalize the annual flow, but to impound the excessive floods of one year to supply a deficiency resulting from a following lean year. Such construction will obviate, to a great extent, the likelihood of the situation you suggest. Furthermore, there can not be a drought or lack of water in the lower States without a similar condition in the upper. A shortage of water below can only be caused by lack of rainfall above. It is inconceivable that any upper State would attempt to store and withhold water it did not need. Such action would not be permitted under the ordinary rules of law and is prohibited by the compact itself. If the water is used in the upper States, the return flow, ultimately large in quantity, necessarily runs down the stream. The large reservoir sites capable of impounding the flow for more than one year are in the lower, not the upper, basin, and it would be a physical impossibility for the upper States to withhold all the flow of the river for any long period, even if they desired to do so. For these reasons, I answer this question in the negative.

Question 14. Can paragraph (d) of Article III be construed to mean that the States of the upper division may withhold all except 75,000,000 acre-feet of water within any period of 10 years and thus not only secure the amount to which they are entitled under the apportionment made in paragraph (a) but also the entire unapportioned surplus waters of the Colorado River?

No. Paragraph (a) of Article III apportions to the upper basin 7,500,000 acre-feet per annum. Paragraph (e) of Article III provides that the States of the upper division shall not withhold water that can not be beneficially used. Paragraphs (f) and (g) of this article specifically leave to further apportionment water now unapportioned. There is, therefore, no possibility of construing paragraph (d) of this article as suggested.

Question 15. Does paragraph (d) of Article III in any way modify the obligation of the States of the upper division, as expressed in paragraph (c), to permit the surplus and unapportioned waters to flow down in satisfaction of any right to water which may hereafter be accorded by treaty to Mexico? Within any year of a 10-year period, could the States of the upper division shift to the States of the lower division the entire burden of supplying such water to Mexico?

(a) No. It is provided in the compact that the upper States shall add their share of any Mexican burden to the delivery to be made at Lee Ferry, whenever any Mexican rights shall be established by treaty. By paragraph (c) of Article III, such an amount of water is to be delivered in addition to the 75,000,000 acre-feet otherwise provided for.

(b) In the face of the specific provision of Article III (c) that the burden of any deficiency must be "equally borne," I can see no possibility of placing upon the lower division the entire burden. If the surplus is sufficient, there is no burden on anyone. If it is insufficient the plain language is that it must be equally shared, with the equally plain provision that the upper division must furnish its half.

Question 16. Why is it that provision is made in paragraph (f) of Article III for a further apportionment, after 40 years, of the waters of the Colorado River system unapportioned by paragraphs (a), (b) and (c), but that no provision is made for a revision of the terms relating to the flow of the Colorado River at Lee Ferry, as set forth in paragraph (d)?

No such special provision was necessary. All that the present commission has done has been by virtue of its power "to divide and apportion equitably" the waters of the river. By specifying in this compact the powers of the second commission in identical language the same powers are necessarily granted, and that commission may do whatever this one could, subject only to noninterference with individual rights which may have become vested under this agreement. It was therefore not considered necessary to specify powers in detail, since the grant of the general power includes the particular.

In this connection it must be remembered that the further compact at the end of 40 years can be entered into only by unanimous agreement of the States. Given such unanimity, anything desired may be done and any existing provisions modified or annulled.

Question 17. In your opinion, will the States of the upper division or the States of the lower division benefit most by the terms of paragraph (e) of Article III when the same are in actual operation?

This paragraph applies only to an unreasonable or arbitrary withholding or demand. I do not anticipate either arbitrary action or unreasonableness on the part of any of the States concerned. The upper States can gain nothing by withholding water not needed, nor can the lower States gain by demanding water for which they have no use. The paragraph is of value as an expression of the prohibition of such action, but I doubt if it is ever called into practical effect.

Question 18. Why is the use of the waters of the Colorado River for navigation made subservient to domestic, agricultural, and power uses, as provided in paragraph (a) of Article IV?

This article is an expression of the views of the commission as to the relative importance of the uses to which the waters of the river may

be devoted. It is recognized that on many streams navigation is a paramount use, but on this particular river navigation is negligible in fact. As expressed in the language adopted, the river "has ceased to be navigable for commerce." This is a true statement of the existing situation. Below Yuma there is but little water in the river bed. The Laguna Dam, above Yuma, has made navigation between points above and below it physically impossible, and the construction of further dams in the development of the river will prevent navigation at other points, even if it were now physically possible. Power structures, irrigation dams, and navigation can not conveniently exist together. It was therefore felt that the very great possible use of this water for power and irrigation far outweighed in economic importance the very slight and largely theoretical use which might be made for navigation, and this paragraph was drafted accordingly.

Question 19. Why is the impounding of water for power purposes made subservient to its use and consumption for agricultural and domestic purposes, as provided in paragraph (b) of Article IV?

(a) Because such subordination conforms to established law, either by constitution or statute, in most of the semiarid States. This provision frees the farmer from the danger of damage suits by power companies in the event of conflict between them.

(b) Because the cultivation of land naturally outranks in importance the generation of power, since it is the most important of human activities, the foundation upon which all other industries finally rest.

(c) Because there was a general agreement by all parties appearing before the commission, including those representing power interests, that such preference was proper.

Question 20. Will this subordination of the development of hydro-electric power to domestic and agricultural uses, combined with the apportionment of 7,500,000 acre-feet of water to the upper basin, utterly destroy an asset of the State of Arizona consisting of 3,000,000 horsepower, which it is said could otherwise be developed within that State if the Colorado River continues to flow, undiminished in volume, across its northern boundary line and through the Grand Canyon?

(a) The subordination of power to agriculture will only diminish power in the case that it is necessary to stop the entire flow of the river at some lower dam at some particular season of the year in order to create reserves for the agricultural community. The normal engineering development of the river will proceed by various dams, of which the dam lowest down would be the only one where there would be the remotest probability of a complete stoppage of water flow. Indeed, this could not happen for at least a hundred years, as it would contemplate a development of acreage in the lower basin far beyond anything now dreamed of.

(b) The adequate development of power can only be obtained through the erection of storage and through the irrigation of the upper basin. Storage dams can be erected both in the lower and upper canyon in such a fashion as to secure an average flow of the water throughout the entire year, and thus the maximum power developed. The irrigation of the Upper Basin, as explained above, acts itself as a reservoir regulating the flow of the river, increasing the minimum flow, and thus increasing the average power.

(c) Obviously, the use of the water for irrigation in the upper basin must in some degree diminish the volume of power in the lower basin, even though the lower river were entirely regulated to secure an even flow of the water. But it can not be pretended that the upper basin is to be denied the right to the use of the water for agricultural purposes because of power demands in the lower basin. Such a pretension would not be supported in any of the courts, and if set up in the lower basin would mean that the basin will not be developed so long as the upper States can exert any legislative influence whatever. As a matter of fact, the power possibilities of the river are in no way diminished by the compact, unless it is to be assumed that there is not to be an equitable division of water.

(d) The compact provides that no water is to be withheld above that can not be used for purposes of agriculture. The lower basin will therefore receive the entire flow of the river, less only the amount consumptively used in the upper States for agricultural purposes.

(e) The contention that the Colorado River is to continue to flow undiminished in volume across the northern boundary line of Arizona is a contention that the upper States shall have no rights to irrigation. It is a direct negation of both equity and human rights.

Question 21. Paragraph (c) of Article IV states that that article shall not interfere with the control by any State over the appropriation, use, and distribution of water within its own boundaries. Does this imply that the remainder of the compact may interfere with such intrastate control?

This article seems the only one of the compact which might affect the relations of citizens of one State with each other, and it was therefore considered advisable to add the clause to which your question refers. I do not believe, however, that its insertion in this article would, by implication or otherwise, preclude the complete control by each State of its own internal affairs.

Question 22. Does the Colorado River compact apportion any water to the State of Arizona?

No, nor to any other State individually. The apportionment is to the groups.

Question 23. In case of disagreements between the States of Arizona California, or Nevada as to a division among them of the waters of the Colorado River system apportioned by the compact to the lower basin, what procedure will be followed and what rules will govern the settlement of such differences?

This situation would be covered by Article VI. If its provisions are not sufficient or not satisfactory, then the dispute would be settled in the same way as other interstate conflicts now are, either by negotiation or agreement or by litigation.

Question 24. What was the necessity for Article VII relating to the obligations of the United States to Indian tribes?

This article was perhaps unnecessary. It is merely a declaration that the States, in entering into the agreement, disclaim any intention of affecting the performance of any obligations owing by the United States to Indians. It is presumed that the States have no power to disturb these relations, and it was thought wise to declare that no such result was intended.

Question 25. Article VIII is somewhat confusing to me and I would like to have your interpretation of its meaning. Why is the term "storage capacity" used? Does the capacity of a reservoir to hold water necessarily mean that it will be filled? If this "storage capacity" is destroyed by the reservoir filling with silt, are all rights to the use of water in the lower basin likewise destroyed? Why was so small a figure as 5,000,000 acre-feet agreed upon as the measure of this "capacity"?

(a) The first sentence of this paragraph is a recognition of the validity of present perfected rights to the use of waters and is inserted to obviate any fears on the part of present users that their rights might be impaired by the compact.

(b) The second sentence covers the situation now existing on the lower river. It is claimed that the entire low-water flow of the river has now been appropriated by users in California and Arizona, that rights to its continued and unimpaired flow have vested, and that any interference with these rights by attempted appropriation in the upper States could be prevented by appropriate legal proceedings. If such rights do exist, under the provisions of this paragraph they continue unimpaired until the use of water by direct diversion is substituted by its use through storage, at which time the enforcement of any rights to low-water flow for direct diversion obviously becomes unnecessary. When adequate storage has been provided, disputes over low-water flow necessarily cease. Five million acre-feet of storage is ample to provide water for all existing appropriations in the lower basin, and since it was intended only to meet the situation there, it was agreed to. It is in no sense a limitation upon the size of the works to be built nor even an expression of opinion of the capacity to be adopted.

There can be no reasonable doubt in the mind of anyone as to the supply of water for a reservoir of this capacity. Given the capacity, the filling of the reservoir will result as a matter of course and physical necessity.

The rights to the use of water in the lower basin are in no way dependent upon the construction of this or any other storage. The clause in question affects only rights to the direct diversion of low-water flow. The apportionment of water between the basins and the guaranty of quantity by the upper States have no relation to this situation, and whether storage is or is not provided, whether or not reservoirs fill with silt, the apportionment and mutual obligations as to division of water remain unaffected and unimpaired.

Question 26. All of these questions have been asked primarily with a view to obtaining first-hand information for the benefit of the legislature of the State of Arizona, which now has the Colorado River compact under consideration. Any further observations that you may care to make will, therefore, be appreciated.

It seems to me a primary fact that the legislative action necessary for appropriations from Congress can not be secured nor construction work established at any point unless an equitable division of the waters of the Colorado River is first accomplished. There are only two methods of doing this; one is by compact and the other is by litigation. If this compact is not ratified it is necessary to start the process all over again, and I can see little hope of any more constructive basis of handling the problem than this compact already embraces.

The minor objections to the compact are generally based on exploitation of theoretical figures, without a full appreciation of the physical facts that govern the flow of the Colorado River. I have found that careful consideration of these physical surroundings of the river dissipate fear whenever they are carefully inquired into.

It is to be remembered also that until the dams are constructed the present flood menace will continue to threaten the Yuma project, the Imperial Valley, and other Arizona and California territory adjacent to the river on its lower reaches.

[APPENDIX 20]

THE BOULDER CANYON PROJECT ACT

THE ACT OF DECEMBER 21, 1928 (45 STAT. 1057)

WITH ANNOTATIONS SHOWING AMENDMENTS

(Prepared by California Colorado River Commission;
the figures in the notes refer to the Congressional
Record ("CR"), 70th Congress, first ("CR1") and
second ("CR2") sessions, and page number)

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BOULDER CANYON PROJECT ACT

[PUBLIC—No. 642—70TH CONGRESS]

[H. R. 5773]

An act to provide for the construction of works for the protection and development of the Colorado River Basin, for the approval of the Colorado River compact, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of controlling the floods, improving navigation and regulating the flow of the Colorado River,¹ providing for storage and for the delivery of the stored² waters thereof for reclamation of public lands and other beneficial uses exclusively² within the United States, and for the generation of electrical energy as a means of making the project herein authorized a self-supporting and financially solvent undertaking, the Secretary of the Interior, subject to the terms of the Colorado River compact hereinafter mentioned, is hereby authorized to construct, operate, and maintain a dam and incidental works in the main stream of the Colorado River at Black Canyon or Boulder Canyon adequate to create a storage reservoir of a capacity of not less than twenty million acre-feet of water and a main canal and appurtenant structures located entirely within the United States connecting the Laguna Dam,³ or other suitable diversion dam, which the Secretary of the Interior is hereby authorized to construct if deemed necessary or advisable by him upon engineering or economic considerations, with the Imperial and Coachella Valleys in California,⁴ the expenditures

¹ (Senator King CR2-548.) Before Colorado strike out "lower."

² "Stored," "exclusively," inserted in Senate Committee.

³ (Senator Johnson, CR2-623.) After Laguna Dam insert "or other suitable diversion dam, which the Secretary of the Interior is hereby authorized to construct if deemed necessary or advisable by him upon engineering or economic considerations."

⁴ The following was inserted on the floor of the House: (Congressman Johnson, CR1-10012.) "*Provided*, That the laws of any State in which any part of the construction work herein authorized is performed, in respect of the employment of laborers and mechanics on State, county, or municipal works, shall apply to the employment of laborers and mechanics upon any part of the construction work herein authorized:" (Remainder of this paragraph was in bill as passed by House): "*Provided further*, That all contracts for the delivery of water for irrigation purposes provided for in sec. 5 shall provide that all irrigable land held in private ownership by any one owner in excess of one hundred and sixty acres shall be appraised in a manner to be prescribed by the Secretary of the Interior, and the sale prices thereof fixed by the said Secretary on the basis of its actual bona fide value at the date of appraisal without reference to the proposed construction of the irrigation works provided for by this act; and that no such excess lands so held shall receive water from said canal if the owners thereof shall refuse to execute valid recordable contracts for the sale of such lands under terms and conditions satisfactory to the Secretary of the Interior and at prices not to exceed those fixed by the Secretary of the Interior; also to construct, and equip, operate, and maintain at or near said dam, and within a State which had approved the Colorado River compact hereinafter mentioned, a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from said reservoir; and to acquire by proceedings in eminent domain, or otherwise, all lands, rights of way, and other property necessary for said purposes:" (Congressman Swing, CR1-10015.) "*Provided further*, That the Sec-

for said main canal and appurtenant structures to be reimbursable, as provided in the reclamation law,⁵ and shall not be paid out of revenues derived from the sale or disposal of water power or electric energy at the dam authorized to be constructed at said Black Canyon or Boulder Canyon, or for water for potable purposes outside of the Imperial and Coachella Valleys: *Provided, however,* That no charge shall be made for water or for the use, storage, or delivery of water for irrigation or water for potable purposes⁶ in the Imperial or Coachella Valleys; also to construct and equip, operate, and maintain at or near said dam,⁷ or cause to be constructed, a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from said reservoir; and to acquire by proceedings in eminent domain, or otherwise, all lands, rights of way, and other property necessary for said purposes.

SEC. 2. (a) There is hereby established a special fund, to be known as the "Colorado River Dam fund" (hereinafter referred to as the "fund"), and to be available, as hereafter provided, only for carrying out the provisions of this act. All revenues received in carrying out the provisions of this act shall be paid into and expenditures shall be made out of the fund, under the direction of the Secretary of the Interior.

(b) The Secretary of the Treasury is authorized to advance to the fund, from time to time and within the appropriations therefor, such amounts as the Secretary of the Interior deems necessary for carrying out the provisions of this act, except that the aggregate amount of such advances shall not exceed the sum of \$165,000,000.⁸ Of this amount the sum of \$25,000,000 shall be allocated to flood control and shall be repaid to the United States out of 62½ per centum of revenues, if any, in excess of the amount necessary to meet periodical payments

retary of the Interior is hereby authorized and directed to appoint a board of five eminent engineers and geologists, at least one of whom shall be an engineer officer of the Army on the active or retired list, to examine the proposed site of the dam and review the plans and estimates made therefor before beginning construction, and to advise him from time to time as he may require as to matters affecting the safety, feasibility, and adequacy of the proposed structure and incidental works, the compensation of said board to be fixed by him for each, respectively, but not to exceed \$50 per day and necessary traveling expenses, including a per diem of not to exceed \$6, in lieu of subsistence, for each member of the board so employed for the time employed and actually engaged upon such work:" (Congressman Cramton, CR1-10016.) "And *provided further,* That the work of construction shall not be commenced until plans therefor are approved by said special board of engineers." (Congressman Moore, CR1-10018.) "No authority hereby conferred on the Secretary of the Interior shall be exercised without the President's sanction and approval." All of the above was automatically eliminated from the bill by action of the Senate by substitution of Senate bill as an amendment (Senator Johnson, CR2-68.)

⁵ (Senator Pittman, CR2-599.) After "law" insert, "and shall not be paid out of revenues derived from the sale or disposal of water power or electric energy at the dam authorized to be constructed at said Black Canyon or Boulder Canyon, or for water for potable purposes outside of the Imperial and Coachella Valleys."

⁶ (Senator Pittman, CR2-600.) After "purposes" insert "in the Imperial or Coachella Valleys."

⁷ (Senator Pittman, CR2-543.) After "dam" insert "or cause to be constructed."

⁸ (Senator Phipps, CR2-413.) Strike out "\$125,000,000" and insert "\$165,000,000. Of this amount the sum of \$25,000,000 shall be allocated to flood control and shall be repaid to the United States out of 62½ per centum of revenues, if any, in excess of the amount necessary to meet periodical payments during the period of amortization, as provided in section 4 of this act."

during the period of amortization, as provided in section 4 of this act. If said sum of \$25,000,000⁹ is not repaid in full during the period of amortization, then 62½ per centum of all net revenues shall be applied to payment of the remainder. Interest at the rate of 4 per centum per annum accruing during the year upon the amounts so advanced and remaining unpaid shall be paid annually out of the fund, except as herein otherwise provided.

(c) Moneys in the fund advanced under subdivision (b) shall be available only for expenditures for construction and the payment of interest, during construction, upon the amounts so advanced. No expenditures out of the fund shall be made for operation and maintenance except from appropriations therefor.

(d) The Secretary of the Treasury shall charge the fund as of June 30 in each year with such amount as may be necessary for the payment of interest on advances made under subdivision (b) at the rate of 4 per centum per annum accrued during the year upon the amounts so advanced and remaining unpaid, except that if the fund is insufficient to meet the payment of interest the Secretary of the Treasury may, in his discretion, defer any part of such payment, and the amount so deferred shall bear interest at the rate of 4 per centum per annum until paid.

(e) The Secretary of the Interior shall certify to the Secretary of the Treasury, at the close of each fiscal year, the amount of money in the fund in excess of the amount necessary for construction, operation, and maintenance, and payment of interest. Upon receipt of each such certificate the Secretary of the Treasury is authorized and directed to charge the fund with the amount so certified as repayment of the advances made under subdivision (b), which amount shall be covered into the Treasury to the credit of miscellaneous receipts.

SEC. 3. There is hereby authorized to be appropriated from time to time, out of any money in the Treasury not otherwise appropriated, such sums of money as may be necessary to carry out the purposes of this act, not exceeding in the aggregate \$165,000,000.

SEC. 4 (a) This act¹⁰ shall not take effect and no authority shall

⁹ (Senator Phipps, CR2-472.) After "Act" insert "If said sum of \$25,000,000 is not repaid in full during the period of amortization, then 62½ per centum of all net revenues shall be applied to payment of the remainder."

¹⁰ (Sec. 4.) (a) The bill originally passed by the House provided that the act should not become effective "until the States of California, Colorado, Nevada, New Mexico, Utah, and Wyoming shall have approved the Colorado River compact . . . and shall have consented to a waiver of the provisions of the first paragraph of Article XI of said compact, which makes the same binding and obligatory only when approved by each of the seven States . . . and until the President by public proclamation shall have so declared." The Senate bill made the same provision excepting it provided the act should not become effective "until the State of California and at least five of the States of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming shall have approved the Colorado River compact . . . , and shall have consented to a waiver of the provisions of the first paragraph of Article XI of said compact." Senator Hayden (CR2-157) proposed the following substitution: "Sec. 4. (a) This act shall not take effect and no authority shall be exercised hereunder, unless and until the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming shall have ratified the Colorado River compact mentioned in section 12 hereof, and the President, by public proclamation, shall have so declared: *Provided*, That the ratification act of the State of California shall contain a provision agreeing that the aggregate annual consumptive use by that State of waters of the Colorado River shall never exceed 4,200,000 acre-feet of the water apportioned to the lower basin by paragraph (a) of Article III of said compact, and

be exercised hereunder and no work shall be begun and no moneys expended on or in connection with the works or structures provided for in this act, and no water rights shall be claimed or initiated hereunder, and no steps shall be taken by the United States or by others to initiate or perfect any claims to the use of water pertinent to such works or structures unless and until (1) the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming shall have ratified the Colorado River compact, mentioned in section 13 hereof, and the President by public proclamation shall have so declared, or (2) if said States fail to ratify the said compact within six months from the date of the passage of this act then, until six of said States, including the State of California, shall ratify said compact and

that the aggregate beneficial consumptive use by that State of waters of the Colorado River shall never exceed 500,000 acre-feet of the water apportioned by the compact to the lower basin by paragraph (b) of said Article III; and that the use by California of the excess or surplus waters unapportioned by the Colorado River compact shall never exceed annually one-half of such excess surplus waters; and that the limitations so accepted by California shall be irrevocable and unconditional, unless modified by the agreement described in the following paragraph, nor shall said limitations apply to water diverted by or for the benefit of the Yuma reclamation project for domestic, agricultural, or power purposes except to the portion thereof consumptively used in California for domestic and agricultural purposes.

"The said ratifying act shall further provide that if by tri-State agreement hereafter entered into by the States of California, Nevada, and Arizona the foregoing limitations are accepted and approved as fixing the apportionment of water to California, then California shall and will therein agree (1) that of the 7,500,000 acre-feet annually apportioned to the lower basin by paragraph (a) of Article III of the Colorado River compact, there shall be apportioned to the State of Nevada, 300,000 acre-feet and to the State of Arizona 3,000,000 acre-feet for exclusive beneficial consumptive use in perpetuity, and (2) of the 1,000,000 acre-feet in addition to which the lower basin has the right to use annually by paragraph (b) of said article, there shall be apportioned to the State of Arizona 500,000 acre-feet for beneficial consumptive use, and (3) that the State of Arizona may annually use one-half of the excess or surplus waters unapportioned by the Colorado River compact, and (4) that the State of Arizona shall have the exclusive beneficial consumptive use of the Gila River and its tributaries within the boundaries of said State, and (5) that the waters of the Gila River and its tributaries shall never be subject to any diminution whatever by any allowance of water which may be made by treaty or otherwise to the United States of Mexico, but if, as provided in paragraph (c) of Article III of the Colorado River compact, it shall become necessary to supply water to the United States of Mexico from waters apportioned by said compact, then the State of California shall and will mutually agree with the State of Arizona to supply one-half of any deficiency which must be supplied to Mexico by the lower basin, and (6) that the State of California shall and will further mutually agree with the States of Arizona and Nevada that none of said three States shall withhold water and none shall require the delivery of water which can not reasonably be applied to domestic and agricultural uses, and (7) that all of the provisions of said tri-State agreement shall be subject in all particulars to the provisions of the Colorado River compact." Senator Hayden later withdrew this amendment CR2-396 to permit the introduction of a substitute amendment CR2-396 by Senator Phipps which was the same as section 4 (a) in the adopted bill with the exception that the limitation on California water was placed at 4,600,000 acre-feet. Senator Hayden offered an amendment to change this amount to 4,200,000 acre-feet CR2-396, which was rejected. Senator Bratton then offered an amendment CR2-398 to make the amount read "4,400,000 acre-feet." This was agreed to, CR2-401. Senator Hayden then offered another amendment to strike out the clause authorizing a six-State compact, which amendment was rejected, CR2-408. The Phipps amendment as originally proposed placed the time limit for entering into the six-State compact as one year. In adopting the Bratton amendment six months was substituted for the one year limit, although no reference was made to this change in the discussion of the amendment on the floor of the Senate. Seemingly the only change considered was the change in the amount of water.

shall consent to waive the provisions of the first paragraph of Article XI of said compact, which makes the same binding and obligatory only when approved by each of the seven States signatory thereto, and shall have approved said compact without conditions, save that of such six-State approval, and the President by public proclamation shall have so declared, and, further, until the State of California, by act of its legislature, shall agree irrevocably and unconditionally with the United States and for the benefit of the States of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, as an express covenant and in consideration of the passage of this act, that the aggregate annual consumptive use (diversions less returns to the river) of water of and from the Colorado River for use in the State of California, including all uses under contracts made under the provisions of this act and all water necessary for the supply of any rights which may now exist, shall not exceed 4,200,000 acre-feet of the waters apportioned to the lower basin States by paragraph (a) ¹¹ of Article III of the Colorado River compact, plus not more than one-half of any excess or surplus waters unapportioned by said compact, such uses always to be subject to the terms of said compact.

¹² The States of Arizona, California, and Nevada are authorized to enter into an agreement which shall provide (1)¹³ that of the 7,500,000 acre-feet annually apportioned to the lower basin by paragraph (a) of Article III of the Colorado River compact, there shall be apportioned to the State of Nevada 300,000 acre-feet and to the State of Arizona 2,800,000 acre-feet for exclusive beneficial consumptive use in perpetuity, and (2) that the State of Arizona may annually use one-half of the excess or surplus waters unapportioned by the Colorado River compact, and (3) that the State of Arizona shall have the exclusive beneficial consumptive use of the Gila River and its tributaries within the boundaries of said State, and (4) that the waters of the Gila River and its tributaries, except return flow after the same enters the Colorado River, shall never be subject to any diminution whatever by any allowance of water which may be made by treaty or otherwise to the United States of Mexico but if, as provided in paragraph (c) of Article III of the Colorado River compact, it shall become necessary to supply water to the United States of Mexico from waters over and above the quantities which are surplus as defined by said compact, then the State of California shall and will mutually agree with the State of Arizona to supply, out of the main stream of the Colorado River, one-half of any deficiency which must be supplied to Mexico by the lower basin, and (5) that the State of California shall and will further mutually agree with the States of Arizona and Nevada that none of said three States shall withhold water and none shall require the delivery of water, which can not reasonably be applied to domestic

¹¹ (Senator Phipps, CR2-473.) After "by" insert "paragraph (a) of Article III of".

¹² This paragraph was originally presented by Senator Hayden, CR2-473, in the following form: "The said ratifying act shall further provide that if by tri-State agreement hereafter entered into by the States of California, Nevada, and Arizona the foregoing limitations are accepted and approved as fixing the apportionment of water to California, then California shall and will therein agree . . . and (6) that all of the provisions of said tri-State agreement shall be subject in all particulars to the provisions of the Colorado River compact."

¹³ (Senator Pittman, CR2-483.) Strike out from "The" to "agree" in Hayden amendment (footnote 12) and insert "The States of Arizona, California, and Nevada are authorized to enter into an agreement which shall provide."

and agricultural uses, and (6) that all of the provisions of said tri-State agreement shall be subject in all particulars to the provisions of the Colorado River compact, and (7)¹⁴ said agreement to take effect upon the ratification of the Colorado River compact by Arizona, California, and Nevada.¹⁵

¹⁶(b) Before any money is appropriated for the construction of said dam or power plant, or any construction work done or contracted for, the Secretary of the Interior shall make provision for revenues by contract, in accordance with the provisions of this act, adequate in his judgment to insure payment of all expenses of operation and maintenance of said works incurred by the United States and the repayment, within fifty years from the date of the completion of said works, of all amounts advanced to the fund under subdivision (b) of section 2 for such works, together with interest thereon made reimbursable under this act.

¹⁷Before any money is appropriated for the construction of said main canal and appurtenant structures to connect the Laguna Dam with the Imperial and Coachella Valleys in California, or any construction work is done upon said canal or contracted for, the Secretary of the Interior shall make provision for revenues, by contract or otherwise, adequate in his judgment to insure payment of all expenses of construction, operation, and maintenance of said main canal and appurtenant structures in the manner provided in the reclamation law.

If during the period of amortization the Secretary of the Interior shall receive revenues in excess of the amount necessary to meet the periodical payments to the United States as provided in the contract, or contracts, executed under this act, then, immediately after the settlement of such periodical payments, he shall pay to the State of Arizona 18¾ per centum of such excess revenues and to the State of Nevada 18¾ per centum of such excess revenues.

SEC. 5. That the Secretary of the Interior is hereby authorized, under such general regulations as he may prescribe, to contract for the storage of water in said reservoir and for the delivery thereof to such points on the river and on said canal as may be agreed upon, for irrigation and domestic uses, and generation of electrical energy and delivery at the switchboard to States, municipal corporations, political subdivisions, and private corporations of electrical energy generated at said dam, upon charges that will provide revenue which, in addition to other revenue accruing under the reclamation law and under this act, will in his judgment cover all expenses of operation and maintenance incurred by the United States on account of works constructed under this act and the payments to the United States under subdivision (b)

¹⁴ (Senator Pittman, CR2-483.) After "compact" insert "and (7) said agreement to take effect upon the ratification of the Colorado River compact by Arizona, California, and Nevada."

¹⁵ See also extract from Congressional debate at end of bill.

¹⁶ (Senator Pittman, CR2-601.) Amended by striking out the original paragraph, as follows, and substituting the paragraph (b) as appearing in the bill: "Before any money is appropriated or any construction work done or contracted for, the Secretary of the Interior shall make provision for revenues, by contract, in accordance with the provisions of the act, adequate, in his judgment, to insure payment of all expenses of operation and maintenance of said works incurred by the United States and the repayment, within 50 years from the date of the completion of the project, of all amounts advanced to the fund under subdivision (b) of section 2, together with interest thereon, made reimbursable under this act."

¹⁷ (Senator Pittman, CR2-601.) Inserted the entire paragraph.

of section 4. Contracts respecting water for irrigation and domestic uses shall be for permanent service and shall conform to paragraph (a) of section 4 of this act. No person shall have or be entitled to have the use for any purpose of the water stored as aforesaid except by contract made as herein stated.

After the repayments to the United States of all money advanced with interest, charges shall be on such basis and the revenues derived therefrom shall be ¹⁸ kept in a separate fund to be expended within the Colorado River Basin as may hereafter be prescribed by the Congress.

General and uniform regulations shall be prescribed by the said Secretary for the awarding of contracts for the sale and delivery of electrical energy, and for renewals under subdivision (b) of this section, and in making such contracts the following shall govern:

(a) No contract for electrical energy or for generation of electrical energy shall be of longer duration than fifty years from the date at which such energy is ready for delivery.

Contracts made pursuant to subdivision (a) of this section shall ¹⁹ be made with a view to obtaining reasonable returns and shall contain provisions whereby at the end of fifteen years from the date of their execution and every ten years thereafter, there shall be readjustment of the contract, upon the demand of either party thereto, either upward or downward as to price, as the Secretary of the Interior may find to be justified by competitive conditions at distributing points or competitive centers, and with provisions under which disputes or disagreements as to interpretation or performance of such contract shall be determined either by arbitration or court proceedings, the Secretary of the Interior being authorized to act for the United States in such readjustments or proceedings.

(b) The holder of any contract for electrical energy not in default thereunder shall be entitled to a renewal thereof upon such terms and conditions as may be authorized or required under the then existing laws and regulations, unless the property of such holder dependent for its usefulness on a continuation of the contract be purchased or acquired and such holder be compensated for damages to its property, used and useful in the transmission and distribution of such electrical energy and not taken, resulting from the termination of the supply.

(c) Contracts for the use of water and necessary privileges for the generation and distribution of hydroelectric energy or for the sale and delivery of electrical energy shall be made with responsible applicants therefor who will pay the price fixed by the said Secretary with a view to meeting the revenue requirements herein provided for. In case of conflicting applications, if any, such conflicts shall be resolved by the said Secretary, after hearing, with due regard to the public interest, and in conformity with the policy expressed in the Federal water power act as to conflicting applications for permits and licenses, except that preference to applicants for the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy, or for delivery at the switchboard of a hydroelectric plant, shall be given, first, to a State for the generation or purchase of electric energy for use in the State, and the States of

¹⁸ (Senator King CR2-547.) Strike out "disposed of as may" and insert "kept in a separate fund to be expended within the Colorado River Basin as may."

¹⁹ (Senator King, CR2-618.) After "shall" insert "be made with a view to obtaining reasonable returns and shall."

Arizona, California, and Nevada shall be given equal opportunity as such applicants.

The rights covered by such preference shall be contracted for by such State within six months after notice by the Secretary of the Interior and to be paid for on the same terms and conditions as may be provided in other similar contracts made by said Secretary: *Provided, however*, That no application of a State or a political subdivision for an allocation of water for power purposes or of electrical energy shall be denied or another application in conflict therewith be granted on the ground that the bond issue of such State or political subdivision, necessary to enable the applicant to utilize such water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy or the electrical energy applied for, has not been authorized or marketed, until after a reasonable time, to be determined by the said Secretary, has been given to such applicant to have such bond issue authorized and marketed.

(d) Any agency receiving a contract for electrical energy equivalent to one hundred thousand firm horsepower, or more, may, when deemed feasible by the said Secretary, from engineering and economic considerations and under general regulations prescribed by him, be required to permit ²⁰ any other agency having contracts hereunder for less than the equivalent of twenty-five thousand firm horsepower, upon application to the Secretary of the Interior made within sixty days from the execution of the contract of the agency the use of whose transmission line is applied for, to participate in the benefits and use of any main transmission line constructed or to be constructed by the former for carrying such energy (not exceeding, however, one-fourth the capacity of such line), upon payment by such other agencies of a reasonable share of the cost of construction, operation, and maintenance thereof.²¹

The use is hereby authorized of such public and reserved lands of the United States as may be necessary or convenient for the construction, operation, and maintenance of main transmission lines to transmit said electrical energy.

SEC. 6. That the dam and reservoir provided for by section 1 hereof shall be used: First, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and satisfaction of present perfected rights in pursuance of Article VIII of said Colorado River compact; and third, for power. The title to said dam, reservoir, plant, and incidental works shall forever remain in the United States, and the United States shall, until otherwise provided by Congress, control, manage, and operate the same, except as herein otherwise provided: *Provided, however*, That the Secretary of the Interior may, in his discretion, enter into contracts of lease of a unit or units of any Government-built plant, with right to generate electrical energy, or, alternately, to enter into contracts of lease for the

²⁰ (Senator King, CR2-548.) Strike out "others similar" and insert "any other."

²¹ (Congressman Hoch, CR1-10024.) Inserted the following paragraph, which was automatically eliminated when the Senate amended House bill by striking out all but the title and substituting Senate bill (Johnson, CR2-68): "(e) Every contract for electrical energy shall provide that the holder of such contract shall guarantee that in any resale of such energy to the consumers thereof the rates shall not exceed what is fair, just, and reasonable as determined by the Federal Power Commission."

use of water for the generation of electrical energy as herein provided, in either of which events the provisions of section 5 of this act relating to revenue, term, renewals, determination of conflicting applications, and joint use of transmission lines under contracts for the sale of electrical energy, shall apply.²²

The Secretary of the Interior shall prescribe and enforce rules and regulations, conforming with the requirements of the Federal water power act, so far as applicable, respecting maintenance of works in condition of repair adequate for their efficient operation, maintenance of a system of accounting, control of rates and service in the absence of State regulation or interstate agreement, valuation for rate-making purposes, transfers of contracts, contracts extending beyond the lease period, expropriation of excessive profits,²³ recapture and/or emergency use by the United States of property of lessees, and penalties for enforcing regulations made under this act or penalizing failure to comply with such regulations or with the provisions of this act. He shall also conform with other provisions of the Federal water power act and of the rules and regulations of the Federal Power Commission, which have been devised or which may be hereafter devised, for the protection of the investor and consumer.

²⁴ The Federal Power Commission is hereby directed not to issue or approve any permits or licenses under said Federal water power act upon or affecting the Colorado River or any of its tributaries,²⁵ except the Gila River, in the States of Colorado, Wyoming, Utah, New Mexico, Nevada, Arizona, and California until this act shall become effective as provided in section 4 herein.

SEC. 7. That the Secretary of the Interior may, in his discretion, when repayments to the United States of all money advanced, with interest, reimbursable hereunder, shall have been made, transfer the title to said canal and appurtenant structures,²⁶ except the Laguna Dam and the main canal and appurtenant structures down to and including Syphon Drop, to the districts or other agencies of the

²² (Congressman Davenport, CR1-10231, inserted the following paragraphs, which were automatically eliminated when the Senate amended House bill by striking out all but the title and substituting Senate bill, Johnson, CR2-68): "As a condition to the lease of the said plant or any unit or units thereof, and as a condition to the sale of electrical energy therefrom, every lessee and every purchaser, if the United States operates the plant, shall agree that the property of such lessee or purchaser, used and useful in connection therewith, shall be valued, whether by the agencies of the States or of the United States, and whether for regulation of rates or for taxation or for State or municipal acquisition and use, at its fair value, not to exceed the net investment of the said lessee or purchaser and said net investment shall be ascertained in accordance with the provisions of the Federal water power act and the regulations of the Federal Power Commission.

"Every lease and every contract for the sale of power shall provide that the resale price thereof, with the transformation, transmission, and distribution of such energy, extending to sale to the ultimate consumer, shall be subject to the regulation and control of said Federal Power Commission or of the appropriate authorities of any State or States in which such power is transmitted, distributed, sold, or used, according to the respective jurisdictions of said Federal Power Commission or said State authority, as provided in sections 19 and/or 20 of the Federal water power act."

²³ (Senator King, CR2-548.) After "profits" insert "recapture and/or."

²⁴ (Senator Phipps, CR2-337.) Inserted the entire paragraph.

²⁵ (Senator Ashurst, CR2-412.) After "tributaries" insert "except the Gila River."

²⁶ (Senator Hayden, CR2-596.) After "structures" insert "except the Laguna Dam and the main canal and appurtenant structures down to and including Syphon Drop."

United States having a beneficial interest therein in proportion to their respective capital investments under such form of organization as may be acceptable to him. The said districts or other agencies shall have the privilege at any time of utilizing by contract or otherwise such power possibilities as may exist upon said canal, in proportion to their respective contributions or obligations toward the capital cost of said canal and appurtenant structures from and including the diversion works to the point where each respective power plant may be located. The net proceeds from any power development on said canal shall be paid into the fund and credited to said districts or other agencies on their said contracts, in proportion to their rights to develop power, until the districts or other agencies using said canal shall have paid thereby and under any contract or otherwise an amount of money equivalent to the operation and maintenance expense and cost of construction thereof.

SEC. 8.²⁷ (a) The United States, its permittees, licensees, and contractees, and all users and appropriators of water stored, diverted, carried, and/or distributed by the reservoir, canals, and other works herein authorized, shall observe and be subject to and controlled by said Colorado River compact in the construction, management, and operation of said reservoir, canals, and other works and the storage, diversion, delivery, and use of water for the generation of power, irrigation, and other purposes, anything in this act to the contrary notwithstanding, and all permits, licenses, and contracts shall so provide.

(b) Also the United States, in constructing, managing, and operating the dam, reservoir, canals, and other works herein authorized, including the appropriation, delivery, and use of water for the generation of power, irrigation, or other uses, and all users of water thus delivered and all users and appropriators of waters stored by said reservoir and/or carried by said canal, including all permittees and licensees of the United States or any of its agencies, shall observe and be subject to and controlled, anything to the contrary herein notwithstanding, by the terms of such compact, if any, between the States of Arizona, California, and Nevada, or any two thereof, for the equitable division of the benefits, including power, arising from the use of water accruing to said States, subsidiary to and consistent with said Colorado River compact, which may be negotiated and approved by said States and to which Congress shall give its consent and approval on or before January 1, 1929; and the terms of any such compact concluded between said States and approved and consented to by Congress after said date: *Provided*, That in the latter case such compact shall be subject to all contracts, if any,

²⁷ Original bill had as paragraph (a) section 8 the following: "All appropriations of water from the Colorado River, incident to or resulting from the construction, use, and operation of the works herein authorized, shall be made and perfected in and in conformity with the laws of those States which may or shall have approved the Colorado River compact ratified in section 12 of this act." This was taken out in the Senate Committee.

made by the Secretary of the Interior under section 5 hereof prior to the date of such approval and consent by Congress.²⁸

SEC. 9. That all lands of the United States found by the Secretary of the Interior to be practicable of irrigation and reclamation by the irrigation works authorized herein shall be withdrawn from public entry. Thereafter, at the direction of the Secretary of the Interior such lands shall be opened for entry, in tracts varying in size but not exceeding one hundred and sixty acres, as may be determined by the Secretary of the Interior, in accordance with the provisions of the reclamation law, and any such entryman shall pay an equitable share in accordance with the benefits received, as determined by the said Secretary, of the construction cost of said canal and appurtenant structures; said payments to be made in such installments and at such times as may be specified by the Secretary of the Interior, in accordance with the provisions of the said reclamation law, and shall constitute revenue from said project and be covered into the fund herein provided for: *Provided*, That all persons who have served in the United States Army, Navy, or Marine Corps during the war with Germany, the war with Spain, or in the suppression of the insurrection in the Philippines, and who have been honorably separated or discharged therefrom or placed in the Regular Army or Navy Reserve, shall have the exclusive preference right for a period of three months to enter said lands, subject, however, to the provisions of subsection (c) of section 4, act of December 5, 1924 (Forty-third Statutes at Large, p. 702); and also, so far as practicable, preference shall be given to said persons in all construction work authorized by this act: *Provided further*, That in the event such an entry shall be relinquished at any time prior to actual residence upon the land by the entryman for not less than one year, lands so relinquished shall not be subject to entry for a period of sixty days after the filing and notation of the relinquishment in the local land office, and after the expiration of said sixty-day period such lands shall be open to entry, subject to the preference in this section provided.

SEC. 10. That nothing in this act shall be construed as modifying in any manner the existing contract, dated October 23, 1918, between the United States and the Imperial irrigation district, providing for a connection with Laguna Dam; but the Secretary of the Interior is authorized²⁹ to enter into contract or contracts with the said district or other districts, persons, or agencies for the construction, in accordance with this act, of said canal and appurtenant structures, and also for the operation and maintenance thereof, with the consent of the other users.

SEC. 11.³⁰ That the Secretary of the Interior is hereby authorized to make such studies, surveys, investigations, and do such engineering as may be necessary to determine the lands in the State of Arizona that

²⁸ (Senator Hayden, CR2-610-617.) Strike out subsection "(c) of section 8" as follows: "Nothing in this act shall be deemed to waive any of the rights or powers reserved or granted to the United States by paragraph 7 of section 20 of the act providing for the admission of Arizona, approved June 20, 1910, and by the tenth paragraph of Article XX of the constitution of Arizona, but the Secretary of the Interior is authorized on behalf of the United States to exercise such of said rights and powers as may be necessary or convenient for the construction and use of the works herein authorized and for carrying out the purposes of this act."

²⁹ (Senator Johnson, CR2-596.) After "authorized" strike out "to modify the said contract, with the consent of the said district, and also."

³⁰ (Senator Hayden, CR2-596.) Inserted the entire paragraph.

should be embraced within the boundaries of a reclamation project, heretofore commonly known and hereafter to be known as the Parker-Gila Valley reclamation project, and to recommend the most practicable and feasible method of irrigating lands within said project, or units thereof, and the cost of the same; and the appropriation of such sums of money as may be necessary for the aforesaid purposes from time to time is hereby authorized. The Secretary shall report to Congress as soon as practicable, and not later than December 10, 1931, his findings, conclusions, and recommendations regarding such project.

SEC. 12. "Political subdivision" or "political subdivisions" as used in this act shall be understood to include any State, irrigation or other district, municipality, or other governmental organization.

"Reclamation law" as used in this act shall be understood to mean that certain act of the Congress of the United States approved June 17, 1902, entitled "An act appropriating the receipts from the sale and disposal of public land in certain States and Territories to the construction of irrigation works for the reclamation of arid lands," and the acts amendatory thereof and supplemental thereto.

"Maintenance" as used herein shall be deemed to include in each instance provision for keeping the works in good operating condition.

"The Federal Water Power Act," ³¹ as used in this act, shall be understood to mean that certain act of Congress of the United States approved June 10, 1920, entitled "An act to create a Federal Power Commission; to provide for the improvement of navigation; the development of water power; the use of the public lands in relation thereto; and to repeal section 18 of the river and harbor appropriation act, approved August 8, 1917, and for other purposes," and the acts amendatory thereof and supplemental thereto.

"Domestic" ³¹ whenever employed in this act shall include water uses defined as "domestic" in said Colorado River compact.

SEC. 13. (a) The Colorado River compact signed at Santa Fe, New Mexico, November 24, 1922, pursuant to act of Congress approved August 19, 1921, entitled "An act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," is hereby approved by the Congress of the United States, and the provisions of the first paragraph of Article II of the said Colorado River compact, making said compact binding and obligatory when it shall have been approved by the legislature of each of the signatory States, are hereby waived, and this approval shall become effective when the State of California and at least five of the other States mentioned, shall have approved or may hereafter approve said compact as aforesaid and shall consent to such waiver, as herein provided.

(b) The rights of the United States in or to waters of the Colorado River and its tributaries howsoever claimed or acquired, as well as the rights of those claiming under the United States, shall be subject to and controlled by said Colorado River compact.

(c) Also all patents, grants, contracts, concessions, leases, permits, licenses, rights of way, or other privileges from the United States or

³¹ Both paragraphs inserted by Senate Committee.

under its authority, necessary or convenient for the use of waters of the Colorado River or its tributaries, or for the generation or transmission of electrical energy generated by means of the waters of said river or its tributaries, whether under this act, the Federal water power act, or otherwise, shall be upon the express condition and with the express covenant that the rights of the recipients or holders thereof to waters of the river or its tributaries, for the use of which the same are necessary, convenient, or incidental, and the use of the same shall likewise be subject to and controlled by said Colorado River compact.

(d) The conditions and covenants referred to herein shall be deemed to run with the land and the right, interest, or privilege therein and water right, and shall attach as a matter of law, whether set out or referred to in the instrument evidencing any such patent, grant, contract, concession, lease, permit, license, right of way, or other privilege from the United States or under its authority, or not, and shall be deemed to be for the benefit of and be available to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, and the users of water therein or thereunder, by way of suit, defense, or otherwise, in any litigation respecting the waters of the Colorado River or its tributaries.

SEC. 14. This act shall be deemed a supplement to the reclamation law, which said reclamation law shall govern the construction, operation, and management of the works herein authorized, except as otherwise herein provided.

SEC. 15. The Secretary of the Interior is authorized and directed to make investigation and public reports of the feasibility of projects for irrigation, generation of electric power, and other purposes in the States of Arizona, Nevada, Colorado, New Mexico, Utah, and Wyoming for the purpose of making such information available to said States and to the Congress, and of formulating a comprehensive scheme³² of control and the improvement and utilization of the water of the Colorado River and its tributaries. The sum of \$250,000 is hereby authorized to be appropriated from said Colorado River Dam fund, created by section 2 of this act, for such purposes.

SEC. 16.³³ In furtherance of any comprehensive plan formulated hereafter for the control, improvement, and utilization of the resources of the Colorado River system and to the end that the project authorized by this act may constitute and be administered as a unit in such control, improvement, and utilization, any commission or commissioner duly authorized under the laws of any ratifying State in that behalf shall³⁴ have the right to act in an advisory capacity to and in cooperation with the Secretary of the Interior in the exercise of any authority under the provisions of sections 4, 5, and 14 of this act, and shall have at all times access to records of all Federal agencies empowered to act under said sections, and shall be entitled to have copies of said records on request.

SEC. 17.³⁵ Claims of the United States arising out of any contract authorized by this act shall have priority over all others, secured or unsecured.

³² (Senator King, CR2-547.) Before "control" strike out "headwater".

³³ (Senator King, CR2-546.) Entire paragraph inserted.

³⁴ (Senator King, CR2-617.) After "shall" insert "have the right to".

³⁵ (Senator Walsh, CR2-592.) Entire paragraph inserted.

SEC. 18.³⁶ Nothing herein shall be construed as interfering with such rights as the States now have either to the waters within their borders or to adopt such policies and enact such laws as they may deem necessary with respect to the appropriation, control, and use of waters within their borders, except as modified by the Colorado River compact or other interstate agreement.

SEC. 19.³⁶ That the consent of Congress is hereby given to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming to negotiate and enter into compacts or agreements, supplemental to and in conformity with the Colorado River compact and consistent with this act for a comprehensive plan for the development of the Colorado River and providing for the storage, diversion, and use of the waters of said river. Any such compact or agreement may provide for the construction of dams, headworks, and other diversion works or structures for flood control, reclamation, improvement of navigation, diversion of water, or other purposes and/or the construction of power houses or other structures for the purpose of the development of water power and the financing of the same; and for such purposes may authorize the creation of interstate commissions and/or the creation of corporations, authorities, or other instrumentalities.

(a) Such consent is given upon condition that a representative of the United States, to be appointed by the President, shall participate in the negotiations and shall make report to Congress of the proceedings and of any compact or agreement entered into.

(b) No such compact or agreement shall be binding or obligatory upon any of such States unless and until it has been approved by the legislature of each of such States and by the Congress of the United States.³⁷

SEC. 20.³⁸ Nothing in this act shall be construed as a denial or recognition of any rights, if any, in Mexico to the use of the waters of the Colorado River system.

SEC. 21. That the short title of this act shall be "Boulder Canyon project act."

Approved, December 21, 1928.

³⁶ (Senator King, CR2-617.) Both sections inserted.

³⁷ (Congressman Moore, CR1-10236.) Inserted the following paragraph which was automatically stricken out when the Senate amended House bill by striking out all but the title and substituting Senate bill. (Johnson, CR2-68): "The Secretary of the Interior shall annually submit to Congress a report of the transactions had in and pertaining to the administration of this act."

³⁸ Section 20 was in original bill and in bill as passed by the House, being section 15 of original bill. In reporting out the bill from the Senate Committee this section was stricken out, but later inserted by Senator Johnson (CR2-487).

[APPENDIX 21]

AMENDMENTS SUBMITTED TO
THE BOULDER CANYON PROJECT
ACT BUT NOT FINALLY ADOPTED

(Tabulation prepared by the California Colorado River
Commission; the figures in the footnotes refer to the Con-
gressional Record ("CR"), 70th Congress, first or second
sessions (CR1, CR2) and the page number)

AMENDMENTS SUBMITTED BUT NOT FINALLY ADOPTED

NOTES BY CALIFORNIA COLORADO RIVER COMMISSION

The following is a list of amendments submitted or considered during consideration of the bill by the Seventieth Congress, but which either failed of passage or were eliminated by subsequent proceedings. In the debate before Congress during consideration of the bill amendments were usually introduced by reference to a printed bill then before either the Senate or the House. In the prints of the bill in its various forms the pages and line numbers changed, and in tracing the amendments it would be almost impossible to identify the location by page and line number unless the particular form of the bill at that moment in print were in front of the investigator. To eliminate this difficulty reference is made simply to the section or subsection of the final bill having to do with the matter under discussion. If exact information is desired regarding the phraseology of the bill under discussion at the time the particular amendments were introduced it will be necessary to refer to the Congressional Record and to check against a copy of the printed bill then before the legislative body. The bill was printed in numerous forms, with and without amendments, during various stages of the debates and it is impossible to give all of the various prints in a pamphlet of this size. Effort is made here to give the actual text of the amendments as offered and sufficient information to enable the reader to understand and identify the points raised and the effect of the various changes proposed.

AMENDMENTS SUBMITTED OR CONSIDERED BUT ELIMINATED BY SUBSEQUENT PROCEEDINGS

1. Senator Ashurst (CR2-546). Section 10, insert after "district," "and the express consent of the Yuma County Water Users' Association." Withdrawn, CR2-596.

2. (CR1-7695). After section 1, insert, "*Provided*, That no appropriation for construction under the gravity plan shall be made until a compact shall have been entered into between the States of Wyoming, Colorado, Utah, New Mexico, Nevada, California, and Arizona, either to determine the allocation of waters and definite storage elevation and areas or to determine the basic principles that for all times shall govern these matters: *And provided further*, That the passage of this act shall not in any respect whatever prejudice, affect, or militate against the rights of the State of Arizona or the residents or the people thereof, touching any matter, or thing, or property, or property interests relative to the construction of the Colorado River Boulder Dam project." *

3. (CR1-10606). In section 1, strike out "navigation" and insert "interstate commerce." *

4. (CR1-10608). Section 1 after "compact" insert "and the supplementary compact." *

* Where this mark appears after an amendment the amendment was submitted and ordered printed in the Record but was either later withdrawn or was not called up to be acted on.

5. Section 1 after "dam" insert "which shall not exceed 550 feet in height." *

6. (CR1-10608). In section 1 after "at" strike out "Black Canyon or Boulder Canyon" and insert "at a site to be selected by a board of competent engineers to be appointed by the President; *Provided*, That none of such engineers shall have been previously employed by the Department of the Interior." *

7. Section 1 after "water" insert "and which shall be operated as a unit in a comprehensive plan of development of the Colorado River which will insure the maximum water for domestic and irrigation use and for the development of the maximum amount of power." *

8. Section 1, after "California," insert "to utilize waters apportioned to California by said compacts, the expenditures for said main canal and appurtenant structures to be reimbursable, as provided in the reclamation law: *Provided*, That in the event of a treaty between the United States of America and the United States of Mexico said canal and structures may be partially located in Mexico". *

9. Section 1, after "for" strike out "water or for use", and after "storage" strike out "or". *

10. Section 1, after "or" strike out "delivery", and after "irrigation" strike out "or water for potable purposes". *

11. Section 2 (b), after "\$125,000,000" strike out the period and insert ": *Provided*, That the sum of \$30,000,000 thereof shall be allocated to flood control, and shall not be reimbursable to the United States". *

12. (CR1-10608). Section 2 (c) after "and" insert "for" and after "upon" insert "such of". *

13. Section 2 (c) after "advanced" insert "as are subject to an interest charge". *

14. Section 2 (d), after "interest" insert "authorized by this act", and after "advanced" insert "which by the terms of this act, are made subject to the payment of interest". *

15. Section 2 (e), after "interest" insert "and other payments required by this act". *

16. Section 3, after "\$125,000,000" insert ", of which the sum of \$30,000,000 shall be assigned to flood control, and shall not be reimbursable to the United States". *

16a. Strike out section 4 (a) and insert "Section 4. (a) This act shall take effect, and be in full force, when the Colorado River compact referred to and ratified in section 12 of this act shall have been unconditionally ratified by the States of Arizona, California, Colorado Nevada, New Mexico, Utah, and Wyoming, and the President, by public proclamation, shall have so declared, and the States of California, Nevada, and Arizona shall have approved a supplemental compact apportioning among said States the waters of the Colorado River system allocated to the States of the lower basin by said Colorado River compact, or otherwise available for use in said States.

"No work shall be begun and no moneys expended on or in connection with the works or structures provided for in this act, and no water rights shall be claimed or initiated hereunder, and no steps shall be taken by the United States or by any others to initiate or perfect any claims to the use of water pertinent to such works or structures

* Where this mark appears after an amendment the amendment was admitted and ordered printed in the Record but was either later withdrawn or was not called up to be acted on.

except as herein expressly provided in section 17 until said Colorado River compact and the supplementary compact shall have been ratified and such ratification proclaimed as provided in this act."

Strike out section 4 (b) and insert "(b) Before any money is appropriated for the dam at Black Canyon or Boulder Canyon, or for the hydroelectric plant at or near said dam authorized by this act, or any construction work thereon done or contracted for, the Secretary of the Interior shall make provision by contract, in accordance with the provisions of this act, for the right to the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy, and/or for the sale of a sufficient amount of the electrical energy to be developed at the plant aforesaid, and for the storage of water for irrigation and domestic purposes, adequate in his judgment to insure payment of all expenses of operation and maintenance of said dam and power plant and incidental works incurred by the United States and the repayment within 50 years from the date of the completion of such works of all amounts advanced for such purposes to the fund under subdivision (b) of section 2, together with interest thereon reimbursable under this act; and before any money is appropriated for the canals and appurtenant structures authorized by this act or any construction work thereon done or contracted for the said Secretary shall make provision for revenues, by contracts conforming to the provisions of the reclamation law, adequate in his judgment to insure payment of all expenses of operation and maintenance of said canal and appurtenant structures incurred by the United States and the repayment, under the terms and provisions of the reclamation law, of all amounts advanced for such purposes to the fund under said subdivision (b) of section 2. If the Secretary of the Interior shall receive revenues during the period of amortization in excess of the amount necessary to meet the periodical payments to the United States, as provided in the contract or contracts, executed in accordance with the requirements of this act, then he shall, immediately after the settlement of such periodical payments, divide and pay any excess revenues as follows, to wit: To the State of Arizona, 40 per cent; to the State of Nevada, 40 per cent; and the remaining 20 per cent of such excess revenues shall be held by the Secretary as a reserve fund to meet emergencies or to be applied on successive contractual payments to the United States as in his discretion may be considered proper. After the United States has been fully paid in accordance with this act, and the contracts executed thereunder, then all net revenues shall be divided as follows, to wit: To Arizona, 45 per cent; to Nevada, 45 per cent; and to the contractee or contractees, 10 per cent." *

17. (CR1-10609). Before section 5, after "revenue" insert "*Provided, however,* That after investments made by the Government shall have been returned, the plants for the generation of electric power, if constructed by the United States, together with appurtenant water rights, equipment, and structures, exclusive of the dam, shall pass to the States of Arizona and Nevada jointly, to be managed and controlled by them as they may decide at the time of transfer; operations to be conducted subject to the provisions of the Colorado River compact." *

* Where this mark appears after an amendment the amendment was submitted and ordered printed in the Record but was either later withdrawn or was not called up to be acted on.

18. (CR1-10609). Section 5, after "section 4" strike out all down to and including the word "service." *

19. (CR1-10609). In section 5, near the end of first paragraph after "stored" insert "behind said dam at Black or Boulder Canyon," and after "except" insert "upon compliance with the water laws of the States wherein such water is made available, nor except." *

20. (CR1-10609). At the end of first paragraph of section 5, after "stated" insert "and no such contract shall provide for the delivery or permit the diversion of said stored water in any State in excess of the respective amounts set forth in this act or as may be agreed upon in any compact entered into and ratified as provided by this act." *

21. (CR1-10609). Section 5 after "stated" insert "*Provided*, That the Secretary of the Interior in the delivery of water shall limit the amounts used in Arizona and California so that neither of said States shall use in excess of one-half of the water available in the lower basin out of the main Colorado River after 300,000 acre-feet has been deducted for use within the State of Nevada." *

22. (CR1-10609). Second paragraph of section 5 after "interest" strike out all down to and including the word "Congress" and insert "shall have been made, the plants for the generation of electric power if constructed by the United States, together with appurtenant water rights, equipment, and structures, exclusive of the dam, shall pass to the States of Arizona and Nevada, jointly, to be managed and controlled by them as they may decide at the time of transfer; operations to be conducted subject to the provisions of the Colorado River compact." *

23. (CR1-10609). Strike out all of second paragraph of section 5.*

24. (CR1-10609). Before subsection (b) of section 5, insert "Each of the States of Arizona, California, and Nevada may designate a commissioner by legislative enactment who shall act in an advisory capacity to the Secretary of the Interior in the exercise of any authority conferred upon him by this act, and each of such commissions shall have at all times access to records of all Federal agencies empowered to act under this act and shall be entitled to have copies of said records on request." *

25. (CR1-10609). Subsection (b) of section 5 after "conditions" insert "as are authorized by the Federal power act or." *

26. (CR1-10609). Subsection (b) of section 5 after "regulations" insert a period and strike out the remainder of the subsection.*

27. (CR1-10609). Subsection (c) of section 5 after "license" insert "That preference to applicants for the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy, or for delivery at the switchboard of a hydroelectric plant, shall be given, first, to a State; second, to a political subdivision of a State; third, to citizens of the United States or any association of such citizens, or any corporation organized under the laws of the United States or any State thereof. The States of Arizona, California, and Nevada shall have preference, and upon an equality with regard to such preferential rights, and shall be given equal opportunity as such applicants." *

* Where this mark appears after an amendment the amendment was submitted and ordered printed in the Record but was either later withdrawn or was not called up to be acted on.

[APPENDIX 22]

THE PRESIDENT'S PROCLAMATION
OF JUNE 25, 1929

427

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

PUBLIC PROCLAMATION

Pursuant to the provisions of section 4 (a) of the Boulder Canyon project act approved December 21, 1928 (45 Stat. 1057), it is hereby declared by public proclamation:

(a) That the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming have not ratified the Colorado River Compact mentioned in section 13 (a) of said act of December 21, 1928, within six months from the date of the passage and approval of said act.

(b) That the States of California, Colorado, Nevada, New Mexico, Utah, and Wyoming have ratified said compact and have consented to waive the provisions of the first paragraph of Article XI of said compact, which makes the same binding and obligatory only when approved by each of the seven States signatory thereto, and that each of the States last named has approved said compact without condition, except that of six-State approval as prescribed in section 13 (a) of said act of December 21, 1928.

(c) That the State of California has in all things met the requirements set out in the first paragraph of section 4 (a) of said act of December 21, 1928, necessary to render said act effective on six-State approval of said compact.

(d) All prescribed conditions having been fulfilled, the said Boulder Canyon project act approved December 21, 1928, is hereby declared to be effective this date.

In testimony whereof I have hereunto set my hand and caused the seal of the United States of America to be affixed.

Done at the city of Washington this 25th day of June, in the year of our Lord One Thousand Nine Hundred and Twenty-nine, and of the Independence of the United States of America, the One Hundred and Fifty-third.

HERBERT HOOVER.

By the President:

HENRY L. STIMSON,
Secretary of State.

[SEAL]

[No. 1882]

[APPENDIX 23]

THE APPROPRIATION ACTS

1930

1931

1932

431

SPECIAL PROVISIONS OF THE SECOND DEFICIENCY ACT, FISCAL YEAR 1930

An act making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1930, and prior fiscal years, to provide supplemental appropriations for the fiscal years ending June 30, 1930, and June 30, 1931, and for other purposes. (Act July 3, 1930, ch. 846, 46 Stat. 860.)

* * * * *

BUREAU OF RECLAMATION

Boulder Canyon project: For the commencement of construction of a dam and incidental works in the main stream of the Colorado River at Black Canyon, to create a storage reservoir, and of a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from such reservoir; to acquire by proceedings in eminent domain, or otherwise, all lands, rights of way, and other property necessary for such purposes; and for incidental operations; as authorized by the Boulder Canyon project act, approved December 21, 1928 (U. S. C., Supp. III, title 33, ch. 15A); \$10,660,000 to remain available until advanced to the Colorado River Dam fund, which amount shall be available for personal services in the District of Columbia and for all other objects of expenditure that are specified for projects included under the caption "Bureau of Reclamation" in the Interior Department appropriation acts for the fiscal years 1930 and 1931, without regard to the limitations of amounts therein set forth: *Provided*, That of the amount hereby appropriated, not to exceed \$100,000 shall be available for investigation and reports as authorized by section 15 of the Boulder Canyon project act. (46 Stat. 877.)

Secondary projects: The sum of \$25,000 of the appropriation of \$275,000 for secondary projects, contained in the "First deficiency act, fiscal year 1930," is hereby made available for investigations of water supply for the San Joaquin and Sacramento Valleys, Calif. (46 Stat. 878.)

* * * * *

SEC. 5. This act may be cited as the "Second deficiency act, fiscal year 1930." (46 Stat. 918.)

Boulder Canyon project: For the continuation of construction of the Hoover Dam and incidental works in the main stream of the Colorado River at Black Canyon, to create a storage reservoir, and of a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from such reservoir; to acquire by proceedings in eminent domain, or otherwise, all lands, rights of way and other property necessary for such purposes; and for incidental operations; as authorized by the Boulder Canyon project act, approved December 21, 1928 (U. S. C., Supp. III, title 33, ch. 15A); \$15,000,000, to be immediately avail-

able and to remain available until advanced to the Colorado River Dam fund, which amount shall be available for personal services in the District of Columbia and for all other objects of expenditure that are specified for projects included in this act under the caption "Bureau of Reclamation" without regard to the limitations of amounts therein set forth: *Provided*, That of the amount hereby appropriated, not to exceed \$50,000, reimbursable, shall be available for investigation and reports as authorized by section 15 of the Boulder Canyon project act. (46 Stat. 1146.)

* * * * *

Boulder Canyon project: For the continuation of construction of the Hoover Dam and incidental works in the main stream of the Colorado River at Black Canyon, to create a storage reservoir, and of a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from such reservoir; to acquire by proceedings in eminent domain or otherwise, all lands, rights of way, and other property necessary for such purposes; and for incidental operations, as authorized by the Boulder Canyon project act, approved December 21, 1928 (U. S. C., Supp. V, title 43, ch. 12A); \$6,000,000, to be immediately available and to remain available until advanced to the Colorado River Dam fund, which amount shall be available for personal services in the District of Columbia and for all other objects of expenditure that are specified for projects included in this act under the caption "Bureau of Reclamation" without regard to the limitations of amounts therein set forth: *Provided*, That of this fund not to exceed \$70,000 shall be available for the erection, operation, and maintenance of necessary school buildings and appurtenances on the Boulder Canyon project Federal reservation, and for the purchase and repair of required desks, furnishings, and other suitable facilities; for payment of compensation to teachers and other employees necessary for the efficient conduct and operation of schools on said reservation. (47 Stat. 118.)

* * * * *

PUBLIC WORKS—APPROPRIATION FOR HOOVER DAM (SPECIAL PROVISIONS OF EMERGENCY RELIEF AND CONSTRUCTION ACT OF 1932)

[Extracts from] An act to relieve destitution, to broaden the lending powers of the Reconstruction Finance Corporation, and to create employment by providing for and expediting a public-works program. (Act July 21, 1932, 47 Stat. 709.)

* * * * *

TITLE III—PUBLIC WORKS

SEC. 301. (a) For the purpose of providing for emergency construction of certain authorized public works with a view to increasing employment and carrying out the policy declared in the employment stabilization act of 1931, there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$322,224,000, which shall be allocated as follows:

* * * * *

(5) For the continuation of construction of the Hoover Dam and incidental works, as authorized by the Boulder Canyon project act, approved December 21, 1928 (U. S. C., Supp. V, title 43, ch. 12A), \$10,000,000. (47 Stat. 717.)

* * * * *

SEC. 307. All contracts let for construction projects pursuant to this title shall be subject to the conditions that no convict labor shall be directly employed on any such project, and that (except in executive, administrative, and supervisory positions), so far as practicable, no individual directly employed on any such project shall be permitted to work more than thirty hours in any one week, and that in the employment of labor in connection with any such project, preference shall be given, where they are qualified, to ex-service men with dependents.

NOTE.—In connection with the foregoing \$10,000,000 appropriation for Hoover Dam work, the department and the bureau are of opinion that it would be impracticable to operate under the limitations of section 307. Under date of September 16, 1932, the Administrative Assistant to the Secretary and Budget Officer advised the bureau that the department was advised informally by the General Accounting Office that the question of practicability was one for administrative determination and should be shown by certificate of the Secretary of the Interior. The only showing which the Comptroller General would require with a copy of the contract would be a copy of such certificate.

SPECIAL PROVISIONS OF THE SECOND DEFICIENCY ACT, FISCAL YEAR 1932

[Extracts from] An act making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1932, and prior fiscal years, to provide supplemental appropriations for the fiscal years ending June 30, 1932, and June 30, 1933, and for other purposes. (Act July 1, 1932, 47 Stat. 525.)

Boulder Canyon project: For the continuation of construction of the Hoover Dam and incidental works in the main stream of the Colorado River at Black Canyon, to create a storage reservoir, and of a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from such reservoir; to acquire by proceedings in eminent domain or otherwise, all lands, rights of way, and other property necessary for such purposes; and for incidental operations, as authorized by the Boulder Canyon project act, approved December 21, 1928 (U. S. C., Supp. V, title 43, ch. 12A); \$7,000,000, to remain available until advanced to the Colorado River Dam fund; which amount shall be available for personal services in the District of Columbia and for all other objects of expenditure that are specified for projects included in the Interior Department appropriation act for the fiscal year 1933 under the caption "Bureau of Reclamation" without regard to the limitations of amounts therein set forth. (47 Stat. 535.)

[APPENDIX 24]

THE ORDER TO COMMENCE CONSTRUCTION

STATEMENT BY THE SECRETARY
ON JULY 7, 1930

437

July 7, 1930.

MEMORANDUM FOR THE PRESS

The Secretary of the Interior announced to-day that construction of the Boulder Canyon project had commenced, immediately on the President's signature of the appropriation bill.

The engineer in charge, Mr. Walker R. Young, and his assistants, were already on the ground waiting telegraphic instructions. The first day's work began the staking out of the railroad and the construction road, surveys of which have already been completed, laying out streets for the town site, and continuation of surveys for the water supply system.

The order which started construction was signed by the Secretary immediately following the President's signature of the appropriation bill, and read as follows:

Order No. 436

HON. ELWOOD MEAD,
Commissioner of Reclamation.

SIR: You are directed to commence construction on Boulder Dam to-day.

Respectfully,

RAY LYMAN WILBUR,
Secretary.

The Secretary stated that the plans and specifications are being carried to completion with all possible expedition, looking to the advertising of bids and the awarding of construction contracts at the earliest possible date. Following the completion of the work begun to-day on the railroad, construction road, town site, and water works, the money appropriated will be used to commence construction of the cofferdams and diversion tunnels.

In announcing the commencement of construction, the Secretary made the following statement:

"The Boulder Dam will signalize our national conquest over the Great American Desert. With dollars, men, and engineering brains we will build a great natural resource. We will make new geography, and start a new era in the southwestern part of the United States. With Imperial Valley no longer menaced by floods, new hope and new financial credit will be given to one of the largest irrigation districts in the West. By increasing the water supply of Los Angeles and the surrounding cities, homes and industries are made possible for many millions of people. A great new source of power forecasts the opening of new mines and the creation of new industries in Arizona, Nevada, and California.

"To bring about this transformation requires a dam higher than any which the engineer has hitherto conceived or attempted to build. It is to be placed in the bottom of a canyon, whose walls rise over 2,000 feet and through which flows a turbulent river, at times carrying a flow equal to the average of the Mississippi at St. Louis.

"The dam is to be built in a region of intense summer heat, amid desert surroundings and where the public lands, in large part, are being surveyed for the first time.

"To build the dam economically and efficiently requires that special attention be given to those factors which influence the health and energy of the workers. A thousand men will be employed over a period of five to eight years. Many of these will have families, and this means that the town to be created near the dam site will have a population of 4,000 to 5,000 people. This town will not be a temporary construction camp. During the time that the dam is under construction, thousands of tourists will each year visit this section. When it has been completed, the lake 100 miles in length above it will draw other thousands because of its scenic beauties. Plans accordingly have been made to lay out a town which will represent the most modern ideas in town planning.

"The water works will be similar in character to those built at Yuma, Ariz., where the conditions of climate and water are similar to those at Boulder Dam.

"From the town site to the dam is about three miles. The town will be connected with the outside world by an automobile road and a railroad about 30 miles in length. It is not necessary that construction of the tunnels to divert the river shall await the completion of these facilities of living and transportation. There is a good road from Las Vegas to the canyon. Much of the equipment needed in tunnel construction can be hauled in over this road. A temporary construction camp can be located on the river and the construction of the tunnels thereby expedited.

"These diversion tunnels will be four in number, each 50 feet in diameter. Because of their size, their excavation will be very much like the operation of a quarry. The greatest problem will be the disposal of the excavated material. Part of it will be needed to build the cofferdams that will be placed in the river, above and below the site of the dam, to keep the water out of the excavation where the foundation of the dam is to be placed.

"The building of the road, the railroad, the tunnels, and the cofferdams will all precede the beginning of the great wedge, over 700 feet high, that is to close this river. While these earlier works are being built the final detailed plans for the dam will be completed. Only engineers who have had considerable familiarity with dams and power development can fully appreciate all that is involved in these plans. The dam is not merely a mass of concrete to hold the water back. It is a complex industrial structure traversed by pipes and corridors, in which will be placed the regulating gates and the valves for the dynamos which will generate a million horsepower of electrical energy and the wasteways for controlling floods.

"Of the initial appropriation of \$10,660,000, \$2,500,000 will be used to build the railroad, \$525,000 will be expended in the construction of waterworks, laying out the town, building streets, sewers, and other conveniences of the town, and in the construction of a main office building for the Government engineers and clerical staff and 25 homes for its permanent employees at the dam.

"The greater part of the 150,000 acres which will be flooded is public land, but scattered through it are small areas of privately owned land, the largest one being in the valley of the Virgin River.

Title to these lands and to whatever mining claims have merit will have to be acquired.

"Five million dollars of the initial estimate is to be used in construction of the tunnels, which will eventually cost \$18,000,000. While the tunnels and the cofferdams are being built all the details of the dam and its power equipment will be worked out. The Reclamation Bureau will have the cooperation of the engineers of the Los Angeles Water and Power Department and the Southern California Edison Co. and its related companies. Confidence is felt that this power equipment will represent the highest efficiency yet achieved in any industrial development of this character.

"The designing of this dam is in competent hands. No organization in any country has had greater experience in such work than the Bureau of Reclamation. Not a single dam of the 125 built by the Reclamation Bureau has failed. Its chief designing engineer, J. L. Savage, is recognized as a genius in his line. He has successively designed three dams which at the time of their construction were the highest in the world. Boulder Dam adds another to this unique record. In addition to the corps of experts on the permanent staff of the bureau, it has as consulting engineers, A. J. Wiley, who has an international reputation and is consulting engineer for the irrigation department of India; L. C. Hill, the designer and resident engineer on the Roosevelt Dam and many monumental works in this and other countries; and D. C. Henny, one of the foremost consulting engineers of the country.

"Because of the exceptional size of the dam and the difficult engineering problems involved, Congress thought it prudent to create a board of five—three engineers and two geologists—who would review the plans and estimates prepared by the Bureau of Reclamation and report direct to the President. The engineers on this board—Gen. Wm. L. Seibert, builder of Gatun Locks at Panama, Daniel W. Mead, and Robert Ridgway—have approved all of the work thus far submitted to them, and will pass judgment on the detailed plans of the dam when these have been completed.

"Boulder Dam will not only be a monumental engineering work, but the laws authorizing it inaugurated the greatest scheme of rural planning yet undertaken in the West. That this scheme shall prove of the greatest possible value to the Nation, it necessitates now a study of all irrigation and power possibilities of the whole basin, and of the different States. Five hundred thousand dollars has been provided this year for studies of secondary projects in the Colorado Basin. This includes \$100,000 for a study of the irrigation possibilities of Utah, Colorado, Wyoming, and New Mexico, the four States above Boulder Dam; \$250,000 for surveys and preparation of plans and estimates for the Parker-Gila project in Arizona; and \$150,000 for continuing the surveys and preparation of plans and estimates for the Palo Verde, Imperial, and Coachella Valleys. Altogether, these investigations will deal with the possible future reclamation of 6,000,000 acres of land, an area equal to that now irrigated in the lower Nile. Consideration must be given to a possible 6,000,000 horsepower electrical development on the river as a whole.

"To bring into harmony the varying views and conflicting interests and to work out of this a properly correlated scheme of development, require ability and experience not alone of the engineer but of the

economist and the statesman. The half century of extensive administrative experience of Commissioner Mead, his record as framer of successful policies, are convincing evidence that this great opportunity for statesmanship is in capable hands.

"R. F. Walter, the chief engineer, who will be Commissioner Mead's right-hand man in this investigation and development, is also prepared, through long years of experience in the West and the exercise of large responsibilities, to deal effectively with the varied and difficult questions which must come up for decision.

"Of one thing the public should be warned and that is the unwisdom of going to the vicinity of the dam site in the expectation of getting work without ample provision to meet the emergency should this expectation fail. The dam site is located in the midst of a great desert with few inhabitants and slight opportunity for other employment than that which it may afford. Employment will develop only as contracts are let and ample notice will be given when opportunities for work present themselves."

[APPENDIX 25]

ORDER NAMING THE DAM
SEPTEMBER 17, 1930

443

THE SECRETARY OF THE INTERIOR,
Washington, D. C., September 17, 1930.

MY DEAR DOCTOR MEAD: This is to notify you that the dam which is to be built in the Colorado River at Black Canyon is to be called the Hoover Dam.

Sincerely yours,

RAY LYMAN WILBUR.

DR. ELWOOD MEAD,
Commissioner of Reclamation,
Washington, D. C.

[APPENDIX 26]

CESSION OF JURISDICTION
BY NEVADA AND ACCEPTANCE
BY UNITED STATES

447

ACT OF NEVADA CEDING JURISDICTION OVER LANDS OF UNITED STATES

An Act ceding the jurisdiction of this State over certain lands owned or to be acquired by the United States and repealing certain acts relating thereto

Approved February 24, 1921.

Sec. 2895. Jurisdiction ceded over United States lands.

Sec. 2896. Civil and criminal process excepted.

Sec. 2897. Jurisdiction does not vest until United States acquires title.

Sec. 2898. Certain acts repealed.

Sec. 2895. Jurisdiction ceded over United States lands.

1. The consent of the State of Nevada is hereby given, in accordance with the seventeenth clause, eighth section of the first article of the Constitution of the United States, to the acquisition by the United States, by purchase, condemnation, or otherwise, of any land in this State which has been, or may hereafter be, acquired for sites for customhouses, courthouses, post offices, arsenals, or other public buildings whatever, or for any other purpose of the Government.

The following note is from a case decided under an earlier enactment (Stats. 1885, p. 40):

Under the provisions of article 1, section 8, United States Constitution, land purchased for the purposes therein enumerated ipso facto falls within the exclusive jurisdiction of the United States.

Post offices and Federal courthouses are "needful buildings" under the provisions of said section.

Where a State cedes to the United States exclusive jurisdiction over land purchased as a site for a public building "for all purposes except the administration of the criminal laws of this State," the State has no jurisdiction for the punishment of crimes committed on the purchased land but only the right to execute criminal process thereon for the violation of its laws committed elsewhere within the State. (State v. Mack, 23 Nev. 362, 366, 62 Am. St. Rep. 811, 47 Pac. 763.)

Sec. 2896. Civil and criminal process excepted.

2. The exclusive jurisdiction in and over any land so acquired by the United States shall be and the same is hereby, ceded to the United States for all purposes, except the service upon such sites of all civil and criminal process of the courts of this State, but the jurisdiction so ceded shall continue no longer than the said United States shall own such lands; provided, that an accurate description and plat of such lands so acquired, verified by the oath of some officer of the general government having knowledge of the facts, shall be filed with the Governor of this State.

Sec. 2897. Jurisdiction does not vest until United States acquires title.

3. The jurisdiction hereby ceded shall not vest until the United States shall have acquired the title to the said lands by purchase, condemnation, or otherwise; and so long as the said lands shall remain the property of the United States when acquired as aforesaid, and no longer, the same shall be and continue exempt and exonerated from all State, county, and municipal assessment, taxation, or other charges which may be levied or imposed under the authority of this State.

Sec. 2898. Certain acts repealed.

4. Those certain acts entitled "An act ceding the jurisdiction of this State over certain lands owned by the United States," approved January 18, 1883, and "An act ceding the jurisdiction of this State over certain lands to be acquired by the United States," approved February 24, 1885, are hereby repealed.

[Act of February 24, 1921, secs. 2895-2898, Nevada Comp. Laws, 1929.]

THE SECRETARY OF THE INTERIOR,
Washington, D. C., May 19, 1931.

HON. FRED B. BALZAR,
Governor of Nevada,
Carson City, Nev.

MY DEAR GOVERNOR BALZAR: Pursuant to the seventeenth clause of article 1, section 8 of the Constitution of the United States, and to section 2897 of the Nevada Compiled Laws, 1929, there is attached hereto for filing in your office an accurate description and plat or diagram showing lands embraced within the Boulder Canyon project Federal Reservation in Clark County, Nev., the establishment of which is hereby declared, effective the date on which this letter and its accompanying enclosures are filed in your office. This reservation is established in order to facilitate the construction and operation of the Hoover Dam, power plant and appurtenant works authorized by the Boulder Canyon project act of December 21, 1928. (45 Stat. 1057.)

Within the area described on said plat or diagram exclusive jurisdiction shall be exercised by the United States for all purposes except the service of civil and criminal process of the courts of the State of Nevada, as duly authorized by law.

The reservation hereby established is supplemental to the withdrawals of public lands heretofore made under the provisions of the said Boulder Canyon project act and of the reclamation law, and the filing of said plat and description and the establishment of said reservation shall not be construed as a restoration of any public lands heretofore so withdrawn or as an abridgement of the rights of the United States under such withdrawals.

This letter and accompanying plat will be delivered to you by Chief Engineer R. F. Walter, of the Bureau of Reclamation, who will be glad to give you any details desired concerning plans of construction or any related matters.

In the prosecution of this work I hope to have the cooperation of yourself and of the other officials of your State. Any helpful suggestions pertaining to this work will be welcomed and deeply appreciated.

Very truly yours,

(Signed)

RAY LYMAN WILBUR.



* Accession No. 24207

STATE OF NEVADA,
EXECUTIVE CHAMBER,
Carson City, May 26, 1931.

Hon. RAY LYMAN WILBUR,
Secretary of the Interior, Washington, D. C.

MY DEAR SECRETARY WILBUR: This will acknowledge receipt at the hands of Chief Engineer R. F. Walter, of the Bureau of Reclamation, of your letter of May 19, with accompanying map of the Boulder Canyon project Federal Reservation in Clark County, Nev., which last has been filed in this office, and transmitted to the Surveyor General of Nevada for recording and filing in that office.

It is noted that within the area described upon said plat or diagram, exclusive jurisdiction shall be exercised by the United States for all purposes except the service of civil and criminal process of the courts of the State of Nevada, as duly authorized by law.

Very truly yours,

F. B. BALZAR, *Governor.*

[APPENDIX 26-A]

DEPARTMENTAL ORDER APPROVING
REPORT OF COMMISSION FOR
ACQUISITION OF LANDS IN
RESERVOIR AREA

455

UNITED STATES DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D. C., October 20, 1931.

The Secretary of the Interior.

SIR: Cecil W. Creel, Harry E. Crain, and Levi W. Syphus were appointed by the department as appraisers to appraise the non-mineral property that will be required for Hoover Reservoir, Boulder Canyon project.

The appraisal report is inclosed in three parts:

(a) The full board appraisal consisting of an appraisal of 48 tracts in which all three appraisers agreed on valuations.

(b) The Crain and Creel appraisal consisting of an appraisal of 218 tracts covering all tracts not included in the full board appraisal in which two appraisers only, Messrs. Crain and Creel, agreed on valuations.

(c) The Syphus or minority appraisal, being an appraisal by Mr. Syphus alone of the tracts not included in the full board appraisal.

There are also inclosed (1) a letter of October 14, 1931, from the Chief Engineer, and (2) a letter of October 7, 1931, from Construction Engineer and District Counsel Alexander commenting upon the appraisal reports.

The construction engineer, district counsel, and Chief Engineer are of the opinion, in which I concur, that where land is appraised at less than \$5 per acre, the offers to purchase should be made on the basis of \$5 per acre. While unimproved desert nonmineral land is practically valueless, it is felt that an offer of \$2.50 per acre (as fixed by the board) would strike the owners as so low as to lead to many condemnation suits, unless the offer were later raised. What award a jury would make in condemnation suits is of course always problematical, but our experience has been that juries generally double or treble the valuation of the Government's appraisers.

In appraising land for which a water right is claimed, the appraisers were faced by the difficulty of ascertaining the area in each holding for which a water right existed. No attempt has been made to ascertain the water right areas, but the appraisal has been made in the alternative, in the one case on the assumption that all of the land for which a water right could reasonably be claimed has a full water right, and in the other case on the assumption that none of the land has a water right. The valuation which the appraisers put on the water can thus be ascertained in connection with each tract, and, when the purchase is made, this value per water-right acre can be applied to the acreage in the holding then determined to have a water right.

The Crain and Creel appraisal of water-right values is \$100 per share for the preferred stock of the Muddy Valley Irrigation Co., \$6 per share for its common stock, and (with some exceptions) \$100 per acre for a full water right not represented by shares of stock.

As shown on page 14 of the Alexander-Young report herewith, if the property is purchased at the appraised values fixed in the reports herewith, the total expenditure will not overrun \$848,553.40.

It is recommended that the full board and Crain-Creel appraisals be approved, including the Crain-Creel appraisals of water-right valuations, except (a) the appraisals of tracts Nos. 99, 115, and 275, as to which reports will be made later; (b) appraisals where unimproved land is valued at less than \$5 per acre, in all which cases it is recommended that offers be authorized as if the land has been appraised at \$5 per acre. It is also recommended that the title required of vendors under this appraisal be fee-simple, except for mineral reservations in State patented land and for existing road, telephone line, and ditch easements. Nevada mineral reservations seem to be unimportant. (Sec. 4155, Nevada Compiled Laws, 1929.) It is also recommended that offers to landowners be authorized in accordance with the approved appraisals modified as above.

Very truly yours,

ELWOOD MEAD, *Commissioner.*

Incl. 88051.

Approved, except as to (b), which should be deleted October 26, 1931.

RAY LYMAN WILBUR,
Secretary.

[APPENDIX 27]

EXECUTIVE ORDER
CREATING COLORADO RIVER
WILD LIFE REFUGE

459

EXECUTIVE ORDER

COLORADO RIVER WILD-LIFE REFUGE, NEVADA AND ARIZONA

It is hereby ordered that the following-described area in the States of Nevada and Arizona, be, and the same is hereby, reserved and set apart as a refuge and breeding ground for wild birds and animals:

ARIZONA

GILA AND SALT RIVER MERIDIAN

T. 31 N., R. 15	W., all fractional unsurveyed portion north and west of Hualpa Indian Reservation;
T. 32 N., R. 15	W., secs. 4 to 9, secs. 16 to 21, and secs. 28 to 33, inclusive (unsurveyed);
T. 30 N., R. 16	W., secs. 5, 6, 7, 8, and 18 (partly surveyed);
T. 31 N., R. 16	W., all (unsurveyed);
T. 32 N., R. 16	W., all (unsurveyed);
T. 33 N., R. 16	W., all (unsurveyed);
T. 30 N., R. 17	W., secs. 1 to 18, inclusive (partly surveyed);
T. 31 N., R. 17	W., all fractional;
T. 32 N., R. 17	W., all fractional (unsurveyed);
T. 30 N., R. 18	W., secs. 1 to 21 and secs. 28 to 30, inclusive (partly surveyed);
T. 30 N., R. 19	W., secs. 1 to 18 and secs. 24 to 25, inclusive (unsurveyed);
T. 31 N., R. 19	W., all fractional (unsurveyed);
T. 32 N., R. 19	W., all fractional (unsurveyed);
T. 30 N., R. 20	W., secs. 5 to 8, inclusive (unsurveyed);

NEVADA

MOUNT DIABLE MERIDIAN

T. 31 N., R. 20	W., all (unsurveyed);
T. 32 N., R. 20	W., all fractional (unsurveyed);
T. 30 N., R. 21	W., secs. 1 and 12 (unsurveyed);
T. 31 N., R. 21	W., all (unsurveyed);
T. 32 N., R. 21	W., all fractional (unsurveyed);
T. 30 N., R. 22	W., all (unsurveyed);
T. 31 N., R. 22	W., all (unsurveyed);
T. 32 N., R. 22	W., all fractional (unsurveyed);
T. 30 N., R. 23	W., all fractional;
T. 31 N., R. 23	W., all fractional;
T. 32 N., R. 23	W., all fractional;
T. 20 S., R. 63	E., sec. 36 (unsurveyed);
T. 23 S., R. 63	E., secs. 1, 12, and 13, and that portion of secs. 2, 11, 14, 23, and 24 within Boulder Canyon Project Federal Reservation;
T. 21 S., R. 63½	E., secs. 1, 12, and 13 (unsurveyed);
T. 23 S., R. 63½	E., secs. 12, 13, and 24, and that portion of sec. 1 within Boulder Canyon Project Federal Reservation;
T. 20 S., R. 64	E., secs. 31 and 32;
T. 21 S., R. 64	E., all (unsurveyed);
T. 22 S., R. 64	E., all;
T. 23 S., R. 64	E., secs. 1 to 24, inclusive;
T. 20 S., R. 65	E., secs. 19 to 36, inclusive;
T. 21 S., R. 65	E., all fractional;
T. 22 S., R. 65	E., all fractional;
T. 23 S., R. 65	E., secs. 5 to 8 and secs. 16 to 21, inclusive (unsurveyed);
T. 20 S., R. 66	E., secs. 19 to 36, inclusive (unsurveyed);
T. 21 S., R. 66	E., all fractional (unsurveyed);
T. 17 S., R. 67	E., secs. 24 and 25;
T. 18 S., R. 67	E., secs. 13, 24, 25, and 36;
T. 19 S., R. 67	E., secs. 1, 12, 13, 24, 25, and 36;

T. 20 S., R. 67	E.,	secs. 1 and 2, secs. 11 to 14, and secs. 19 to 36, inclusive (unsurveyed);
T. 21 S., R. 67	E.,	all fractional (unsurveyed);
T. 15 S., R. 68	E.,	secs. 25, 26, 35, and 36;
T. 16 S., R. 68	E.,	secs. 1 and 2, secs. 11 to 14, and secs. 19 to 36, inclusive;
T. 17 S., R. 68	E.,	secs. 1 to 5, secs. 8 to 30 and secs. 32 to 36, inclusive;
T. 18 S., R. 68	E.,	secs. 1 to 5 and secs. 7 to 36, inclusive;
T. 19 S., R. 68	E.,	secs. 2 to 11, secs. 14 to 23, and secs. 26 to 35, inclusive;
T. 20 S., R. 68	E.,	secs. 2 to 11, secs. 14 to 23, and secs. 25 to 36, inclusive;
T. 21 S., R. 68	E.,	all fractional;
T. 15 S., R. 69	E.,	secs. 29 to 32, inclusive;
T. 16 S., R. 69	E.,	secs. 5, 6, 7, 18, 19, 30, 31, and 32;
T. 17 S., R. 69	E.,	secs. 4 to 10, secs. 15 to 21, and secs. 28 to 33, inclusive;
T. 18 S., R. 69	E.,	secs. 5, 6, 7, 8, and 18;
T. 20 S., R. 69	E.,	secs. 31 to 36, inclusive;
T. 21 S., R. 69	E.,	all fractional (unsurveyed);
T. 22 S., R. 69	E.,	all fractional (unsurveyed);
T. 20 S., R. 70	E.,	secs. 23 to 26 and secs. 31 to 36, inclusive (unsurveyed);
T. 21 S., R. 70	E.,	all fractional (unsurveyed);
T. 22 S., R. 70	E.,	all fractional (unsurveyed);
T. 20 S., R. 71	E.,	secs. 3, 4, 9, 10, secs. 15 to 22 and secs. 27 to 33, inclusive (unsurveyed);
T. 21 S., R. 71	E.,	all fractional (unsurveyed).

Practically all the lands involved have been withdrawn for classification and in connection with the Boulder Canyon project for river regulation, improvement of navigation, flood control, irrigation and domestic uses, and for power development, and are primarily under the jurisdiction of the Department of the Interior. The reservation of this area as a wild-life refuge is subject to the use thereof by said department for the purposes mentioned and other incidental purposes, and to any other existing valid rights.

It is unlawful within this reservation (a) to hunt, trap, capture, willfully disturb, or kill any wild animal or bird of any kind whatever, to take or destroy the nests or eggs of any wild bird, to occupy or use any part of the reservation, except as provided for by legislation or under such rules and regulations as are promulgated jointly by the Secretary of Interior and the Secretary of Agriculture; (b) to cut, burn, or destroy any timber, underbrush, grass, or other natural growth; (c) willfully to leave fire or to suffer it to burn unattended near any forest, timber, or other inflammable material; (d) after building a fire in or near any forest, timber, or other inflammable material, to leave it without totally extinguishing it; and (e) willfully to injure, molest, or destroy any property of the United States.

Warning is given to all persons not to commit any of the acts herein enumerated, under the penalties prescribed by sections 106, 107, and 145 of chapter 4, title 18, United States Code (35 Stat. 1098 and 43 Stat. 98), or by section 10 of the Migratory Bird Conservation Act of February 18, 1929 (45 Stat. 1224; U. S. Code, Supp., title 16, sec. 715*i*).

This refuge shall be known as the Colorado River Wild Life Refuge.

THE WHITE HOUSE,

—, 1933.

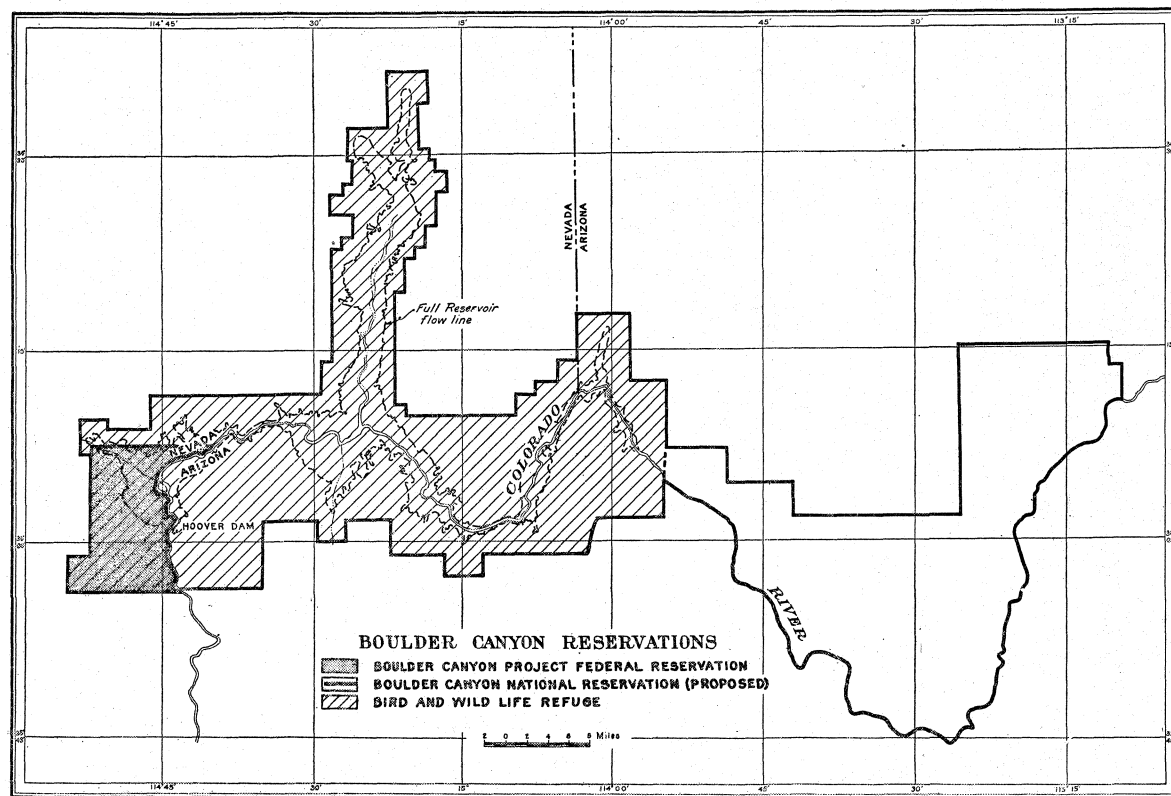
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[APPENDIX 28]

PROPOSED LEGISLATION
ESTABLISHING BOULDER CANYON
NATIONAL RESERVATION

SUBMITTED BY THE DEPARTMENT
TO THE 72^d CONGRESS, 2^d SESSION

463



A BILL

FOR THE ESTABLISHMENT, DEVELOPMENT, AND ADMINISTRATION OF THE BOULDER CANYON NATIONAL RESERVATION, AND THE DE- VELOPMENT AND ADMINISTRATION OF THE BOULDER CANYON PROJECT FEDERAL RESERVATION, AND FOR OTHER PURPOSES

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby "set aside and reserved by the United States"¹ for its use in the construction, operation, and maintenance of the works authorized by the Boulder Canyon project act of December 21, 1928 (45 Stat. 1057), the lands in the States of Arizona and Nevada listed and described as follows:

ARIZONA

GILA AND SALT RIVER MERIDIAN

- T. 32 N., R. 8 W., secs. 4 to 9, inclusive, and fractional secs. 17, 18 and 19 (partly surveyed);
- T. 33 N., R. 8 W., secs. 19, 30, 31, 32 and 33, and those portions of secs. 20 and 29 lying west of the west boundary of the Grand Canyon National Monument;
- T. 31 N., R. 9 W., all fractional (partly surveyed);
- T. 32 N., R. 9 W., all (partly surveyed);
- T. 33 N., R. 9 W., secs. 19 to 36, inclusive;
- T. 27 N., R. 10 W., all fractional (unsurveyed);
- T. 28 N., R. 10 W., all fractional (unsurveyed);
- T. 29 N., R. 10 W., all fractional (partly surveyed);
- T. 30 N., R. 10 W., all fractional (unsurveyed);
- T. 31 N., R. 10 W., all (unsurveyed);
- T. 32 N., R. 10 W., all;
- T. 33 N., R. 10 W., secs. 19 to 36, inclusive;
- T. 27 N., R. 11 W., all fractional (unsurveyed);
- T. 28 N., R. 11 W., all fractional (partly surveyed);
- T. 29 N., R. 11 W., all (partly surveyed);
- T. 30 N., R. 11 W., all;
- T. 28 N., R. 12 W., all fractional (unsurveyed);
- T. 29 N., R. 12 W., all (unsurveyed);
- T. 30 N., R. 12 W., all (unsurveyed);
- T. 28 N., R. 13 W., all fractional (unsurveyed);
- T. 29 N., R. 13 W., all fractional (unsurveyed);
- T. 30 N., R. 13 W., all (unsurveyed);
- T. 31 N., R. 13 W., secs. 19 to 21 and secs. 28 to 33, inclusive (partly surveyed);
- T. 30 N., R. 14 W., all fractional (unsurveyed);
- T. 31 N., R. 14 W., secs. 4 to 9, secs. 16 to 28 and secs. 34 to 36, inclusive, and fractional secs. 29, 30, 32 and 33 (partly surveyed);
- T. 31 N., R. 15 W., all fractional unsurveyed portion north and west of Hualpai Indian Reservation;
- T. 32 N., R. 15 W., secs. 4 to 9, secs. 16 to 21 and secs. 28 to 33, inclusive (unsurveyed);
- T. 30 N., R. 16 W., secs. 5, 6, 7, 8 and 18 (partly surveyed);
- T. 31 N., R. 16 W., all (unsurveyed);
- T. 32 N., R. 16 W., all (unsurveyed);
- T. 33 N., R. 16 W., all (unsurveyed);
- T. 30 N., R. 17 W., secs. 1 to 18, inclusive (partly surveyed);
- T. 31 N., R. 17 W., all fractional;
- T. 32 N., R. 17 W., all fractional (unsurveyed);

¹ Certificate of Secretary in B. C. P. Fed. Res.

T. 30 N., R. 18 W., secs. 1 to 21 and secs. 28 to 30, inclusive (partly surveyed);
 T. 30 N., R. 19 W., secs. 1 to 18 and secs. 24 to 25, inclusive (unsurveyed);
 T. 31 N., R. 19 W., all fractional (unsurveyed);
 T. 32 N., R. 19 W., all fractional (unsurveyed);
 T. 30 N., R. 20 W., secs. 5 to 8, inclusive (unsurveyed);
 T. 31 N., R. 20 W., all (unsurveyed);
 T. 32 N., R. 20 W., all fractional (unsurveyed);
 T. 30 N., R. 21 W., secs. 1 and 12 (unsurveyed);
 T. 31 N., R. 21 W., all (unsurveyed);
 T. 32 N., R. 21 W., all fractional (unsurveyed);
 T. 30 N., R. 22 W., all (unsurveyed);
 T. 31 N., R. 22 W., all (unsurveyed);
 T. 32 N., R. 22 W., all fractional (unsurveyed);
 T. 30 N., R. 23 W., all fractional;
 T. 31 N., R. 23 W., all fractional;
 T. 32 N., R. 23 W., all fractional.

NEVADA

MOUNT DIABLO MERIDIAN

T. 20 S., R. 63 E., sec. 36 (unsurveyed);
 T. 23 S., R. 63 E., secs. 1, 12 and 13, and that portion of secs. 2, 11, 14, 23 and 24 within Boulder Canyon Project Federal Reservation;
 T. 21 S., R. 63½ E., secs. 1, 12 and 13 (unsurveyed);
 T. 23 S., R. 63½ E., secs. 12, 13 and 24, and that portion of sec. 1 within Boulder Canyon Project Federal Reservation;
 T. 20 S., R. 64 E., secs. 31 and 32;
 T. 21 S., R. 64 E., all (unsurveyed);
 T. 22 S., R. 64 E., all;
 T. 23 S., R. 64 E., secs. 1 to 24, inclusive;
 T. 20 S., R. 65 E., secs. 19 to 36, inclusive;
 T. 21 S., R. 65 E., all fractional;
 T. 22 S., R. 65 E., all fractional;
 T. 23 S., R. 65 E., secs. 5 to 8 and secs. 16 to 21, inclusive (unsurveyed);
 T. 20 S., R. 66 E., secs. 19 to 36, inclusive (unsurveyed);
 T. 21 S., R. 66 E., all fractional (unsurveyed);
 T. 17 S., R. 67 E., secs. 24 and 25;
 T. 18 S., R. 67 E., secs. 13, 24, 25 and 36;
 T. 19 S., R. 67 E., secs. 1, 12, 13, 24, 25 and 36;
 T. 20 S., R. 67 E., secs. 1 and 2, secs. 11 to 14 and secs. 19 to 36, inclusive (unsurveyed);
 T. 21 S., R. 67 E., all fractional (unsurveyed);
 T. 15 S., R. 68 E., secs. 25, 26, 35 and 36;
 T. 16 S., R. 68 E., secs. 1 and 2, secs. 11 to 14 and secs. 19 to 36, inclusive;
 T. 17 S., R. 68 E., secs. 1 to 5, secs. 8 to 30 and secs. 32 to 36, inclusive;
 T. 18 S., R. 68 E., secs. 1 to 5 and secs. 7 to 36, inclusive;
 T. 19 S., R. 68 E., secs. 2 to 11, secs. 14 to 23 and secs. 26 to 35, inclusive;
 T. 20 S., R. 68 E., secs. 2 to 11, secs. 14 to 23 and secs. 25 to 36, inclusive;
 T. 21 S., R. 68 E., all fractional;
 T. 15 S., R. 69 E., secs. 29 to 32, inclusive;
 T. 16 S., R. 69 E., secs. 5, 6, 7, 18, 19, 30, 31 and 32;
 T. 17 S., R. 69 E., secs. 4 to 10, secs. 15 to 21 and secs. 28 to 33, inclusive;
 T. 18 S., R. 69 E., secs. 5, 6, 7, 8 and 18;
 T. 20 S., R. 69 E., secs. 31 to 36, inclusive;
 T. 21 S., R. 69 E., all fractional (unsurveyed);
 T. 22 S., R. 69 E., all fractional (unsurveyed);
 T. 20 S., R. 70 E., secs. 23 to 26 and secs. 31 to 36, inclusive (unsurveyed);
 T. 21 S., R. 70 E., all fractional (unsurveyed);
 T. 22 S., R. 70 E., all fractional (unsurveyed);
 T. 20 S., R. 71 E., secs. 3, 4, 9, 10, secs. 15 to 22 and secs. 27 to 33, inclusive (unsurveyed);
 T. 21 S., R. 71 E., all fractional (unsurveyed).

The Boulder Canyon Project Federal Reservation, established by order of the Secretary of the Interior, May 15, 1931, shall continue to consist of so much of the above listed lands as are Government owned and are included within the following description, to wit:

"Beginning at corner No. 1, at a point in the middle of the channel of the Colorado River which is east of a point four miles south of the corner of Ts. 22 and 23 S., Rs. 64 and 65 E., M. D. M., Nevada; thence from said corner No. 1, west eleven miles to corner No. 2, the southwest corner of the reservation; thence north three miles and twenty chains to corner No. 3; thence east two miles to corner No. 4; thence north nine miles and sixty chains to corner No. 5, the northwest corner of the reservation; thence east twelve miles to corner No. 6, the northeast corner of the reservation; thence south to corner No. 7, at a point in the middle of the channel of the Colorado River; thence down the middle of said channel to corner No. 1, the place of beginning." ¹

The remainder of the above-listed lands shall hereafter constitute the Boulder Canyon National Reservation.

SEC. 2. "The construction, operation, and maintenance of a dam and incidental works in the main stream of the Colorado River at Black Canyon and the creation of a storage reservoir," ² having been authorized, and such construction being now in progress, "for the purpose of controlling the floods, improving navigation, and regulating the flow of the said river, providing for storage, and for the delivery of the stored waters thereof for reclamation of public lands and for the generation of electrical energy," ² the accomplishment of said purposes in accordance with the provisions and requirements of the said Boulder Canyon project act shall be given priority in "the supervision, management, and control" of the said reservation. ³ So far as relates to the accomplishment of the said purposes of said Boulder Canyon project act, the Bureau of Reclamation, under the direction of the Secretary of the Interior, shall have such supervision, management, and control in said Boulder Canyon National Reservation and in the Boulder Canyon Project Federal Reservation, heretofore established.

SEC. 3. "Under the direction of the Secretary of the Interior," ³ and in so far as can be done without interference with the accomplishment of the purposes of the said Boulder Canyon project act, the National Park Service shall "promote and regulate the use" ⁴ of the said reservations by "such means and measures as will conserve the scenery and the natural and historic objects and the wild life therein and provide for the enjoyment of the same" ⁴ and the recreational use thereof for the benefit of the people of the United States. In so far as applicable and not in conflict with the purposes set forth in section 2 hereof, the provisions of the act of August 25, 1916 (39 Stat. 535), as amended, shall govern such promotion and regulation of said reservations by the National Park Service. In the supervision, management, and control of other national reservations for Federal purposes, the National Park Service, under direction of the Secretary of the Interior and with his approval, shall cooperate in a similar way and with similar authority, upon request of the agency charged with the primary administration of any other such reservation. ³

SEC. 4. The withdrawals for reclamation and power purposes dated, respectively, May 8, 1919, April 19, 1920, August 7, 1920, March 30, 1921, May 19, 1921, April 21, 1923, and June 28, 1930, are hereby vacated, except as to the lands included in the Boulder Canyon National Reservation and in the Boulder Canyon Project

¹ Plat of May 15, 1931; see p. 451.

² Sec. 1, act Dec. 21, 1928.

³ Sec. 2, act Aug. 25, 1916.

⁴ Sec. 1, act Aug. 25, 1916.

Federal Reservation as described in section 1 hereof; and, also, except as to such lands as are south of the southern boundary of the Boulder Canyon Project Federal Reservation and as to such lands as are north of the northern boundary of the Boulder Canyon National Reservation. The withdrawals for classification and study, with a view to possible national monument use, dated respectively, May 3, 1929, and April 25, 1930, are also hereby restored to entry, except as to lands included in the Boulder Canyon National Reservation and in the Boulder Canyon Project Federal Reservation as described in section 1 hereof.

SEC. 5. (a) The State of Nevada by the act of February 24, 1921 (secs. 2895 to 2898, inclusive, C. L. Nevada, 1929), having given consent to the acquisition by the United States of lands in that State for the purposes of the Government, upon the filing in the office of the Governor of Nevada of a plat thereof, the Boulder Canyon Project Federal Reservation was set apart and reserved by the Secretary of the Interior for the United States under date of May 15, 1931, as shown by plat filed in the office of the Governor of Nevada on the 26th day of May, 1931, and "sole and exclusive jurisdiction was assumed by the United States over the area embraced and included within the said Boulder Canyon Project Federal Reservation in the State of Nevada, saving, however, to the State of Nevada the right to serve civil or criminal process within the limits of the aforesaid reservation in the State of Nevada in suits or prosecutions for or on account of rights acquired, obligations incurred, or crimes committed in said State, outside of said reservation."⁵ Notwithstanding such sole and exclusive jurisdiction assumed by the United States over said area, the said State shall have the right to tax persons and private corporations, their franchises and property on the lands included in said reservation in said State; and the persons residing in said reservation in said State now or hereafter shall have the right to vote at all elections held within the county of Clark in which said reservation is situated in said State; and the laws of the said State of Nevada with reference to public schools shall continue in full force and effect in said reservation in said State of Nevada, including the right to tax for their construction, operation, and maintenance: *Provided*, That this subsection shall be of no force or effect except and until the Legislature of Nevada accepts the return of such jurisdiction as to taxation, elections, and schools as is granted in this subsection: *Provided further*, That no tax shall be levied, assessed, or collected against any property used in the performance of any power or water contract with the United States, or income derived from such use, or franchise used in connection therewith: *Provided further*, That nothing herein shall be construed to give to the State of Nevada the right to tax in said reservation in said State of Nevada, other than by a bullion tax, or property tax for school purposes, prior to June 30, 1941.⁶

(b) "All the laws applicable to places under the sole and exclusive jurisdiction of the United States shall have force and effect in said Boulder Canyon Project Federal Reservation in said State. All fugitives from justice taking refuge in said reservation in said State of Nevada shall be subject to the same laws as refugees found anywhere in the State of Nevada. If any offense shall be committed in said reservation in said State of Nevada, which offense is not prohib-

⁵ 16 U. S. C. 57, Yosemite et al.

⁶ Date of expiration of leases.

ited or the punishment is not specifically provided for by any law of the United States, the offender shall be subject to the same punishment as the laws of Nevada in force at the time of the commission of the offense may provide for a like offense in said State."⁷

(c) "The said Boulder Canyon Project Federal Reservation in the State of Nevada shall constitute a part of the United States judicial district for the State of Nevada, and the district court of the United States in and for said district shall have jurisdiction of all offenses committed therein. The said district court shall appoint a commissioner, who shall reside in the reservation in said State and who shall have jurisdiction to hear and act upon all complaints made of any violations of law or of the rules and regulations made by the Secretary of the Interior for the Government of said reservation in said State. Such commissioner shall have power upon sworn information to issue process in the name of the United States for the arrest of any person charged with the commission of any misdemeanor or charged with a violation of the rules and regulations or of any law for the government of said reservation in said State, and try persons so charged and, if found guilty, impose punishment and adjudge the forfeiture prescribed. In all cases of conviction an appeal shall lie from the judgment of said commissioner to the United States Court for the district of Nevada and the United States district court in such district shall prescribe rules and procedure and practice for such commissioner in the trial of cases and for appeals to said United States district court. Such commissioner shall also have the power to issue process in the name of the United States for the arrest of any person charged with commission within said reservation in said State of any criminal offense other than a misdemeanor or a violation of the rules and regulations or of any law for the government of said reservation in said State, and to hear the evidence introduced, and if he is of the opinion that probable cause is shown for holding the person so charged for trial, he shall cause such person to be safely conveyed to a secure place of confinement within the jurisdiction of the United States District Court for the State of Nevada, and certify a transcript of the record of his proceedings and testimony in the case to said court, which court shall have jurisdiction of the case. The said commissioner shall grant bail in all cases bailable under the laws of the United States or of said State. All process issued by said commissioner shall be directed to the marshal of the United States for the district of Nevada, but nothing herein contained shall be so construed to prevent the arrest, by any officer or employee of the Government or any person employed by the United States in the policing of said reservation within the boundary of said reservation, without process of any person taken in the act of violating the law or any regulation prescribed by the secretary. The said commissioner shall be paid an annual salary as appropriated for by Congress, payable monthly. All fees, costs, and expenses collected by the commissioner and all fines and costs imposed and collected shall be deposited with the clerk of the United States District Court for the State of Nevada. All fees, costs, and expenses, arising in cases under this subsection shall be certified, approved, and paid as are like fees, costs, and expenses in the courts of the United States."⁸

⁷ 16 U. S. C. 58, 59, Yosemite et al.

⁸ 16 U. S. C. 66-77, Yosemite et al.

SEC. 6. "The Secretary of the Interior is authorized, under general regulations to be prescribed by him, to permit the prospecting, development, and the utilization of the mineral resources"⁹ of said reservations in the State of Nevada and Arizona, whenever consistent with the purposes of said Reservations. The deposits of oil, gas, coal, gold, copper, and other minerals in the lands in said reservations shall, exclusive of the surface thereof, be subject to disposition in accordance with the provisions of the mining laws in force at the time of such disposition. Any person qualified to permit, lease, locate, or enter any of the mineral deposits in such lands, or having the right to mine and remove the same under the laws of the United States, shall have the right at all times to enter upon said lands for the purpose of prospecting for oil, gas, coal, gold, copper, or other minerals therein, provided he shall not injure, damage, or destroy any tangible improvements of others thereon. Any person who has acquired from the United States the deposits of oil, gas, coal, gold, copper, or other minerals, through lease, location, or entry, or the right to mine and remove the same, may reenter and occupy so much of the surface thereof as may be required for all purposes reasonably incident to the mining or removal of the oil, gas, coal, gold, copper, or other minerals, but shall be liable in damages for the destruction or damage to tangible improvements of others: *Provided*, That all permits, leases, entries, or patents made or issued for the oil, gas, coal, gold, copper, or other mineral deposits herein reserved shall contain appropriate notations declaring them to be subject to the provisions of this act. No title, right, claim, or interest in or to the mineral lands within the said reservations as defined herein, may be initiated by discovery, location, entry, purchase, or otherwise, and the mineral deposits only shall be subject to disposition in the manner herein provided, but valid rights or claims which have attached to the lands prior to approval hereof shall not be affected by this act.

SEC. 7. "The Secretary of the Interior shall have authority to issue, under rules and regulations to be prescribed by him, grazing permits and to authorize the grazing of livestock on the lands within said reservations at fees not to exceed those charged by the Forest Service in adjacent areas, so long as such grazing is not detrimental to the purposes of said reservations."¹⁰

SEC. 8. The Secretary of the Interior is authorized to make and publish such general rules and regulations as he may deem necessary and proper for the government and care of said reservations, for the protection of the property therein and for the preservation of the peace, health, and safety of the inhabitants of said reservations. Violation of any rules and regulations authorized by this act shall be a misdemeanor and shall be punished by a fine of not more than \$500 or by imprisonment not exceeding six months, or by both said fine and imprisonment.¹¹

SEC. 9. The Secretary of the Interior is authorized in his discretion to lease without charge to the State of Nevada and/or the State of Arizona, or to any political subdivision thereof, such tract or tracts of land in said reservations as to him may seem proper for school purposes.

⁹ 40 Stat. 1178, Grand Canyon.

¹⁰ Sequoia, 44 Stat. 820.

¹¹ Department substitute for Arentz bill.

IV. NEGOTIATIONS CONCERNING THE POWER CONTRACTS

- 29. Hydrology of Boulder Canyon Reservoir.
- 30. Value of Boulder Canyon power.
- 31. Notices to prospective applicants for power.
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- 33. Tentative allocation.
- 33-A. Statement by Secretary Wilbur at close of power hearings,
November 13, 1929.
- 34. Agreement of March 20, 1930, among major California
applicants.
- 35. Agreement of April 7, 1930, among municipalities for alloca-
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- 36. Letter from the Chairman of the Southern California Edison
Co.

[APPENDIX 29]

HYDROLOGY OF BOULDER CANYON RESERVOIR

WITH REFERENCE ESPECIALLY TO
THE HEIGHT OF THE DAM TO BE CONSTRUCTED

BY E. B. DEBLER

[OMITTING CHARTS AND APPENDIXES]

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HYDROLOGY OF THE BOULDER CANYON RESERVOIR WITH REFERENCE ESPECIALLY TO THE HEIGHT OF DAM TO BE ADOPTED

INTRODUCTION

The Boulder Canyon project act (45 Stat. 1057), approved December 21, 1928, was largely predicated on data developed prior to 1924. The board of engineers appointed in pursuance of S. J. Res. 164, approved May 29, 1928 (45 Stat. 1011), in its report of December 3, 1928, considered some data which became available subsequently but was unable in the limited time available to give detailed consideration to these matters.

The Boulder Canyon act prescribed a minimum reservoir capacity of 20,000,000 acre-feet. The plans covered by the report of the board of engineers contemplated a dam to raise the water level 550 feet, with an initial storage capacity of 26,000,000 acre-feet. Marked reductions in the cost of producing power in southern California resulting from improvements in the art of steam power production make it necessary to achieve the lowest obtainable cost of production to insure the financial success of the project. Unexpectedly large power demands make it desirable to produce the maximum power consistent with engineering feasibility and cost.

Studies made in connection with the 1924 report indicated a declining cost for power with increasing reservoir capacities up to fully 34,000,000 acre-feet.

The present report is based on all data available to date and is directed primarily to the consideration of high level dams with especial attention to schemes of reservoir operation intended to produce a maximum power output consistent with adequate flood protection and an assured irrigation supply.

A number of important features have been given consideration to a degree of detail not properly presentable in this summary. Descriptions thereof will be found appended in a series of exhibits.

BOULDER CANYON STREAM FLOW

Discharge records.

Yuma gage height records are available from 1878 to date but discharge measurements date only from 1902. Gaging stations were established on the main tributaries in the upper basin at various times in and after 1895. Desultory measurements were made at Bullshead, 1902-03; Hardyville, 1905-1907; and Topock, 1917-1922. Dependable records have been obtained at Lees Ferry beginning with 1922, and at Bright Angel and Topock beginning with 1923. Methods in use at Yuma in earlier years, while in keeping with methods in common use at the time, were not adequate to obtain accurate records in periods of high water. Most of these imperfections would tend to indicate discharges higher than actual; some would tend to produce the opposite result. The Colorado River board reported an opinion that Yuma discharges should be reduced 10 per cent.

A careful study has been made of the reported discharges at Yuma in relation to reported discharges at gaging stations in the upper basin where the difficulties of measurement are far less, for the entire period of concurrent records. The results of the present study and the estimates by E. C. LaRue appearing in Water Supply Paper No. 556 compare as follows:

Mean annual discharge at Black Canyon in acre-feet

1897-1901, inclusive:	
Bureau's 1930 estimate.....	16, 200, 000
LaRue 1925 estimate.....	17, 700, 000
1902-1922, inclusive:	
Bureau's 1930 estimate from upstream records....	17, 600, 000
Bureau's 1930 estimate from Yuma records.....	17, 300, 000
LaRue 1925 estimate.....	17, 800, 000

From this study it was concluded that the use of Yuma reported discharges as the basis of estimated flows at Boulder Canyon Dam is conservative. Nevertheless it is believed advisable to assume that Boulder Canyon water supply may be overrated and a general allowance for this purpose is hereinafter explained.

Boulder Canyon flow in relation to operated stations.

The limited records of stream flow on Colorado River make it advisable to use such records to the full extent available, consistent with confidence in the result. For the years 1897-1901, discharge estimates are based on upstream records, no measurements having been made downstream. For 1902-1922 the Yuma records have been used by deducting Gila River discharges and adding Yuma project diversions to obtain Colorado River flow; then applying a correction based on concurrent records of 1926 to 1929, inclusive, at Yuma and Topock, to obtain Topock discharges. The average annual loss from Topock to Yuma was found to be 750,000 acre-feet annually. The resulting estimated discharges at Topock for 1902-1922, together with the reported discharges there for 1923 to 1929 have then been corrected to obtain Boulder Canyon discharges, the correction factor adopted bearing the same relation to the recorded correction factor for Topock to Yuma, as the stream bed and valley floor areas. The loss from Boulder Canyon to Topock was thus found to be 250,000 acre-feet annually, and the loss from Boulder Canyon to Yuma, 1,000,000 acre-feet, or an average of 1,380 second-feet, under present conditions. The distribution of this loss through the year is based on the recorded distribution of loss from Topock to Yuma. While the annual loss is no doubt variable and bears some relation to heights and duration of floods, climatic conditions, etc., lack of sufficient records preclude a proper determination of such variation which is, in any event, comparatively small.

Correction for past and future depletion.

Past and 1928 irrigation development above Boulder Canyon, including transmountain diversions and of anticipated future development within the 50-year repayment period for the Boulder Canyon project have been reviewed, as has upstream power development. For the purposes of this report, Boulder Canyon Dam has been assumed completed in 1938 with development in the 10-year period of 1928-1938 at the average rate from 1928 to 1988. The results may be summarized as follows:

Development above Boulder Canyon

	1928	1938	1988
Irrigated area, acres-----	1, 717, 000	2, 040, 000	3, 368, 000
Capacity of irrigation reservoirs, acre-feet-----	662, 000	-----	2, 933, 000
Capacity of power reservoirs, acre-feet-----	10, 000	-----	8, 100, 000
Transmountain diversions, acre-feet annually-----	116, 000	180, 000	621, 000
Surface area of irrigation reservoirs, acres-----	27, 800	} 60, 000	{ 86, 400
Surface area of power reservoirs, acres-----	2, 000		
Mean depletion for irrigation consumptive use, transmountain diversions and reservoir losses, acre-feet annually-----	2, 760, 000	3, 481, 000	6, 595, 000
Mean annual inflow to Boulder Canyon, acre-feet-----	15, 730, 000	15, 009, 000	11, 895, 000

Irrigation depletion has been taken at 1.5 acre-feet per acre annually for the first one million acres of development, with all additional areas to have a normal consumptive use of 1.5 acre-feet per acre. Normal reservoir losses are assumed at 4 feet per year over the mean exposed area. These normal losses have been fluctuated for run-off conditions with departure from the normal equal to one-half the departure in the case of run-off.

In estimating future stream flow, no allowance has been made for the hold-over effects of upstream storage estimated to total 11,000,000 acre-feet in capacity by 1988. Its effect would be to increase stream flow at Boulder Canyon during the critical period determining firm power capacity.

No consideration has been given to the ultimate stream flow available at Boulder Canyon since the matter of primary interest is the power output which will be available during the 50-year repayment period for amortization of construction advances. Even the repayment period is so long that the estimate of run-off conditions as far ahead as 1988 may be far astray.

FLOOD CONTROL

Maximum discharges at Boulder Canyon.

In view of the large increase in construction diversion capacity recommended by the Colorado River board, further studies have been made of the annual flood peaks that have passed Boulder Canyon. Expressed in terms of probability, the results are as follows:

Frequency with which discharge will be equaled or exceeded	Discharge in second-feet
Once in 5 years-----	130, 000
Once in 10 years-----	160, 000
Once in 20 years-----	190, 000
Once in 50 years-----	230, 000
Once in 100 years-----	260, 000
Once in 500 years-----	320, 000
Once in 1,000 years-----	360, 000
Once in 10,000 years-----	450, 000

During the period of discharge measurements at Yuma, 1902-1929, maximum discharges at Boulder Canyon have equaled or exceeded 100,000 second-feet on 17 separate occasions, 150,000 second-feet on 6 occasions, and 200,000 second-feet on 2 occasions, with a maximum of 210,000 second-feet. The flood of 1884 is estimated to have had a peak of 250,000 to 300,000 second-feet.

The storage capacity behind the construction diversion works is small but a break may nevertheless do some damage. The need for reassurance of downstream interests and the delay in construction and consequent loss in revenue that would result from a flooding of the dam excavation make it advisable to be conservative in provisions for flood diversion during construction. The recommendation of 200,000 second-feet by the Colorado River board, while very conservative, can hardly be considered overdrawn and appears advisable of adoption.

Flood control discharges from reservoir.

At present the floods annually recurring destroy a large part of the vegetal growth appearing on sand bars and in flood-water channels between periods of flood, thus maintaining a condition favorable to rapid erosion by rising floods.

Waters released from Boulder Canyon reservoir will, for all practical purposes, be clear and will issue at far more uniform rates than at present. The result on the river channel, for a long time to come, is extremely problematical. Eventually there will be a number of dams between Boulder Canyon and Laguna Dam with the river passing serenely through a number of slack-water ponds. Waste waters will then be relatively small in volume and their disposal to the Gulf will not be difficult. In the meantime a large part of the flow must be conducted to the Gulf.

Three possibilities at once present themselves. The stream may erode its bed actively until enough gravel is uncovered to produce a stable channel at materially lower elevations; it may degenerate into a shallow bank-eroding stream with a continual tendency to meander and to raise its bed; it may merely assume a highly meandering channel within its flood plain and flow therein in a clear and comparatively narrow, deep stream. The first possibility, if extended to the delta region, would solve the channel capacity problem but would introduce difficulty in maintaining diversion and bank protection works. The flood dangers in the second need not be described. The third possibility, while harmless at ordinary times, would be the most dangerous in time of flood. In view of uncertainties connected with this situation, it is advisable to make liberal provisions for flood control, and maximum reservoir discharge of 75,000 second-feet with a near maximum flood, such as that of 1884, has been adopted.

Flood volumes.

In arriving at these volumes for the years of record since 1902, consideration has been given to the loss and temporary storage of water in the channels and by overflow between Boulder Canyon and Yuma. The 1884 flood is known to have been the largest flow, both in rate and seasonal volume, that has occurred in Colorado River since settlements were made along that stream. Estimates for the

1884 flood are based on a gage height at Grand Junction, gage heights at Yuma, detailed newspaper accounts of flood conditions in western Colorado, a flood observation at Lees Ferry, high-water marks in Black Canyon, and reports of conditions at Needles by the Atchison, Topeka & Santa Fe Railroad engineers.

Probability theories have been applied to the data with the following results, under conditions of no upstream irrigation:

Occurrence once in—	Run-off, in millions of acre-feet in excess of—				
	40,000 second-feet	50,000 second-feet	60,000 second-feet	75,000 second-feet	100,000 second-feet
10 years.....	9	7	6	4	2
50 years.....	13	10	8	6	4
100 years.....	14	12	9	7	4
500 years.....	17	14	10	8	5
1,000 years.....	18	15	11	8	5
1884 flood.....	22	20	18	15	12

From the above table it would appear that the 1884 flood was one of near maximum proportions. This conclusion is supported by accounts of stream-bed conditions found in the description of the Redrock Bridge in volume 25, Trans. A. S. C. E. In 1881 soundings were made for bedrock. In 1888, after the high flood of 1884, the so-called bedrock of 1881 was found to have been replaced by drift sand, gravel, and boulders. Apparently the material taken for bedrock in 1881 had been in place for a period bordering on a geologic age permitting extensive compacting.

Flood control capacity and releases.

Studies of the relation of rainfall and run-off in the past 30 years indicates that run-off can be predicted to a considerable degree and reservoir operations conducted to take advantage thereof. Rainfall data for 1884 are meager as the Weather Bureau was not then in existence; nevertheless, there were strong indications toward the end of winter of heavy run-off. It has been concluded that operation can be so conducted as to result in a distributed reservoir outflow substantially as follows:

	Second-feet
April.....	55,000
May.....	65,000
June.....	75,000
July.....	75,000
August.....	50,000

River losses and irrigation diversions, including the All-American Canal, would reduce these flows by 13,000 second-feet in their passage to Yuma.

With such outflow, the requisite flood control capacity is 9,500,000 acre-feet with upstream development as estimated for 1938 and 4,000,000 acre-feet with upstream development as of 1988. These reservations for flood control have been assumed in all computations for power output. For the period of run-off record, from 1902 to 1929, the largest releases at the reservoir, and corresponding flows at

Yuma, with the All-American Canal constructed and 1938 upstream development would have been as follows:

Mean out-flow in thousands of second-feet

Month	1907	1909	1917	1920	1921
January.....	21	21	21	21	30
February.....	21	21	28	20	29
March.....	35	22	26	21	21
April.....	25	36	26	22	21
May.....	21	39	28	25	21
June.....	20	40	28	24	20
July.....	48	19	37	29	38
August.....	36	19	22	19	29
September.....	21	35	19	19	19
October.....	23	35	19	19	19
November.....	32	32	20	20	29
December.....	30	31	28	28	32

NOTE.—Discharges through the delta below Yuma would be less by 13,000 second-feet in summer and 4,000 second-feet in winter.

IRRIGATION USES

The maximum diversion by the Imperial Canal up to 1928 has been 7,255 second-feet. Yuma discharges are 2,500 second-feet less than at Topock with a stable river at moderate discharges in midsummer and the loss from Boulder Canyon to Topock at such times is estimated at 300 second-feet. The maximum release required from Boulder Canyon under present conditions would then be 10,055 second-feet. By 1938 it is expected that the Los Angeles aqueduct would be in operation with a demand of 1,500 second-feet. The All-American Canal may also be constructed by 1938 with a capacity of 10,000 second-feet for irrigation purposes, but the maximum irrigation use from the canal will not exceed 8,000 second-feet for a long time, such use constituting an increase of fully 50 per cent over present California use. Mexico now uses about 2,000 second-feet and there is little reason to anticipate a greater demand even though a water allocation treaty be consummated. The maximum demand in 1938 is then estimated as follows:

	Second-feet
Present use and loss Boulder Canyon to Yuma.....	2, 800
Los Angeles Aqueduct.....	1, 500
All-American Canal.....	8, 000
Mexico.....	2, 000
Total.....	14, 300

Under 1938 conditions power releases equal or exceed this amount and irrigation demands need not be considered in reservoir operations.

Power demands in the lower Colorado River Basin and adjacent regions are expected to result in the construction of power dams on Colorado River below Boulder Canyon at a comparatively early date. Aside from this feature the development of the Parker and Parker-Gila Valley projects will necessitate a diversion dam at Parker, with favorable conditions for moderate storage capacity. Under these conditions it is to be expected that re-regulation of Boulder Canyon outflow to fit irrigation needs will be effected by dams below Boulder Canyon and that momentary irrigation demands need never be considered in Boulder Canyon operations. In the event irrigation plans

should be perfected without provision for such re-regulating storage, it may in time become necessary to add the Bullshead Reservoir to the Boulder Canyon project. Increased power output will make such addition self-supporting.

The discharges necessitated by power requirements will assure an adequate annual irrigation supply at all times.

SILT

The Colorado River board adopted a figure of 137,000 acre-feet as the annual silt load of the Colorado River compared with a previous bureau estimate of 80,000 acre-feet. The estimates of upstream development contemplate reservoirs with a total capacity of 11,000,000 acre-feet, of which some 8,000,000 acre-feet would be in power reservoirs principally at the lower ends of the main tributaries. Construction of the Bridge Canyon Dam is included with an active storage capacity of 1,000,000 acre-feet.

The upper reservoirs will materially reduce silt flow while Bridge Canyon would almost completely stop silt flow into Boulder Canyon. The silt accumulation during the repayment period has been assumed at 3,000,000 acre-feet with a maximum deposit at a level slightly below the average storage level.

POWER OUTPUT

Plant efficiency.

The following efficiencies have been assumed in all operations:

	Per cent
Penstocks.....	97
Turbines.....	90
Generators.....	96
Transformers.....	99
Net over-all efficiency.....	83

Firm power.

Run-off records on Colorado River extend over a period of 37 years from 1895 to 1932. No other stream in this locality has longer records. Great Salt Lake obtains most of its inflow from the western slope of mountains, the eastern side of which drain to the Colorado River. Inflow to Great Salt Lake can be estimated for the past 78 years from known lake levels, known lake area, estimated evaporation rates, and allowances for increasing depletions for irrigation uses. From such estimates it appears that there have been three periods of low run-off in 78 years, each of which closely approximated that of 1900-1905, inclusive, in total run-off for the 6-year period, one of these having a total 6 per cent below and the other 4 per cent above the late period.

There are, furthermore, other periods with conditions only moderately better. Firm power should, therefore, be based on the output obtainable in the low run-off period immediately following 1900. It has been decided that a maximum monthly shortage of 10 per cent in firm power output will be permissible.

With declining storage, increasing outflow is necessary for full power output. When such depletion is carried too far, undesirable results obtain in that the maximum power shortage becomes unduly

high, irrigation shortages are invited, and total power output during the critical period is depressed by the continuance of low heads. To meet this situation, an empirical rule has been adopted for a maximum permissible draft of 15,000 second-feet under 1938 conditions whenever the storage level is below 15,000,000 acre-feet; and of 14,000 second-feet under 1988 conditions whenever the storage level falls below 15,000,000 acre-feet.

The resulting firm power for various maximum high-water levels is as follows:

Maximum water level, feet	Raise in river (feet)	Firm power output under 1938 conditions (horse-power, continuous output)	Firm power output under 1988 conditions (horse-power, continuous output)
1, 204	557	608, 000	543, 000
1, 222	575	650, 000	582, 000
1, 229	582	663, 000	594, 000

Dump power output.

Except during the critical periods of low run-off, large amounts of power may be produced in addition to the firm power. This report assumes power installations such that the firm power, if generated at a uniform rate would constitute 65 per cent of the installation, in effect permitting a load factor as low as 65 per cent. Plant capacity at any time not needed for the production of firm power may be utilized to produce dump power provided a suitable market be found.

A detailed study of the relation of accumulated precipitation in winter and early spring to the run-off in the succeeding summer produced results permitting a rather extensive use of flood storage capacity for power production without encroaching upon the primary purpose of such storage for flood control and without endangering firm power output in case a protracted period of low run-off should develop. The details of these provisions are so complicated that they will not be reproduced here but may be consulted in Exhibit H.

Heights of dam considered.

The Colorado River Board report was based on consideration of a dam having a top elevation (exclusive of parapet) of 1,207 with ordinary high-water level fixed at elevation 1,197, a 550-foot raise of the low-water surface of the river. It has now been concluded that the 10-foot freeboard heretofore contemplated may safely be reduced to 3 feet, in view of the extremely rare occasions when the upper portion of the flood-control storage will be utilized. As the raise in water level has become the more commonly used term in designating the size of dam, that term will also here be used. The three levels considered are as follows:

Raise in water surface, feet	Top of dam, elevation	High water	Capacity at high water in 1938	Capacity at high water in 1988
557	¹ 1, 207	1, 204	<i>Acre-feet</i> 27, 000, 000	<i>Acre-feet</i> 24, 000, 000
575	1, 225	1, 222	29, 500, 000	26, 500, 000
582	1, 232	1, 229	30, 500, 000	27, 500, 000

¹ Same as dam considered by Colorado River Board.

Summary of power output.

The results of the computations on the bases heretofore outlined are herein summarized.

Raise in water surface.....	557 feet		575 feet		582 feet	
Elevation of top of dam.....	1,207 feet		1,225 feet		1,232 feet	
High-water level.....	1,204 feet		1,222 feet		1,229 feet	
Upstream development as of.....	1938	1988	1938	1988	1938	1988
Reservoir capacity.....acre-feet..	27,000,000	24,000,000	29,500,000	26,500,000	30,500,000	27,500,000

OUTPUT IN HORSEPOWER

Plant capacity.....	935,000	935,000	1,000,000	1,000,000	1,020,000	1,020,000
Continuous firm output.....	608,000	543,000	650,000	582,000	663,000	594,000
Average possible output, 1897-1929..	837,000	722,000	887,000	754,000	901,000	765,000
Minimum output.....	547,000	489,000	585,000	524,000	597,000	535,000

ANNUAL OUTPUT IN MILLIONS OF KILOWATT-HOURS

Firm power.....	3,970	3,540	4,240	3,800	4,330	3,880
Average total for 1897-1929.....	5,460	4,720	5,790	4,920	5,880	4,990

Reservoir operations and related data bearing on the reservoir with 575-foot raise in water surface are presented as Plates 1 and 2. [Omitted]

The power analysis indicates a large amount of dump power available over a major portion of time provided adequate equipment be installed for its generation. If contractors for firm power should so coordinate their sources of power as to be able to utilize Boulder Canyon power at a 100 per cent load factor, no dump power would be available except through the provision of additional power units. The price obtainable for dump power may not warrant such an undertaking. In view of these uncertainties it is inadvisable to take dump power into consideration in determining relative advantages for different heights of dam.

Determinations of firm power output have necessitated extensive estimates in base data. Due caution dictates that the results be scaled down at least until new and additional data obtainable only in the course of a number of years of observation, particularly of stream flow and rainfall, shall confirm or alter the estimates made. It is proposed that the comparison be based on firm power output 10 per cent less than that computed for conditions of 1938.

Firm power output under 1938 conditions:

Raise in water surface	Computed firm power output	Adopted firm power output	Adopted annual output of firm power
<i>Feet</i>	<i>Horsepower</i>	<i>Horsepower</i>	<i>Kilowatt-hours</i>
557	608,000	547,000	3,600,000,000
575	650,000	585,000	3,800,000,000
582	663,000	597,000	3,900,000,000

COST OF POWER OBTAINABLE BY RAISING DAM

The selling price of falling water has tentatively been announced at 1.63 mills per kilowatt-hour of firm power. Estimates have been made on the same basis, of the increase in construction and annual costs occasioned by raising the dam. These costs have been compared with the increase in output, in the following table:

	Increase in raise of water surface	
	From 557 to 575 feet	From 575 to 582 feet
Increase in construction cost.....	\$3, 134, 000	\$1, 258, 000
Increase in annual cost:		
Interest and amortization.....	145, 893	58, 545
Operation and maintenance.....		
Depreciation.....	1, 355	529
Total.....	147, 248	59, 074
Increase in annual power output, kilowatt-hours..	269, 000, 000	79, 000, 000
Cost per kilowatt-hour for the increased output..	0. 00055	0. 00076

The above table indicates a fast-mounting cost for the increased energy obtainable with a raise in height of dam, but with such costs still well below the cost with the 550-foot or 557-foot dam, even though the height be increased to 582 feet.

INTERFERENCE WITH BRIDGE CANYON SITE

At the head of the Boulder Canyon Reservoir lies the Bridge Canyon dam site, considered the most desirable of the sites on that section of the river. River level there is at elevation 1,207 feet, with 10,000 second-feet flowing.

The extent of interference by Boulder Canyon is presented in the following table:

	With 1938 develop- ment	With 1988 develop- ment
557-FOOT DAM AT BOULDER CANYON		
Maximum water level at Boulder ¹	1, 204	1, 204
575-FOOT DAM AT BOULDER CANYON		
Maximum water level at Boulder.....	1, 222	1, 222
Maximum encroachment.....feet.....	16	16
Greatest encroachment, 1897-1929.....do.....	3	10
Time encroached, 1897-1929.....per cent.....	0. 3	13
582-FOOT DAM AT BOULDER CANYON		
Maximum water level at Boulder.....	1, 229	1, 229
Maximum encroachment.....feet.....	23	23
Greatest encroachment, 1897-1929.....do.....	8	15
Time encroached, 1897-1929.....per cent.....	8	25

¹ Interference negligible, limited to backwater effect at high flood.

With a 557-foot dam there is negligible encroachment. With the 575-foot and 582-foot dams, the maximum encroachment is 16 feet and 23 feet, respectively, this result obtaining when a full reservoir

at Boulder Canyon would be concurrent with a low discharge at Bridge Canyon.

Stream-flow conditions at Bridge Canyon resemble conditions at Bright Angel more nearly than at other stations and at that station there is a rise of 25 feet in water level for a discharge of 150,000 second-feet. The still-water level with a full reservoir for a 582-foot dam would then roughly equal the level obtaining at present with a flood of 150,000 second-feet.

With the 575-foot and 582-foot dams there would be a backwater effect whenever the reservoir would be full. With very high floods this effect might amount to as much as 3 feet for the 575-foot dam and as high as 8 feet for the 582-foot dam.

From the standpoint of power production at Bridge Canyon there would then be a material, though minor reduction in power output with a 575-foot dam at Boulder Canyon, increasing rapidly with higher dams. From the standpoint of design, to care for flood levels, the Bridge Canyon power site would not be greatly affected with heights of dam at Boulder Canyon up to 582 feet.

CONCLUSIONS

1. For adequate flood control a capacity of 9,500,000 acre-feet should be reserved under 1938 conditions of upstream development declining to 4,000,000 acre-feet in the 50-year repayment period to 1988.

2. Firm power output obtainable upon completion of Boulder Canyon Dam in 1938, with a 10 per cent reduction on account of uncertainties in available base data, would be as follows:

Raise in water level (feet)	Elevation of water surface	Elevation of top of dam (exclusive of parapet)	Continuous output	Annual output
			<i>Horsepower</i>	<i>Kilowatt-hours</i>
557	1, 204	¹ 1, 207	547, 000	3, 600, 000, 000
575	1, 222	1, 225	585, 000	3, 800, 000, 000
582	1, 229	1, 232	597, 000	3, 900, 000, 000

¹ Same dam as reported by Colorado River Board, with freeboard reduced 7 feet, raising water level accordingly.

It is estimated that these outputs can be maintained throughout the repayment period, particularly if other power dams are constructed along Colorado River.

3. Large amounts of dump power can be produced in seasons of high run-off without encroaching on flood control, irrigation, or the production of firm power. The cost and market for this power are so uncertain that no income should now be counted on from this source.

4. Raising the dam reduces the average cost of firm power output. There are indications, however, that this will not hold true for heights much beyond 582 feet.

5. For Boulder Canyon dams up to 575 feet, the power value of Bridge Canyon dam site would be affected but little and construction cost at Bridge Canyon would not be appreciably increased. For greater heights interference progresses steadily.

E. B. DEBLER.

[APPENDIX 30]

SUMMARY OF STUDIES ON HOOVER DAM POWER VALUES

BY

R. F. WALTER, L. N. McCLELLAN, W. F. DURAND

SEPTEMBER 10, 1929 (SUMMARY OF REPORTS)

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SUMMARY OF REPORT DATED SEPTEMBER 10, 1929

BY R. F. WALTER, CHIEF ENGINEER, BUREAU OF RECLAMATION,
L. N. McCLELLAN, ELECTRICAL ENGINEER, BUREAU OF RECLAMATION,
AND W. F. DURAND, CONSULTING ENGINEER, RELATIVE
TO RATES FOR BOULDER CANYON POWER

COMPETITIVE POWER

The Boulder Canyon project act provides that the rates to be charged for power shall be justified by competitive conditions at distributing points or competitive centers. A number of estimates of cost of residual undeveloped hydroelectric power projects in the Sierra Nevada Mountains, geographically tributary to the power market in southern California, have been examined and it is found that the cost of such developments, including the cost of transmission facilities for delivering power in the vicinity of Los Angeles, varies from \$300 to \$400 per kilowatt. The total estimated cost of the Boulder Canyon development is \$121,000,000, of which \$25,000,000 is allocated to flood control. By deducting the \$25,000,000 allocated to flood control and adding \$50,000,000 for the cost of transmission lines and terminal substations it is found that the total estimated cost of the Boulder Canyon power development is in round figures \$146,000,000 for an installed capacity of 750,000 kilowatts, which is at the rate of \$195 per kilowatt.

It thus appears that as a hydroelectric power project, and in comparison with the estimated costs of other hydroelectric developments which could supply power to the southern California market, the Boulder Canyon development stands in a class by itself and it is quite unapproachable by any of the remaining undeveloped hydroelectric projects on the Sierra Nevada streams.

Under present economic conditions in southern California the value of Boulder Canyon power is determined not by the cost of competitive hydroelectric power but by the cost of producing power in large steam generating stations located at tidewater and operating on fuel oil or natural gas.

COST OF FUEL OIL

The price of fuel oil (or natural gas) is the most important single factor affecting the cost of steam power in southern California. At present the large central stations which supply power to the southern California territory are using natural gas for fuel, but they are equipped for burning fuel oil.

Data derived from various sources representing conditions in southern California in June of the present year [1929] gave prices of fuel oil, or of gas equivalent to fuel oil, ranging from \$0.68 to about \$0.80 per barrel. Since that time it has been stated that the State conservation law, which went into effect during the summer requiring the beneficial use of natural gas as a condition to the working of wells for oil, has resulted in marked reductions in the price of gas for boiler fuel, in some cases down to the equivalent of oil at about \$0.50 per barrel.

It is understood that the result has been, for the time being, a general unsettling of the conditions affecting the price of fuel in this part of the State. However, it seems fair to assume that the conditions will prove only temporary in character and it is the general consensus of opinion that, for any such period as the 15 years covering the first contract period under the Boulder Dam act, the price of fuel will presumably increase rather than decrease. The depletion of nearby oil fields and natural-gas supplies; improvements in the process for obtaining gasoline from fuel oil, thus tending to decrease the fuel-oil residue; together with the general governmental policy of conservation and restriction of production will all tend toward this end.

The Boulder Canyon project act provides for the readjustment of the rates for sale of power 15 years after the contracts are executed and every 10 years thereafter. With this provision for readjustment of rates the price of fuel oil is of concern only for the period beginning when Boulder Canyon power becomes available and ending with the first 15-year period, a matter of perhaps 8 or 9 years.

Considering the present price of fuel oil and natural gas and that, as above noted, these prices are more likely to increase than decrease, it is considered fair to assume an average price of fuel oil, for a period beginning 6 to 7 years and ending 15 years from the present time, somewhere in the range between \$0.75 and \$0.80 per barrel.

The price of fuel oil is a very important factor in determining the value of power at Boulder Canyon. A difference, for example, of 5 cents per barrel in the assumed price of oil will result in a difference of about \$325,000 per year in the value of power at Boulder Canyon, assuming a 60 per cent load factor.

STEAM POWER

The amount of steam power which would be required as substitute for any particular installation at Boulder Canyon is determined by the losses in transmitting power from Boulder Canyon to the load centers and from the substitute steam plant to the same load centers. The installed capacity will depend on the amount of spare capacity in the substitute steam plant. The losses from generators to low voltage side of transformers at the terminal substation have been taken as follows:

	Boulder Canyon	Steam plant
	<i>Per cent</i>	<i>Per cent</i>
Step-up transformers.....	1.0	1.0
Line.....	7.5	.5
Step-down transformers.....	1.0	1.0
Condensers for line regulation.....	2.5	.0
Total.....	12.0	2.5

Good operating practice would require some spare capacity in a steam power plant of the size necessary for a substitute for Boulder Canyon power. Such a plant would have probably six or seven units and sufficient capacity should be provided so that full plant output could be maintained with one unit out of service and without exceed-

ing the safe overload or economical operating capacity of the machines remaining in service. For the purposes of this study it is assumed that each unit could operate economically when carrying an overload of 10 per cent continuously and the installed capacity of the substitute steam plant has been determined on this basis with one unit out of service.

The largest and most efficient steam power plant in southern California at present is the Long Beach No. 3 plant of the Southern California Edison Co., which is designed for an ultimate installation of four units of 100,000 kilowatts capacity each. The first unit of this plant was placed in service June 20, 1928, and a second unit is now being installed. The plant is equipped for using either natural gas or fuel oil and is arranged so that coal-burning equipment can be installed if later found that such fuel is more economical than fuel oil or natural gas. Sea water is used for cooling purposes, the steam pressure is 400 pounds, and the temperature of the steam is 700° F. At 100 per cent load factor this plant produces a little better than 490 kilowatt-hours net per barrel of fuel oil, corresponding to a fuel economy of 12,674 B. t. u. per kilowatt-hour. Data obtained from the Railroad Commission of the State of California and from the Southern California Edison Co. indicate that the cost of the Long Beach No. 3 plant, when the ultimate installation of four units is completed, will amount to \$77.50 per kilowatt of capacity. Data submitted by the Los Angeles Gas & Electric Corp. show that the Seal Beach steam plant, which has an installed capacity of 75,000 kilowatts, cost \$78.20 per kilowatt of capacity. In these estimates the cost of a substitute steam plant has been taken at \$77.50 per kilowatt of installed capacity, the fuel consumption has been taken at 0.55 barrel per kilowatt of installed capacity per year plus $\frac{1}{500}$ barrel per kilowatt-hour generated, and the cost of operation and maintenance has been taken at \$2.25 per kilowatt of required capacity per year corresponding to the actual figures for the Long Beach No. 3 plant.

Estimated cost of equivalent steam-generated energy

[Annual kilowatt-hours generated by equivalent steam plant, 3,249,000]

Load factor	Cost of fuel oil, per barrel		
	\$0.70	\$0.75	\$0.80
With public development: ¹			
55 per cent.....	\$11, 047, 000	\$11, 397, 000	\$11, 749, 000
65 per cent.....	10, 187, 000	10, 536, 000	10, 884, 000
80 per cent.....	9, 293, 000	9, 639, 000	9, 985, 000
With private development: ²			
55 per cent.....	12, 975, 000	13, 355, 000	13, 735, 000
65 per cent.....	11, 913, 000	12, 290, 000	12, 667, 000
80 per cent.....	10, 809, 000	11, 183, 000	11, 557, 000

¹ With interest on investment at 4.75 per cent; depreciation, 2.25 per cent; amortization, 1.07 per cent; and general expense, 2 per cent.

² Interest on investment, 7.5 per cent; depreciation, 1.9 per cent; Federal tax, 0.4 per cent; general expense, 2 per cent; State tax, 8.1 per cent on all other costs.

The substitute steam power plant would be located at tidewater and it is assumed that power would have to be transmitted an average distance of 25 miles to reach the terminal substations. The normal

capacity of each 220 kilovolt circuit from the substitute steam plant to the terminal substations has been taken at 200,000 kilowatts and one spare circuit has been included so as to afford the same factor of safety as is used in connection with Boulder Canyon transmission. The capital cost and the annual cost of operation of each circuit of the back transmission lines from the substitute steam plant have been estimated on the same assumptions as used for the Boulder Canyon transmission lines except that no condenser equipment has been included with the steam-plant transmission, whereas with Boulder Canyon transmission there has been included sufficient condenser capacity for line regulation. State taxes have been omitted from the cost of substitute steam power and from the cost of Boulder Canyon power in the private corporation set-up, because this tax is calculated on the gross revenue which would be the same whether power is obtained from steam or from Boulder Canyon and it would therefore have no effect on the value of power at Boulder Canyon.

Estimated costs of transmission from equivalent steam plant to load center—public development

Load factor, per cent.....	55	65	80
Capacity delivered from terminal substation, kilowatts.....	657, 000	556, 000	452, 000
Line circuits.....	5	4	4
Capital cost ¹	\$12,686,000	\$10,461,000	\$9, 421, 000
Annual cost:			
With public development ²	\$1, 020, 000	\$845, 000	\$747, 000
With private development ³	\$1, 388, 000	\$1, 149, 000	\$1, 022, 000

¹ Right of way, 50 feet for each circuit and at \$5,000 per acre; line at same rate per mile as for line to Hoover Dam; terminal substation at \$10 per kilowatt.

² Interest, 4.75 per cent; depreciation, exclusive of right of way, 1.25 per cent; amortization, 1.107 per cent; operation and maintenance of line, \$125 per circuit mile and of terminal substation at 2 per cent; general expense, 2 per cent.

³ Interest at 7.5 per cent; Federal tax, 0.4 per cent; operation and maintenance, depreciation, and overhead, unchanged; State taxes, 8.1 per cent.

TRANSMISSION

Boulder Canyon power will be transmitted about 280 miles to reach the load centers in southern California and it is assumed that transmission will be at 220,000 volts. With several circuits operating in parallel the safe carrying capacity of each circuit will be about 110,000 to 120,000 kilowatts delivered, with ample margin for stability. The number of circuits required for any particular size of installation at Boulder Canyon is determined by dividing the total peak power delivered by 110,000 kilowatts. Switching equipment for crossover and sectionalizing purposes at the mid-point of the transmission lines is included.

Terminal substations including sufficient condenser capacity for regulation of power factor would be required whether power is obtained from a steam plant or from Boulder Canyon and therefore the capital cost as well as the annual cost of these substations does not affect the value of Boulder Canyon power. Additional condenser equipment is required for line regulation, however, and the estimates of Boulder Canyon transmission include one kilovolt-ampere of condenser capacity for each kilowatt delivered.

Right of way for Boulder Canyon transmission lines will be largely over public land which will cost nothing; but some very expensive right of way will be required for these lines in the vicinity of Los Angeles. It is assumed that 60 miles of lines will traverse semi-improved land, the right of way for which is estimated at \$250 per acre; and 33 miles will pass through highly improved territory, the right of way for which is estimated at \$5,000 per acre, with a width of 50 feet per circuit.

It is understood that the cost of operation and maintenance of the Big Creek 220-kilovolt lines of the Southern California Edison Co. amounts to \$150 per circuit mile per year. These lines pass through country which is very different from the desert country through which the Boulder Canyon lines will pass. The right of way of the Big Creek lines must be cleared of brush every year at considerable cost to prevent fires, whereas a large part of the Boulder Canyon lines will be free from brush. The Edison Company has in the past spent large amounts for the patrol of its Big Creek lines to find the cause of flashovers, and after finding the cause additional money has been spent on corrective measures such as bird guards. The Boulder Canyon lines would be designed in the light of the experience gained from the Big Creek lines and the result would doubtless be improved reliability as well as a lower cost of operation and maintenance. The annual cost of operation and maintenance of the Boulder Canyon transmission lines has therefore been taken at \$125 per circuit mile per year.

Transmission lines, Boulder Canyon to load center

	Number of circuits		
	4	5	6
Capacity, delivery to terminal, kilowatts-----	440, 000	550, 000	660, 000
Construction cost: ¹			
Line ² -----	\$20, 176, 000	\$25, 097, 000	\$30, 018, 000
Sectionalizing station ³ -----	860, 000	1, 044, 000	1, 228, 000
Terminal substation ⁴ -----	7, 676, 000	9, 594, 000	11, 514, 000
Right of way-----	3, 667, 000	4, 583, 000	5, 500, 000
Total-----	32, 379, 000	40, 318, 000	48, 260, 000
Annual cost:			
Public development ⁵ -----	2, 628, 000	3, 275, 000	3, 917, 000
Private development ⁶ -----	3, 571, 000	4, 449, 000	5, 323, 000

¹ All items include 15 per cent for engineering, overhead, and contingencies, and 4 per cent for interest during construction.

² Consist of 5½ towers at \$1,066 each; conductors at \$7,033 and insulators at \$1,443 per circuit mile; telephone, roads, bridges, and patrol stations at \$414,000.

³ Station at \$154,000 per circuit and \$103,000 for buildings, camps, oil system, etc.

⁴ Station at \$920,000 per circuit and \$342,200 per condenser with 2 condensers per circuit.

⁵ Interest, 4.75 per cent; amortization, 1.107 per cent, depreciation, exclusive of right of way, 1.25 per cent; operation and maintenance, \$125 per circuit mile for line, \$5,000 per pair and 2 per cent of cost for sectionalizing station, and 2 per cent for terminal station; general expense, 2 per cent.

⁶ Interest, 7½ per cent; Federal tax, 0.4 per cent; State tax, 8.1 per cent; and other items as for public development.

STEAM STAND-BY

It is generally considered that some amount of steam stand-by should be provided in connection with long-distance transmission, such as will be involved in the case of transmission of Boulder Canyon power to southern California, in order to provide reliable and satisfactory service. Several circuits will be required for the transmission of Boulder Canyon power and when one of these circuits is out of service for any reason it will be possible to transfer a part of the power normally carried by that circuit to the other circuits. For the purposes of this study, it is assumed that the circuits remaining in service can be operated at a capacity of 120,000 kilowatts delivered, at times when one circuit is out of service. The amount of steam stand-by is then determined by the normal capacity of one transmission circuit less the overload capacity of the circuits remaining in service.

Stand-by requirements

Average power generated at Boulder Canyon, kilowatts-----	411, 000	411, 000	411, 000
Load factor-----per cent-----	.55	.65	.80
Peak generated-----kilowatts-----	747, 000	632, 000	514, 000
Delivered peak, 12 per cent loss-----do-----	657, 000	556, 000	452, 000
Circuits-----	6	5	4
Total capacity, 1 line out-----kilowatts-----	600, 000	480, 000	360, 000
Stand-by needed at terminal-----do-----	57, 000	76, 000	92, 000
Stand-by needed at steam plant, 2 per cent loss-----kilowatts-----	58, 000	78, 000	94, 000

The cost of the steam stand-by plant has been taken at the same cost per kilowatt as used for the cost of the substitute steam plant. A steam plant built purely for stand-by service would sacrifice high efficiency for low capital cost and while the proposed stand-by plant is of relatively small capacity it is believed fair to assume that it could be built for the same unit cost as the larger plant. Actually the stand-by capacity would, no doubt, be provided as part of a large plant, in which case the cost per kilowatt would be the same as for the substitute steam plant, or \$77.50 per kilowatt.

The annual cost of the stand-by plant has been taken on the same unit basis as for the larger substitute steam plant except that operation and maintenance has been reduced 50 cents per kilowatt per year and fuel cost includes one barrel per kilowatt capacity for stand-by fuel only. The annual cost is then practically independent of oil cost.

	Load factor, per cent		
	55	65	80
Annual cost:			
With public development-----	\$520, 000	\$700, 000	\$842, 000
With private development-----	646, 000	867, 000	1, 045, 000

Cost of back transmission from steam stand-by plant to Boulder Canyon Terminal Substation

	Public develop- ment	Private develop- ment
Capital cost ¹ -----	\$2, 725, 000	\$2, 725, 000
Annual cost ² -----	171, 000	246, 000

¹ 25 miles of line at \$19,000 per mile and 150-foot right of way at \$5,000 per acre.² On basis previously outlined for Boulder Canyon lines.*Total annual cost of steam stand-by plant and line*

	Cost of fuel oil per barrel		
	\$0.70	\$0.75	\$0.80
Private development:			
Load factor, 55 per cent—			
Total annual cost exclusive of State tax-----	\$823, 000	\$826, 000	\$828, 000
Total annual cost inclusive of State tax-----	889, 000	892, 000	895, 000
Load factor, 65 per cent—			
Total annual cost exclusive of State tax-----	1, 027, 000	1, 030, 000	1, 034, 000
Total annual cost inclusive of State tax-----	1, 110, 000	1, 113, 000	1, 117, 000
Load factor, 80 per cent—			
Total annual cost exclusive of State tax-----	1, 190, 000	1, 194, 000	1, 199, 000
Total annual cost inclusive of State tax-----	1, 286, 000	1, 290, 000	1, 296, 000
Public development:			
Load factor, 55 per cent, total annual cost-----	689, 000	692, 000	694, 000
Load factor, 65 per cent, total annual cost-----	866, 000	869, 000	873, 000
Load factor, 80 per cent, total annual cost-----	1, 008, 000	1, 012, 000	1, 018, 000

VALUE OF BOULDER CANYON POWER

The estimated value of Boulder Canyon power as determined by the cost of substitute steam power generated near the load center, both with and without steam stand-by, is derived in the tables immediately following for both public and private steam-plant construction, with fuel prices of 70, 75, and 80 cents per barrel of fuel oil, and for load factors of 55 per cent, 65 per cent, and 80 per cent. These tables are based on the Government providing the Boulder Canyon Dam and power house but assume installation and operation of the machinery and equipment by the lessee.

Curves D, E, and F, on Plates 1 and 2 show graphically the estimated value of power at Boulder Canyon for fuel-oil prices of 80, 75, and 70 cents per barrel, respectively, and for various load factors.

Estimated construction and annual cost of Boulder Canyon hydroplant, assuming power house constructed by the Government and power-plant machinery and equipment purchased, installed, and operated by lessee. Public and private development

Number of units installed in power plant..... Installed capacity in kilowatts.....	8 500,000	9 562,500	10 625,000	11 687,500	12 750,000
Estimated construction cost of power plant, penstocks, switching station, etc. ¹	\$15,909,449	\$17,313,659	\$20,184,113	\$21,579,623	\$22,975,133
Estimated cost power-plant building.....	1,984,398	2,158,089	2,331,780	2,505,471	2,679,162
Estimated cost power-plant machinery and equipment to lessee.....	13,925,051	15,155,570	17,852,333	19,074,152	20,295,971
Interest during construction at 4 per cent on power plant, penstocks, and switching station ¹	439,906	465,951	530,298	558,888	584,759
Interest during construction at 4 per cent on power-plant building.....	65,744	69,218	72,691	76,166	79,640
Interest during construction at 4 per cent on penstocks, power-plant equipment, and switching station.....	374,162	396,733	457,607	482,722	505,119
Interest during construction at 6 per cent on penstocks, power-plant equipment, and switching station.....	561,243	595,100	686,410	724,083	757,678
Total estimated construction cost to lessee, with interest during construction at 6 per cent.....	14,486,294	15,750,670	18,538,743	19,798,235	21,053,649
<i>Public development</i>					
Interest, 4.75 per cent.....	688,099	748,157	880,590	940,416	1,000,048
Amortization, 1.107 per cent.....	160,363	174,360	205,224	219,166	233,064
Operation and maintenance ¹	221,761	249,545	284,529	312,313	340,097
Depreciation ¹	241,315	265,152	304,807	326,941	370,099
Estimated annual cost.....	1,311,538	1,437,214	1,675,150	1,798,836	1,934,308

Private development

Return on investment, 7.5 per cent.....	1, 086, 472	1, 181, 300	1, 390, 406	1, 484, 868	1, 579, 024
Federal tax, 0.4 per cent.....	57, 945	63, 003	74, 155	79, 193	84, 215
Operation and maintenance ¹	221, 761	249, 545	284, 529	312, 313	340, 097
Depreciation ¹	241, 315	265, 152	304, 807	326, 941	370, 099
Estimated annual cost.....	1, 607, 493	1, 759, 000	2, 053, 897	2, 203, 315	2, 373, 435

¹ See "Memorandum to Consultation Board, June, 1929," p. 58.

Estimated annual value of power at Boulder Canyon, assuming dam and power house constructed by Government and machinery and equipment purchased, installed, and operated by lessee. Public development

Assumptions:

Kilowatt-hours generated annually at Boulder Canyon.....	3, 600, 000, 000
Kilowatt-hours delivered annually from terminal substation.....	3, 168, 000, 000
Kilowatt-hours generated annually at equivalent steam plant.....	3, 249, 000, 000

	Cost of fuel oil per barrel		
	\$0. 70	\$0. 75	\$0. 80
<i>Load factor, 55 per cent. Peak kilowatts generated at Boulder Canyon hydroplant, 747,000</i>			
<i>a</i> Annual cost of equivalent steam power.....	\$11, 047, 000	\$11, 397, 000	\$11, 749, 000
<i>b</i> Annual cost of transmission from equivalent steam plant to load center.....	1, 020, 000	1, 020, 000	1, 020, 000
<i>c</i> Annual cost of equivalent steam power delivered from terminal substation.....	12, 067, 000	12, 417, 000	12, 769, 000
<i>d</i> Annual cost of transmission from Boulder Canyon to load center, 6 circuits.....	3, 917, 000	3, 917, 000	3, 917, 000
<i>e</i> Annual value of power at Boulder Canyon without steam stand-by.....	8, 150, 000	8, 500, 000	8, 852, 000
<i>f</i> Annual cost of Boulder Canyon hydroplant (Table C-16).....	1, 943, 000	1, 943, 000	1, 943, 000
<i>g</i> Annual value of power at Boulder Canyon without steam stand-by, lessee operation.....	6, 207, 000	6, 557, 000	6, 909, 000
<i>h</i> Annual cost of steam stand-by including transmission to load center.....	689, 000	692, 000	694, 000
<i>i</i> Annual value of power at Boulder Canyon with steam stand-by (<i>g</i> , <i>h</i>), lessee operation.....	5, 518, 000	5, 865, 000	6, 215, 000

Estimated annual value of power at Boulder Canyon, assuming dam and power house constructed by Government and machinery and equipment purchased, installed, and operated by lessee. Public development—Continued

	Cost of fuel oil per barrel		
	\$0. 70	\$0. 75	\$0. 80
<i>Load factor, 65 per cent. Peak kilowatts generated at Boulder Canyon hydroplant, 632,000</i>			
<i>a</i> Annual cost of equivalent steam power.....	\$10, 187, 000	\$10, 536, 000	\$10, 884, 000
<i>b</i> Annual cost of transmission from equivalent steam plant to load center.....	845, 000	845, 000	845, 000
<i>c</i> Annual cost of equivalent steam power delivered from terminal substation.....	11, 032, 000	11, 381, 000	11, 729, 000
<i>d</i> Annual cost of transmission from Boulder Canyon to load center, 5 circuits.....	3, 275, 000	3, 275, 000	3, 275, 000
<i>e</i> Annual value of power at Boulder Canyon without steam stand-by.....	7, 757, 000	8, 106, 000	8, 454, 000
<i>f</i> Annual cost of Boulder Canyon hydroplant (Table C-16).....	1, 675, 000	1, 675, 000	1, 675, 000
<i>g</i> Annual value of power at Boulder Canyon without steam stand-by, lessee operation.....	6, 082, 000	6, 431, 000	6, 779, 000
<i>h</i> Annual cost of steam stand-by including transmission to load center.....	866, 000	869, 000	873, 000
<i>i</i> Annual value of power at Boulder Canyon with steam stand-by (<i>g, h</i>), lessee operation.....	5, 216, 000	5, 562, 000	5, 906, 000
<i>Load factor, 80 per cent. Peak kilowatts generated at Boulder Canyon hydroplant, 514,000</i>			
<i>a</i> Annual cost of equivalent steam power.....	9, 293, 000	9, 639, 000	9, 985, 000
<i>b</i> Annual cost of transmission from equivalent steam plant to load center.....	747, 000	747, 000	747, 000
<i>c</i> Annual cost of equivalent steam power delivered from terminal substation.....	10, 040, 000	10, 386, 000	10, 732, 000
<i>d</i> Annual cost of transmission from Boulder Canyon to load center, 4 circuits.....	2, 628, 000	2, 628, 000	2, 628, 000
<i>e</i> Annual value of power at Boulder Canyon without steam stand-by.....	7, 412, 000	7, 758, 000	8, 104, 000
<i>f</i> Annual cost of Boulder Canyon hydroplant (Table C-16).....	1, 437, 000	1, 437, 000	1, 437, 000
<i>g</i> Annual value of power at Boulder Canyon without steam stand-by, lessee operation.....	5, 975, 000	6, 321, 000	6, 667, 000
<i>h</i> Annual cost of steam stand-by including transmission to load center.....	1, 008, 000	1, 012, 000	1, 018, 000
<i>i</i> Annual value of power at Boulder Canyon with steam stand-by (<i>g, h</i>), lessee operation.....	4, 967, 000	5, 309, 000	5, 649, 000

Estimated annual value of power at Boulder Canyon, assuming dam and power house constructed by Government and machinery and equipment purchased, installed, and operated by lessee. Private development

Assumptions:

Kilowatt-hours generated annually at Boulder Canyon.....	3,600,000,000
Kilowatt-hours delivered annually from terminal substation.....	3,168,000,000
Kilowatt-hours generated annually at equivalent steam plant.....	3,249,000,000

	Cost of fuel oil per barrel		
	\$0.70	\$0.75	\$0.80
<i>Load factor, 55 per cent. Peak kilowatts generated at Boulder Canyon hydroplant, 747,000</i>			
a Annual cost of equivalent steam power (without State taxes).....	\$12,003,000	\$12,354,000	\$12,706,000
b Annual cost of transmission from equivalent steam plant to load center.....	1,284,000	1,284,000	1,284,000
c Annual cost of equivalent steam power delivered from terminal substation.....	13,287,000	13,638,000	13,990,000
d Annual cost of transmission from Boulder Canyon to load center, 6 circuits.....	4,924,000	4,924,000	4,924,000
e Annual value of power at Boulder Canyon without steam stand-by.....	8,363,000	8,714,000	9,066,000
f Annual cost of Boulder Canyon hydroplant (Table C-16).....	2,373,000	2,373,000	2,373,000
g Annual value of power at Boulder Canyon without steam stand-by, lessee operation.....	5,990,000	6,341,000	6,693,000
h Annual cost of steam stand-by including transmission to load center.....	823,000	826,000	828,000
i Annual value of power at Boulder Canyon with steam stand-by (g, h), lessee operation.....	5,167,000	5,515,000	5,865,000
<i>Load factor, 65 per cent. Peak kilowatts generated at Boulder Canyon hydroplant, 632,000</i>			
a Annual cost of equivalent steam power (without State taxes).....	11,020,000	11,369,000	11,718,000
b Annual cost of transmission from equivalent steam plant to load center.....	1,063,000	1,063,000	1,063,000
c Annual cost of equivalent steam power delivered from terminal substation.....	12,083,000	12,432,000	12,781,000
d Annual cost of transmission from Boulder Canyon to load center, 5 circuits.....	4,116,000	4,116,000	4,116,000

Estimated annual value of power at Boulder Canyon, assuming dam and power house constructed by Government and machinery and equipment purchased, installed, and operated by lessee. Public development—Continued

	Cost of fuel oil per barrel		
	\$0.70	\$0.75	\$0.80
<i>e</i> Annual value of power at Boulder Canyon without steam stand-by-----	\$7, 967, 000	\$8, 316, 000	\$8, 665, 000
<i>f</i> Annual cost of Boulder Canyon hydroplant (Table C-16)-----	2, 054, 000	2, 054, 000	2, 054, 000
<i>g</i> Annual value of power at Boulder Canyon without steam stand-by, lessee operation-----	5, 913, 000	6, 262, 000	6, 611, 000
<i>h</i> Annual cost of steam stand-by including transmission to load center-----	1, 027, 000	1, 030, 000	1, 034, 000
<i>i</i> Annual value of power at Boulder Canyon with steam stand-by (<i>g</i> , <i>h</i>), lessee operation-----	4, 886, 000	5, 232, 000	5, 577, 000
<i>Load factor, 80 per cent. Peak kilowatts generated at Boulder Canyon hydroplant, 514,000</i>			
<i>a</i> Annual cost of equivalent steam power (without State taxes)-----	9, 999, 000	10, 345, 000	10, 691, 000
<i>b</i> Annual cost of transmission from equivalent steam plant to load center-----	945, 000	945, 000	945, 000
<i>c</i> Annual cost of equivalent steam power delivered from terminal substation-----	10, 944, 000	11, 290, 000	11, 636, 000
<i>d</i> Annual cost of transmission from Boulder Canyon to load center, 4 circuits-----	3, 303, 000	3, 303, 000	3, 303, 000
<i>e</i> Annual value of power at Boulder Canyon without steam stand-by-----	7, 641, 000	7, 987, 000	8, 333, 000
<i>f</i> Annual cost of Boulder Canyon hydroplant (Table C-16)-----	1, 759, 000	1, 759, 000	1, 759, 000
<i>g</i> Annual value of power at Boulder Canyon without steam stand-by, lessee operation-----	5, 882, 000	6, 228, 000	6, 574, 000
<i>h</i> Annual cost of steam stand-by including transmission to load center-----	1, 190, 000	1, 194, 000	1, 199, 000
<i>i</i> Annual value of power at Boulder Canyon with steam stand-by (<i>g</i> , <i>h</i>), lessee operation-----	4, 692, 000	5, 034, 000	5, 375, 000

Estimated value of power at Boulder Canyon. Public and private development

[In mills per kilowatt-hour]

Assumptions: Kilowatt-hours generated annually at Boulder Canyon----- 3, 600, 000, 000

	Cost of fuel oil per barrel					
	Public development			Private development		
	\$0.70	\$0.75	\$0.80	\$0.70	\$0.75	\$0.80
<i>Load factor, 55 per cent</i>						
Value per kilowatt without steam stand-by, lessee operation-----	1. 724	1. 821	1. 919	1. 664	1. 761	1. 859
Value per kilowatt with steam stand-by, lessee operation-----	1. 533	1. 629	1. 726	1. 435	1. 532	1. 629
<i>Load factor, 65 per cent</i>						
Value per kilowatt without steam stand-by, lessee operation-----	1. 689	1. 786	1. 883	1. 643	1. 739	1. 836
Value per kilowatt with steam stand-by, lessee operation-----	1. 449	1. 545	1. 641	1. 357	1. 453	1. 549
<i>Load factor, 80 per cent</i>						
Value per kilowatt without steam stand-by, lessee operation-----	1. 660	1. 756	1. 852	1. 634	1. 730	1. 826
Value per kilowatt with steam stand-by, lessee operation-----	1. 380	1. 475	1. 569	1. 303	1. 398	1. 493

MINIMUM REVENUE REQUIREMENTS

The Boulder Canyon project act requires, in advance of construction appropriations, assured revenues adequate to effect repayment with 4 per cent interest, within 50 years after completion, of the cost of the dam and power plant, exclusive of an allocation of \$25,000,000 for flood control.

The plan now under discussion contemplates that the United States will provide, operate, and maintain the dam and power house, while the power machinery and equipment is to be provided, operated, and maintained by the lessees. The table immediately following is on this basis and presents the resulting requisite power rates with the flood-control cost included in one case and excluded in the other. No allowance has been made for revenues from the sale of water in either case. An arbitrary increase of 10 per cent has been made in the tentative costs to allow for units being out of service and for contingencies. The results are also graphically presented as lines A and B on Plates 1 and 2. In developing the necessary rate to repay the flood-control allocation of \$25,000,000, it becomes necessary to give consideration to section 2 of the Boulder Canyon project act, which dedicates to that purpose only 62½ per cent of the revenues not required to repay costs with the flood-control allocation omitted, automatically providing revenues for the States of Arizona and Nevada.

Plate 3 presents, graphically, the financial operation of the power development, as to Government costs and revenues, for a 12-unit power plant with a 55 per cent load factor on the basis of flood-control costs repaid, assuming minimum power rates for this purpose and no other revenue.

Estimated cost of energy, assuming dam and power house constructed by the Government and power plant machinery and equipment purchased, installed, and operated by lessee

Assumptions:	8	9	10	11	12
Number of units installed in power plant.....	500,000	562,500	625,000	687,500	750,000
Installed capacity in kilowatts.....	82	73	66	60	55
Load factor in per cent.....	3,600	3,600	3,600	3,600	3,600
Output in millions of kilowatt-hours per year.....					
Cost:					
Dam, intake works, tunnels and outlet works, etc.....	\$86, 720, 907	\$86, 720, 907	\$86, 720, 907	\$86, 720, 907	\$86, 720, 907
Interest during construction on above items.....	\$10, 969, 259	\$10, 969, 259	\$10, 969, 259	\$10, 969, 259	\$10, 969, 259
Power-plant building and inclined railway.....	\$1, 984, 398	\$2, 158, 089	\$2, 331, 780	\$2, 505, 471	\$2, 679, 162
Interest during construction on above items.....	\$65, 744	\$69, 218	\$72, 691	\$76, 166	\$79, 640
Total cost, including interest during construction.....	\$99, 740, 308	\$99, 917, 473	\$100,094,637	\$100,271,803	\$100,448,968
Flood control.....	\$25, 000, 000	\$25, 000, 000	\$25, 000, 000	\$25, 000, 000	\$25, 000, 000
Total cost, including interest during construction less flood control.....	\$74, 740, 308	\$74, 917, 473	\$75, 094, 637	\$75, 271, 803	\$75, 448, 968
Annual charges:					
Operation and maintenance of dam.....	\$133, 993	\$133, 993	\$133, 993	\$133, 993	\$133, 993
Depreciation of dam.....	\$156, 940	\$156, 940	\$156, 940	\$156, 940	\$156, 940
Annuity to cover interest and repayment of all except \$25,000,000 flood control.....	\$3, 479, 176	\$3, 487, 423	\$3, 495, 670	\$3, 503, 917	\$3, 512, 165
Subtotal (annual charges without surplus).....	\$3, 770, 109	\$3, 778, 356	\$3, 786, 603	\$3, 794, 850	\$3, 803, 098
Unit cost per kilowatt-hour.....mills.....	1. 047	1. 050	1. 052	1. 054	1. 056
Unit cost per kilowatt-hour.....mills+10 per cent for contingencies.....	1. 152	1. 154	1. 157	1. 160	1. 162
Annuity to cover interest and repayment of \$25,000,000 flood control.....	\$1, 163, 755	\$1, 163, 755	\$1, 163, 755	\$1, 163, 755	\$1, 163, 755
Surplus to Nevada and Arizona (% of above).....	\$698, 253	\$698, 253	\$698, 253	\$698, 253	\$698, 253
Total annual charges.....	\$5, 632, 117	\$5, 640, 364	\$5, 648, 611	\$5, 656, 858	\$5, 665, 106
Unit cost per kilowatt-hour.....mills.....	1. 564	1. 567	1. 569	1. 571	1. 574
Unit cost per kilowatt-hour.....mills+10 per cent for contingencies.....	1. 721	1. 723	1. 726	1. 728	1. 731

NOTE.—Interest and repayment on flood control is taken out of 62½ per cent of annual surplus.

REVENUE FROM SALE OF WATER

Section 1 of the Boulder Canyon project act reads in part as follows: "That no charge shall be made for water or for the use, storage, or delivery of water for irrigation or water for potable purposes in the Imperial or Coachella Valleys" and the first paragraph of section 5 authorizes the Secretary of the Interior "To contract for the storage and delivery of water for irrigation and domestic uses upon charges that will provide revenue which, in addition to other revenue accruing under the Reclamation law and under this act, will, in his judgment, cover all expenses of operation and maintenance incurred by the United States on account of works constructed under this act and the payments to the United States under subdivision (b) of section 4."

Since there is to be no charge for water used in the Imperial and Coachella Valleys the revenue derived from water other than that used by the Metropolitan Water District of southern California will be small.

The Metropolitan Water District estimates that it will require, during the first 10-year period of use, at least 750,000 acre-feet per annum to meet current domestic needs; to protect underground domestic supplies against salt-water invasion and to replenish and restore underground water levels upon which domestic consumption depends. It is understood that the district may desire to contract for 1,000,000 acre-feet per annum.

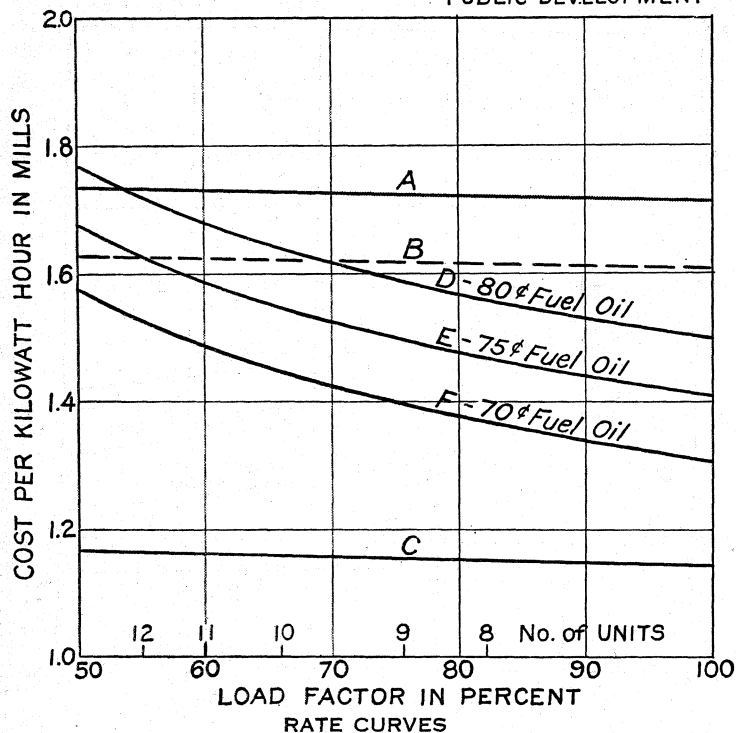
The district has suggested that a fair charge for storage and delivery service for domestic water from Boulder Canyon reservoir may be determined by assuming that the income from stored water, if such service be furnished on a uniform basis, must be sufficient to pay the cost of all features of the project directly involved in providing such storage and delivery service. Studies made by the Bureau of Reclamation indicate that approximately 10,000,000 acre-feet of additional water per year could be diverted from the Colorado River by virtue of the Boulder Canyon reservoir under present upstream development and that in the distant future about 5,000,000 acre-feet of additional water could be diverted per year.

The estimated cost of the dam is \$98,000,000 and the estimated annual cost of operation and maintenance of the dam including depreciation is \$291,000. The total annual charge to provide for operation and maintenance, depreciation, and repayment in 50 years with interest at 4 per cent amounts to \$4,857,000. Assuming that 5,000,000 acre-feet of Boulder Canyon reservoir is allocated to silt storage and 4,400,000 acre-feet is dead storage serving to create a minimum head for power, the active storage would be the difference between 26,000,000 and 9,400,000 or 16,600,000 acre-feet and the annual cost

chargeable to active storage would be $\frac{16,600,000}{26,000,000} \times \$4,851,000 = \$3,100,000$. The annual cost of additional water on this basis would be $\frac{\$3,100,000}{5,000,000} = 62$ cents per acre-foot. It is suggested that 50 to

60 cents per acre-foot would be a fair price to be charged for storage and delivery service from Boulder Canyon reservoir and at this rate a revenue of \$375,000 per annum would be derived from the Metropolitan Water District on the assumption that the district will contract for 750,000 acre-feet per annum.

PLATE I PUBLIC DEVELOPMENT



RATE CURVES
 BOULDER CANYON DAM AND POWER HOUSE CONSTRUCTED BY GOVERNMENT, AND POWER PLANT MACHINERY AND EQUIPMENT PURCHASED, INSTALLED AND OPERATED BY LESSEE.

A..... Rate necessary to repay all costs including Flood Control + 10% for contingencies.

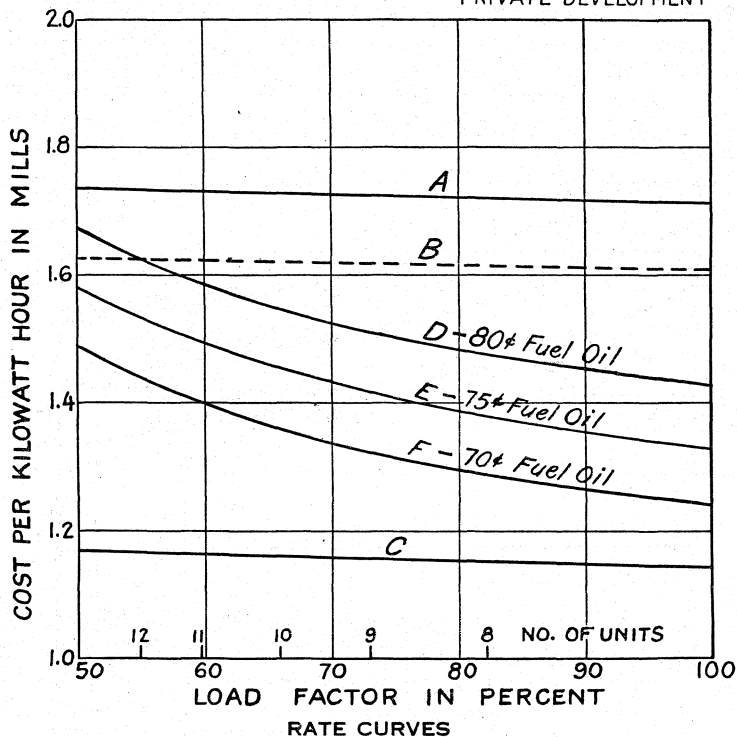
B..... Rate necessary to pay all costs including Flood Control + 10% for contingencies, assuming \$375,000 derived from sale of water.

C..... Rate necessary to pay all costs except Flood Control + 10% for contingencies.

D. E and F.... Value of energy at Boulder Canyon based on cost of equivalent steam energy, and including steam standby for Boulder Canyon Power, for fuel costs as noted.

Boulder Canyon Output assumed at 3,600,000,000 Kw. Hrs. per annum.

PLATE 2
PRIVATE DEVELOPMENT



RATE CURVES
BOULDER CANYON DAM AND POWER HOUSE CONSTRUCTED BY GOVERNMENT, AND POWER PLANT MACHINERY AND EQUIPMENT PURCHASED, INSTALLED AND OPERATED BY LESSEE.

A.....Rate necessary to repay all costs including Flood Control $\pm 10\%$ for contingencies.

B.....Rate necessary to pay all costs including Flood Control $\pm 10\%$ for contingencies, assuming \$375,000. derived from sale of water.

C.....Rate necessary to pay all costs except Flood Control $\pm 10\%$ for contingencies.

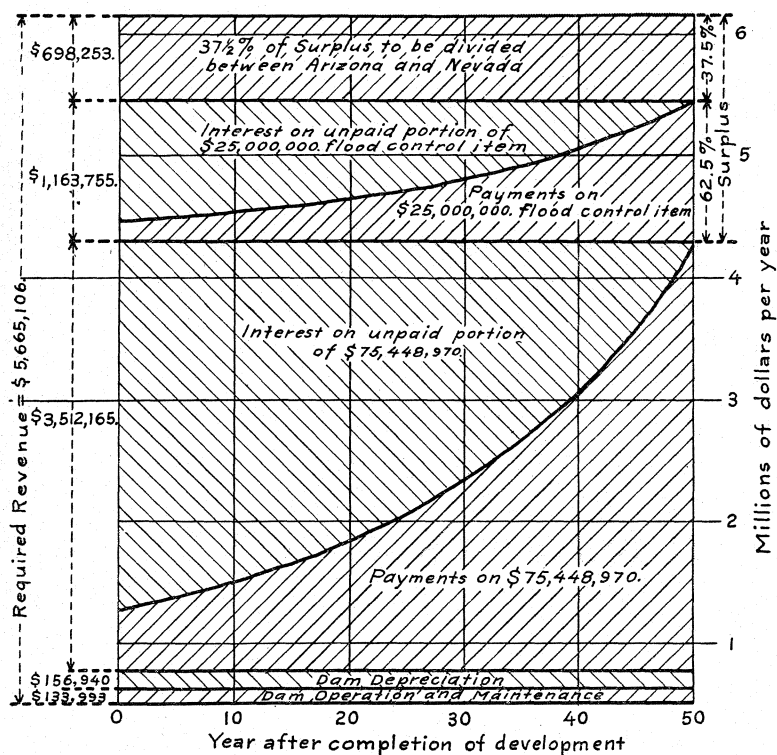
D-E, and F...Value of energy at Boulder Canyon based on cost of equivalent steam energy and including steam standby for Boulder Canyon Power for fuel oil costs as noted.

Boulder Canyon output assumed at 3,600,000,000 Kw. hrs. per annum.

PLATE 3

Total Construction Costs including Interest during Construction
 Dam, Intake Works, Tunnels and Outlet Works = \$97,690,166.
 Power House and Inclined Railroad = \$2,758,802.

Note: Penstocks, Power Plant, Machinery and Equipment
 purchased, installed and operated by lessee



BOULDER CANYON POWER DEVELOPMENT
 ANNUAL REVENUE REQUIRED TO PAY OPERATING
 COSTS, INTEREST, AMORTIZATION AND SURPLUS
 ASSUMING POWER HOUSE FOR 12 UNITS

[APPENDIX 31]

NOTICES TO PROSPECTIVE
APPLICANTS FOR POWER

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MEMORANDUM FOR THE PRESS

The Department of the Interior to-day sent out notices to all prospective purchasers of power to be generated at Boulder Dam that their applications for such power must be filed with the Department in Washington not later than October 1. The parties concerned are principally municipalities in the lower Colorado Basin, including the States of Arizona, California, and Nevada. The notice was as follows:

"Notice is hereby given that all prospective purchasers of power to be generated at the proposed dam on the Colorado River, the construction of which is authorized by the Boulder Canyon project act of December 21, 1928 (48 Stat. 1057), should file applications therefor with the Secretary of the Interior, Washington, D. C., not later than October 1, 1929. Applications should state the quantity of power desired and should contain a general statement concerning the purposes and place of use of the power covered by the application, with such other information as may be considered necessary. The early submission of applications is desirable in order that a decision may be reached concerning the allotment of the power to be made available by this development."

September 10, 1929.

SUMMARY OF APPLICATIONS FILED
FOR HOOVER DAM POWER
(ON OR BEFORE OCTOBER 21, 1929)

NOTE.—Some applications, such as that on behalf of Utah, were informal advices and not firm commitments.

Applications for power, Boulder Canyon project

Applicant	Date of application	Horsepower	Load factor	Millions of kilowatt-hours	Remarks
			Per cent		
State of Nevada-----	Sept. 8, 1929			1, 200	One-third of total power generated. To be taken as needed.
State of Utah-----	Oct. 1, 1929	50, 000			
Metropolitan Water District-----	July 5, 1929	280, 000	98	1, 789	
Mohave County, Ariz-----	Sept. 28, 1929	100, 000			
City of Los Angeles, Calif-----	July 5, 1929	¹ 1, 000, 000	¹ 55	3, 600	
City of Burbank, Calif-----	Sept. 24, 1929	¹ 6, 800	¹ 45	20	
City of San Bernardino, Calif-----	Oct. 21, 1929	10, 000	¹ 45	¹ 29	
City of Pasadena, Calif-----	Sept. 24, 1929	24, 500	45	72	
City of Glendale, Calif-----	Sept. 21, 1929	¹ 17, 000	¹ 45	50	
City of Riverside, Calif-----	Oct. 24, 1929				Amounts not stated.
City of Santa Ana, Calif-----	Sept. 30, 1929	10, 000	¹ 45	¹ 29	
City of Newport Beach, Calif-----	do-----	10, 000	¹ 45	¹ 29	
City of Beverly Hills, Calif-----	Oct. 30, 1929				Do.
Southern California Edison Co-----	July 5, 1929	¹ 850, 000	¹ 65	3, 600	Do.
Central Arizona Light & Power Co-----	Oct. 5, 1929				Or 7.3 per cent California allocation.
Los Angeles Gas & Electric Corporation-----	Sept. 24, 1929	73, 000	¹ 37	¹ 177	
The Arizona Power Co-----	Sept. 30, 1929	30, 000	¹ 50	¹ 98	
Yuma Utilities Co-----	Sept. 27, 1929	26, 800	¹ 45	¹ 79	
Southern Sierras Power Co-----	do-----	¹ 72, 600	¹ 60	286	7.94 per cent of all generated.
Public Utilities Consolidated Corporation-----	Sept. 28, 1929	134, 000	¹ 50	¹ 394	
San Diego Consolidated Gas & Electric Corporation-----	Sept. 27, 1929				3.9 per cent of California allocation.
Katherine Midway Mining Co-----	Sept. 12, 1929	5, 000	¹ 50	¹ 16	
Consolidated Feldspar Corporation-----	Sept. 25, 1929	325	¹ 50	¹ 1	
J. T. Dobbins, Fredonia, Ariz-----	Sept. 10, 1929				Amounts not stated.
United Verde Copper Co-----	Sept. 23, 1929				
Palo Verde Mesa & Chucawalla Valley Development Association-----	July 3, 1929	30, 000	¹ 50	¹ 98	Do.
City of Colton-----	Oct. 21, 1929	3, 000	45	9	

¹ Quantities assumed from best data available.

[APPENDIX 33]

TENTATIVE ALLOCATION OF
POWER, OCTOBER 21, 1929

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October 21, 1929.

MEMORANDUM FOR THE PRESS

The Secretary of the Interior announced to-day his decision in regard to the allocation of Boulder Dam power. He appointed November 12 as the date for a formal hearing in case of any protest.

The power to be developed at the Boulder Dam subject to certain deductions is to be contracted for as follows:

To the Metropolitan Water District of Southern California, 50 per cent, or so much thereof as may be needed and used for the pumping of Colorado River water.

To the City of Los Angeles, 25 per cent; and

To the Southern California Edison and associated companies, 25 per cent.

These allotments are to be subject to certain deductions which may arise through the exercise of preference rights, i. e.—

(a) not exceeding 18 per cent of the total power developed for the State of Nevada for use in Nevada;

(b) not exceeding 18 per cent of the total power for the State of Arizona, for use in Arizona, as above; and should either of the States not exercise its preference rights the other may absorb them up to 4 per cent;

(c) not exceeding 4 per cent for municipalities which have heretofore filed applications.

All such preference rights in whole or in part are to be exercised by the execution of valid contracts with the respective States and municipalities satisfactory to the Secretary and the exercise of such preference rights is to reduce proportionately the above allotments to the district, the city, and the company.

Any State desiring to withdraw power within the limitations above-stated must serve on the Secretary of the Interior written notice within not less than 12 months of the amount of power desired, and for the purchase of which valid contracts satisfactory to the Secretary must be executed.

Power contracted for but not required within a State shall be allocated to the city and the company on a 50-50 basis, with the reservation that it can again be called for within a reasonable time for use within the State. All power provided a State shall be at actual cost.

Should the 50 per cent allocated to the Metropolitan Water District be not required for pumping, this shall become available to the City of Los Angeles, 66⅔ per cent; to the Southern California Edison and associated companies, 33⅓ per cent.

Any municipalities desiring power within the limitation prescribed must execute the necessary contract therefor within 12 months from the date the contracts are made with the district and the city.

Any firm power available at the Boulder Canyon Dam for the payment of which other contractors do not become and remain liable, aside from that allocated to the Metropolitan District, shall be taken and paid for by the City of Los Angeles and the Edison Co., on a 50-50 basis.

The contract for the available power is to be made with the City of Los Angeles, and the Metropolitan Water District, with various subcontracts assuring the above, and providing for a board of control made up of two members nominated by the City of Los Angeles and the Metropolitan Water District, two by the Southern California Edison and associated companies, and one by the Secretary of the Interior, to act with the City of Los Angeles in the operation of the plant.

The Federal Government will install the dam, tunnels, power house, and penstocks. The machinery for the generation and distribution of power is to be provided and installed by the lessee. The costs of installation and operation are to be borne by those contracting for the power in proportion to the amounts received. When the dam and power house are actually in operation the lessees may have the right to ask for a review of the actual cost of units of power and be entitled to deductions which will still permit the charge made to return to the Government all advances and interest in accordance with the Boulder Dam act; and provided further, that if such review indicates that a higher rate should be paid for power to meet the obligation to the Federal Government such an advance in rate will be put into effect.

There will be a clause inserted in all of the contracts which will insure the distribution of all power developed at the Boulder Dam at such a price as in the opinion of the Federal Power Commission is fair to all consumers. Should certain municipalities operating their own power plants desired to make separate agreements with the City of Los Angeles and the Metropolitan Water District they shall be supplied with power at cost price.

The charge for storing water for the Metropolitan Water District will be 25 cents per acre-foot.

[APPENDIX 33A]

STATEMENT BY SECRETARY WILBUR
AT CLOSE OF POWER HEARINGS
NOVEMBER 13, 1929

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STATEMENT BY SECRETARY WILBUR AT CLOSE OF
POWER HEARINGS, NOVEMBER 13, 1929

Secretary WILBUR. I propose not to complete these contracts before the second week in December in the hope that we can bring Arizona into the picture, and I assign each of you and all of those who represent you as agents to make this if possible a seven-State compact.

It will be a most unfortunate thing in this great series of epochs that the West is necessarily to go through in the development of the water, not to carry this thing through upon a uniform program. This must go through so when the Flaming Gorge and all the other projects come on, as they will, we can have a united front against all of those who do not have the vision to see the necessity. Do not forget in your particular thing that you are involved in that your real interest is in this country and its development, and that the western part of the United States must depend upon water and its controlled use for its further development. We must not lose this first battle since otherwise years must elapse before we can do as we should in the maturing of the necessary plans for the West. The easy things have all been done. We are now facing the hard things like this where we must all get together. I hope we may close this conference in that spirit.

[APPENDIX 34]

AGREEMENT OF MARCH 20, 1930
AMONG MAJOR CALIFORNIA APPLICANTS
FOR ALLOCATION OF POWER

525

MEMORANDUM OF ALLOCATION

AN AGREEMENT AMONG THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, THE BOARD OF WATER AND POWER COMMISSIONERS OF THE CITY OF LOS ANGELES, AND THE SOUTHERN CALIFORNIA EDISON CO., ON MARCH 20, 1930

Resolved, that we recommend to the Secretary of the Interior that the 64 per cent of total firm power from the Boulder Canyon project available to California interests under his allocation, be divided upon terms hereinafter set forth, as follows:

	Per cent total firm power
To the Metropolitan Water District.....	36
To the City of Los Angeles and other municipalities which have filed application.....	19
To the Southern California Edison Co.....	9
	<hr/>
Total (exclusive of unused firm power).....	64

and

Further resolved, that we recommend to the Secretary that the Metropolitan Water District be given the first call upon all unused firm power and all unused secondary power up to their total requirements for pumping into and in the aqueduct, and that any unused power of the municipalities be allocated to the City of Los Angeles, and that any remaining unused firm power or unused secondary power be divided one-half to the City of Los Angeles and one-half to the Southern California Edison Co.; and

Further resolved, that all parties hereto agree to cooperate to the fullest extent to make the Boulder Canyon project a success in all its phases; and

Further resolved, that this agreement is based upon the resolution already passed by the Metropolitan Water District of Southern California and accepted by the Board of Water and Power Commissioners of the City of Los Angeles whereby that district requests the City of Los Angeles at cost to generate its power requirements and to operate its transmission lines, which lines are to be paid for and owned by the Metropolitan Water District.

The above resolution was approved March 20, 1930, by representatives of—

The Metropolitan Water District of Southern California,
The Board of Water and Power Commissioners of the City of
Los Angeles,
The Southern California Edison Co.

[APPENDIX 35]

AGREEMENT OF APRIL 7, 1930
AMONG MUNICIPALITIES FOR ALLO-
CATION OF POWER

529

AGREEMENT AMONG MUNICIPALITIES OF APRIL 7, 1930

At a meeting of representatives of the municipalities of Anaheim, Beverly Hills, Burbank, Colton, Fullerton, Glendale, Newport, Pasadena, Riverside, San Bernardino, and Santa Ana, with Northcutt Ely, Executive Assistant to the Secretary of the Interior, on April 7, 1930, at 10 a. m., in the offices of the Metropolitan Water District, the following action was taken:

1. Pursuant to resolution unanimously adopted March 31, 1930, which allocated Boulder Dam primary energy available to the above municipalities (6 per cent of the total generated) among them in proportion to their 1929 consumption, and which directed a committee consisting of representatives of Pasadena, Beverly Hills, and San Bernardino to determine the respective figures for the eleven municipalities 1929 consumption, this committee, under the chairmanship of B. F. DeLanty, of Pasadena, reported as follows:

Boulder Dam power—Smaller cities

City	1929 consumption kilowatt- hours (substa- tion data)	Percentage of total	Switch- board power available, millions of kilowatt- hours	Firm	Recom- mended horsepower at switch- board peak at 45 per cent load factor	Estimated proportional cost of the 2 transmission lines at \$20,000,000
Burbank-----	13, 143, 901	6. 12	15. 55	2, 386	5, 304	\$367, 200
San Bernardino--	25, 275, 440	11. 76	29. 87	4, 586	10, 192	705, 600
Pasadena-----	57, 616, 480	26. 82	68. 12	10, 459	23, 245	1, 609, 200
Glendale-----	34, 567, 200	16. 09	40. 87	6, 276	13, 945	965, 400
Riverside-----	21, 300, 341	9. 91	25. 18	3, 865	8, 588	594, 600
Santa Ana-----	14, 280, 355	6. 65	16. 89	2, 594	5, 763	399, 000
Newport-----	1, 570, 127	. 73	1. 85	285	633	43, 800
Beverly Hills---	21, 519, 303	10. 01	25. 42	3, 904	8, 675	600, 600
Colton-----	11, 801, 850	5. 50	13. 97	2, 145	4, 767	330, 000
Anaheim-----	6, 684, 268	3. 11	7. 90	1, 213	2, 695	186, 600
Fullerton-----	7, 083, 744	3. 30	8. 38	1, 287	2, 860	198, 000
Total-----	214, 843, 009	100. 00	254. 00	39, 000	86, 667	6, 000, 000

The committee explained that the last column, referring to pro rata of cost of the City of Los Angeles transmission line, was a rough estimate.

It was moved, seconded, and unanimously carried that the proposed allocation as presented by this committee be approved.

2. The following resolution was unanimously adopted:

Resolved, That the allocation reported (full text attached hereto) be adopted; that is, of the power allocated to the 11 municipalities, each receive as follows:

City	Percentage of total
Burbank-----	6. 12
San Bernardino--	11. 76
Pasadena-----	26. 82

City	Percentage of total
Glendale.....	16. 09
Riverside.....	9. 91
Santa Ana.....	6. 65
Newport.....	. 73
Beverly Hills.....	10. 01
Colton.....	5. 50
Anaheim.....	3. 11
Fullerton.....	3. 30
	<hr/> 100. 00

Further resolved, That generation of Boulder Canyon power for the municipalities be performed by the City of Los Angeles, and that the municipalities designate the City of Los Angeles as the agent for transmitting any Boulder Canyon power for which they contract over the main transmission lines constructed by the city for carrying Boulder Canyon power, subject to the understanding that, if on further investigation before April 15, 1932, it shall prove to be materially more economical for any municipality to make a different arrangement, it may do so; and

Further resolved, That in case of any disagreement over the question of cost of transmission of Boulder Canyon power, such disagreement will be adjusted by the Secretary of the Interior; and

Further resolved, That any municipality desiring to reserve the right to contract with the United States for power, in accordance with the allocation approved April 7, shall take formal action indicating such desire on or before May 15, 1930, and shall transmit advice of such action to the Secretary and to a committee consisting of the general manager of the light department of the City of Pasadena, who shall transmit such advice to the other municipalities. Thereafter, on or before April 15, 1931, such municipality shall enter into a final contract with the Government. Any power allocated to a municipality, but not reserved or contracted for under the two foregoing time limitations, shall be included in the allocations to those municipalities who do make such reservation and contract, in the ratio that their present allocations bear to each other; and

Further resolved, That these municipalities pledge their cooperation to make the Boulder Canyon project a success in all its phases.

[APPENDIX 36]

LETTER OF APRIL 22, 1930
FROM CHAIRMAN OF THE
SOUTHERN CALIFORNIA EDISON CO.
(LTD.)

533

SOUTHERN CALIFORNIA EDISON Co.,
EDISON BUILDING,
Los Angeles, Calif., April 22, 1930.

Hon. RAY LYMAN WILBUR,
Secretary of the Interior, Washington, D. C.
Care of NORTHCUTT ELY,
Executive Assistant.

MY DEAR MR. SECRETARY: In submitting our final proposal upon the contested point regarding the recovery and load-building period to be provided in the Boulder Dam contracts as affecting this company, I desire to make the following preliminary observations:

The Southern California Edison Co. (Ltd.) is now supplying the major portion of the market of Southern California in which the power from Boulder Dam must be sold. Specifically, with the exception of the power which will be sold to the City of Pasadena and to the Metropolitan Water District, every kilowatt-hour of electrical energy from Boulder Dam which is sold in Southern California must be taken by present customers of this company (or by two or three smaller municipality customers of other private companies). Since this company is a public utility, it is required to continue to supply these municipalities with their requirements for electrical energy until such time as they voluntarily withdraw from our system, which means, in all probability, that we must continue to supply them until the Boulder Dam supply is available. In short, the market for the major portion of Boulder Dam power is apparently to be built up and maintained by this company until Boulder Dam is ready to take it over.

When the market is taken over by Boulder Dam power, there at once results the displacement of the power which this company will be supplying at that time. This means that a large part of the generating equipment of this company will be rendered idle and the investment therein will not only not earn anything but will not carry itself until it is again usefully employed.

The market in which the company can sell this surplus supply of power which it will have on its hands as a result of the displacement by Boulder Dam power will be restricted as compared with the market until that time.

Contrasted with the situation of the City of Los Angeles and other municipalities which are to be your other customers for Boulder Dam power, you will note that this company will have a large amount of idle equipment on its hands, or, stated otherwise, a large supply of surplus power which it must first take care of before it can begin to absorb Boulder Dam power; the cities, on the other hand, by the simple device of discontinuing taking from this company, will have created a vacuum in their supply which can be immediately filled by Boulder Dam power. The cities can, in other words, take not only without loss, but profitably to themselves, so much of Boulder Dam power as is represented by the amount of demand which they transfer from the system of this company to the Boulder Dam source of supply;

and they will be enabled to do this only because we will have built up their demand for them and kept it supplied until that time.

This very great discrepancy in the situations of your principal customers for the falling water from Boulder Dam, of course requires that an allowance must be made for the difference in the capacity to absorb the new supply of power from that source.

As has been repeatedly pointed out the Boulder Dam project is chiefly a water project and our interest in that project is simply in securing for the community in which we serve, the assurance as to an additional supply of water which the community believes it will require. So far as the power is concerned, it is more costly now under the contract price proposed than the power which we are securing from the alternate source of steam plants. It holds out no promise of being cheaper in the future because the price must be kept commensurate with the competitive prices in the distributing territory. We are impelled therefore, to take Boulder Dam power only as an investment in good will in the community in which we serve; that is, to help out in the development of that community and to show our willingness to carry a part of the burden in that development.

It has been, and is, our position that all of the parties participating in the Boulder project should cooperate in the same spirit in which we are cooperating, and to the extent that a sacrifice is necessary, that that sacrifice should be equally made by all. We are asked, however, to make a sacrifice by accepting the same load-building period as the City of Los Angeles and other municipalities, regardless of the above discrepancies in the two situations. After the company has recovered from its idle equipment, it will still not be in as favorable a position to take on the additional load from Boulder Dam as will these municipalities for the reason that even at that time, it will have no vacuum in which to put the power supply from Boulder Dam, but must take care of it entirely out of growth of load in a restricted market. Hence, for us to accept, even after a period has been allowed to us for the reemployment of our idle equipment, the same terms as to load building, is to make a sacrifice which we can not justify except as an investment in good will and in the interests of harmony.

You have represented to us through Mr. Ely that the conclusion of these contracts is very urgent, and that they can only be concluded upon a basis of giving us the same load-building period as others, regardless of the discrepancies in the two situations. Because of our very great desire to be of assistance in the situation, we have come to the conclusion that we will accept this unfair treatment on the condition that we are given a sufficient period in which to recover from the shock of the severance of our former customers from us. We estimate this period at a minimum of three years, but are willing to provide that if we do recover within a less period, we shall begin to take Boulder Dam power as soon as the recovery has been effected. We make this concession only upon the condition that it be distinctly understood that it is an investment in good will and that you shall frankly explain that the company has acceded on that basis and on that basis alone. In short, that you shall explain that we are contracting on a less favorable basis than are the municipalities because of this difference in our situations. Since it is an investment in good will, we think we are entitled to have the public know that we have made a distinct sacrifice in order to join in this contract.

With the foregoing facts in mind, and upon the foregoing condition, we will agree to accept the same load-building period as the other contractees, subject to the condition that we shall not be required to take any power from Boulder Dam until three years have elapsed after the City of Los Angeles has first begun to take that power.

Yours very truly,

(Sgd.) JOHN B. MILLER,
Chairman.

V. NEGOTIATIONS CONCERNING THE WATER CONTRACTS

37. Memorandum of the Commissioner of Reclamation on prices to be charged for water, January 10, 1930.
38. Preliminary agreement of February 21, 1930, among California claimants.
39. Letter of the Secretary, November 5, 1930, requesting cooperation of the State in effecting an allocation.
40. Seven party agreement for water allocation in California, August 18, 1931, approved by the State.
41. Decision of the Secretary on objections to the All-American canal contract, November 4, 1931.

[APPENDIX 37]

MEMORANDUM OF THE
COMMISSIONER OF RECLAMATION
JANUARY 10, 1930

541

January 10, 1930.

MEMORANDUM TO THE SECRETARY—THE
COLORADO CONFERENCE

In conformity with the understanding of the conference yesterday I submit the following statement of the views of this bureau on three of the controverted questions which will come before the conference of the representatives of the lower States of the Colorado Basin, to be held at Phoenix on January 20.

While it is hoped that this conference may remove some of the objections of Arizona to the Colorado compact and subsequent legislation, and thus make the administration of the act easier, there is danger that action might be taken which would have a broader application than to the Colorado River and create precedents which would seriously interfere with the orderly irrigation development of the arid region.

One of the important questions to be considered will be an increase in the price of power to be generated at Boulder Dam, as tentatively fixed by the Secretary. Those urging this increase do so because it will affect the surplus revenues which under the provisions of the Boulder Dam act, go in part to the States of Arizona and Nevada (section 2 (b)). Such rate is therefore a matter of interest and the proper subject of discussion and consideration as influencing the attitude of such States toward the Boulder Canyon development. It seems doubtful, however, whether any attempt should be made to deal with it in any subsidiary compact that may be formulated.

It is not believed, however, that there is anything in the economic situation which will justify the Government's representative in approving recommendation for increasing the price tentatively fixed by the Secretary. That price will provide all the revenues needed to meet the requirements of the act in making payments within the 50-year period and give in addition a substantial yearly payment to the States of Arizona and Nevada. It will do this if the height of the dam, as originally fixed, remains unchanged, but it will do far more if the plans of the Reclamation Bureau for increasing the height of the dam approximately 25 feet are approved. The bureau engineers are convinced that this increase in height should be made. It will greatly increase the storage area and the effectiveness of regulation. It will add to the amount of power which can be developed and to the uniformity with which water for power can be delivered. I am confident that the dam will be built at the greater height proposed, and, if that is done, the payment to Arizona and Nevada will be somewhere between \$500,000 and \$700,000 a year.

As bearing on this matter, and on the inability to increase the price of power without endangering the ability to sell that power to responsible contractors, there is attached a letter from R. F. Walter, chief engineer of this bureau, dated December 7, 1929. I believe Colonel Donovan, as the representative of the Government, should have this information.

There is another objection to increasing the price charged for this power, with a view to increasing the payments to be made to Arizona and Nevada. Except as a compensation to Arizona and Nevada for the loss of taxes resulting from the building of the dam and power house by the Government, I regard payment to these States of part of the power revenue as wrong in principle and creating a precedent which will seriously interfere with the orderly development of the water resources of the arid region in the future.

The rights of a State in the water of a river flowing through the State or past its borders should be limited to the quantity which the State can beneficially use. Beyond this, no toll should be levied on that water where the use goes elsewhere. I do not believe that Arizona and Nevada or any other State of the Colorado Basin are entitled to charge for the use of this water outside their boundaries, any more than I believe that the State of Illinois is entitled to levy a toll on the power generated at Rock Island, because the Mississippi is the western boundary of the State.

This charge, therefore, to be correct in principle should not exceed the income which the States would receive if they were in a position to tax the Boulder Dam structure. Even this is a tax which has not been imposed on Government dams or other irrigation works built heretofore in other States. If such taxes are to be imposed in the future, it is likely to add a burden on the users of water which will be an injury rather than a benefit.

In addition to the above, Arizona and Nevada are both deeply interested in having the charge for power kept low. Cheap power as an instrument to bring into use latent resources, help establish mills and factories, and help bring under irrigation land for which water has to be pumped, will do more for the upbuilding of these States and their general prosperity than any share which they may obtain from higher power charges.

The second important matter to be dealt with concerns the division of the water allocated by the Colorado River compact to the lower basin States. The compact allocates to the upper basin States 7,500,000 acre-feet and to the lower basin States an equal amount, with the right of the lower basin States to increase this amount by an additional million acre-feet. Congress, in section 4 (a) of the Boulder Canyon project act authorizes the execution of a subsidiary compact among the lower basin States, allocating the 7,500,000 acre-feet apportioned by paragraph (a) of Article III of the compact, to the State of Nevada, 300,000 acre-feet, and to the State of Arizona, 2,800,000 acre-feet, thereby leaving 4,400,000 acre-feet of this water for the use of California. This is consonant with the other provisions of this section, absolutely limiting California to the use of this amount of water. In each case reference is specifically made to paragraph (a) of Article III of the compact, which covers only the 7,500,000 acre-feet, thereby evidencing the intention apparently of leaving the additional million acre-feet allowed by the compact to the lower basin States to be divided in some other manner. The proposed subsidiary compact authorized by Congress further provides for the use by Arizona of all the waters of the Gila and its tributaries within the boundaries of that State. This is manifestly the proper use to be made of this water.

It is not believed that there is at present sufficient information available to justify this conference attempting disposal of this million

acre-feet or for the Government to agree to such disposal. The plan of dividing the water between States makes possible long-time planning, but its value is measured largely by how closely such division conforms to the economic needs of the country. The Boulder Canyon act specifically provides for an investigation of the Parker-Gila project. It seems advisable to await completion of the economic and engineering studies provided for in that act. After such study has been made, then it can be determined how much of the water should go to Nevada, how much to Arizona, and how much to California. Before that, action is likely to be mistaken and it is wholly unnecessary.

The third important question which will likely come before the conference relates to the storage charge to be paid for water diverted by the Metropolitan Water District. That has been fixed in the tentative allocation at 25 cents an acre-foot. Those who object to this as being too low do not understand all the circumstances. They do not realize that this will involve a yearly payment by the Metropolitan Water District of \$250,000. They do not realize that practically no service is rendered. All the surveys of the aqueduct thus far made provide for a diversion from the river below Boulder Dam. If there were no reservoir, the natural flow of the river would provide all the water which the counties need for ten months in the year. All that storage would do in any event would be to supplement the low-water flow of the river during a period of two months. All the water which will be diverted will have passed through the power wheels in the dam, and for this the Government will have collected a power charge of about 75 cents an acre-foot.

The largest revenue from power requires that the water be delivered uniformly and that meets the requirements of the city, so that no change in power operations will be required. If the city does not divert the water it will go down to irrigation works below which will take it without paying any storage charge, or will go, unused, into Mexico, of course without any payment for storage. Through filings, the district is entitled to take the natural flow of the river and the builders of the dam can not object to its diversion, even if no storage charge whatever is paid. The willingness to pay a reasonable storage charge grows out of the urgent desire of the coast cities to have an early construction of the dam. They need the water and they need the power which the dam will provide, but their needs should not be taken advantage of to extort an unreasonable price, because the cost of the aqueduct and the heavy yearly pumping charges will make the price of this water, when finally delivered to the households and industries of the coast, a serious economic burden upon them. More money is not needed to get the revenue which the act requires, and the imposition of a higher storage charge such as has been proposed, would add to the economic and financial problems of the coast to an unwarranted degree.

If the Metropolitan Water District changes its plan and diverts water above the dam, or takes it directly from the reservoir in order to get the benefit of increased elevation, a charge to compensate for the reduction in power revenue through such change in diversion will be made.

ELWOOD MEAD,
Commissioner.

[APPENDIX 38]

**PRELIMINARY WATER AGREEMENT
OF FEBRUARY 21, 1930**

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PRELIMINARY AGREEMENT

Whereas the undersigned, Colorado River Commissioners of California, representatives of the Governor of California, representatives of the Metropolitan Water District, the Coachella Valley County Water District, the Imperial Irrigation District, the Palo Verde Irrigation District, and the Boulder Dam Association have reached an understanding for the division of Colorado River water which will be available to California upon the following basis:

Class A water: Agricultural groups, 3,850,000 acre-feet per annum; Metropolitan District, 550,000 acre-feet per annum; total, 4,400,000 acre-feet per annum.

Next 550,000 acre-feet per annum, available for California use: Metropolitan District, 550,000 acre-feet per annum.

All water in river available for California use in excess of above 4,950,000 acre-feet per annum: Agricultural group, all.

And have studied in great detail the available water supply from the Colorado River and the water requirements of California from that source, and while we recognize that California has been so limited as to make infeasible otherwise feasible projects, including several hundred thousand acres of land, we do find that if there are no further limitations then upon the construction of the Boulder Dam the supply will be ample for the now going concerns using water from the Colorado and also for the Colorado River Aqueduct to serve the Metropolitan Water District of Southern California; the Palo Verde Valley lands and the All-American Canal to serve the enlarged development in the Imperial and Coachella valleys; and we further find that the Colorado River Aqueduct and the All-American Canal will constitute extremely important factors in the growth, protection, and prosperity of southern California, and both of these projects ought to be consummated at the earliest possible time.

Now, therefore, be it resolved, That we request all those in authority to expedite as much as reasonably possible all steps leading up to the construction of the Boulder Dam, the Colorado River Aqueduct, and the All-American Canal, and we urge upon the people of southern California that they give these three great projects their moral and financial support, to the end that each of them may be an accomplished fact in the very near future.

Dated February 21, 1930.

(Signed)

W. J. CARR.
A. P. CURRAN.
JOHN L. BACON.
W. B. MATHEWS.
EARL C. POUND.
S. C. EVANS.
W. P. WHITSETT.
HARRY L. HEFFNER.
F. E. WEYMOUTH.
L. A. HAUSER.

JOHN G. BULLOCK.
FRANKLIN THOMAS.
S. H. FINLEY.
W. O. BLAIR.
R. W. BLACKBURN.
THOS. C. YAGER.
MARK ROSE.
M. J. DOWD.
CHAS. L. CHILDERS.

[APPENDIX 39]

LETTER OF THE SECRETARY
SUGGESTING COOPERATION OF THE STATE
IN EFFECTING A WATER ALLOCATION
NOVEMBER 5, 1930

551

THE SECRETARY OF THE INTERIOR,
Washington, D. C., November 5, 1930.

THE IMPERIAL IRRIGATION DISTRICT,
El Centro, California.

DEAR SIRs: It has been pointed out to me by the attorneys drafting the proposed All-American Canal reimbursement contract that it will be impossible to insert a definite figure to cover the quantity of water to be delivered under that contract until the State of California has recommended to us an apportionment of the California share of the waters of the Colorado River. While an agreement between the Metropolitan Water District and the agricultural group, so-called, has been submitted to the department, we have no information as to the division between the Palo Verde Irrigation District, the Yuma project in California, and the proposed contractors for All-American Canal water. In addition, we have been advised by the city and county of San Diego that it claims certain rights, and it may be necessary for you to take up with the Office of Indian Affairs the question of providing water to certain Indian reservations in California.

In any event, the division of California's share of Colorado River water among various California interests is a matter which the State, and not the Department of the Interior, should work out and recommend to the Department.

Accordingly, there is inclosed a draft of recommendations which the California Division of Water Rights might submit to the Department of the Interior, after it has determined what figures and provisions should be inserted in the blanks. This allocation, when finally determined, presumably through agreement of all interests and approval by the proper State authority, might well be included as a uniform clause in every California water contract. Prior to submission of final recommendation by the State, it will be desirable to have a draft available here in order to determine whether there has been a satisfactory disposition of the questions of water apportionment which must be solved in the water contracts.

Copies of this letter are being sent to the State Division of Water Rights, the Metropolitan Water District, the Palo Verde Irrigation District, the Yuma project, the Bureau of Indian Affairs, the City and County of San Diego, and the Coachella Valley County Water District.

Very truly yours,

(Signed)

RAY LYMAN WILBUR.

DRAFT OF RECOMMENDATION TO BE MADE BY THE CALIFORNIA DIVISION OF WATER
RIGHTS TO THE SECRETARY OF THE INTERIOR

It is recommended that the waters which may be available to California under the Colorado River compact, as limited by the Boulder Canyon project act, be apportioned as follows:

I. Of the water which may be available to California by paragraph (a) of Article III of the Colorado River compact:

To Imperial Irrigation District _____ acre-feet.

To Coachella Valley County Water District _____ acre-feet.

To Palo Verde Irrigation District _____ acre-feet.

To lands of the Yuma project in California _____ acre-feet.

To the Metropolitan Water District of Southern California _____
acre-feet.

Indian reservations, as itemized below _____ acre-feet.

To _____, _____ acre-feet.

In case of shortage the water available shall be delivered as follows:

II. Of the water which may be available to California by paragraph (b) of Article III of the Colorado River compact:

To the Metropolitan Water District _____ acre-feet.

To Indian reservations, _____ acre-feet.

To _____, _____ acre-feet.

To _____, _____ acre-feet.

To _____, _____ acre-feet.

To _____, _____ acre-feet.

In case of shortage the water available shall be delivered as follows:

III. Of the water which may be available to California over and above the foregoing:

To _____, _____ acre-feet.

To _____, _____ acre-feet.

In case of shortage the water available shall be delivered as follows:

IV. The Metropolitan Water District may accumulate unused diversion rights as follows, provided that the rights of the United States shall not thereby be affected:

[APPENDIX 40]

SEVEN-PARTY WATER AGREEMENT
OF AUGUST 18, 1931

555

AGREEMENT

REQUESTING THE DIVISION OF WATER RESOURCES OF THE STATE OF CALIFORNIA TO APPORTION CALIFORNIA'S SHARE OF THE WATERS OF THE COLORADO RIVER AMONG THE VARIOUS APPLICANTS AND WATER USERS THEREFROM IN THE STATE, CONSENTING TO SUCH APPORTIONMENTS, AND REQUESTING SIMILAR APPORTIONMENTS BY THE SECRETARY OF THE INTERIOR OF THE UNITED STATES

This agreement, made the 18th day of August, 1931, by and between Palo Verde Irrigation District, Imperial Irrigation District, Coachella Valley County Water District, Metropolitan Water District of Southern California, City of Los Angeles, City of San Diego, and County of San Diego.

Witnesseth:

Whereas the Secretary of the Interior did, on November 5, 1930; request the Division of Water Resources of California a recommendation of the proper apportionments of the water of and from the Colorado River to which California may be entitled under the provisions of the Colorado River compact, the Boulder Canyon project act, and other applicable legislation and regulations to the end that the same could be carried into each and all of the contracts between the United States and applicants for water contracts in California as a uniform clause; and

Whereas the parties hereto have fully considered their respective rights and requirements in cooperation with the other water users and applicants and the Division of Water Resources aforesaid;

Now, therefore, the parties hereto do expressly agree to the apportionments and priorities of water of and from the Colorado River for use in California as hereinafter fully set out and respectfully request the Division of Water Resources to, in all respects, recognize said apportionments and priorities in all matters relating to State authority and to recommend the provisions of Article I hereof to the Secretary of the Interior of the United States for insertion in any and all contracts for water made by him pursuant to the terms of the Boulder Canyon project act, and agree that in every water contract which any party may hereafter enter into with the United States, provisions in accordance with Article I shall be included therein if agreeable to the United States.

ARTICLE I

The waters of the Colorado River available for use within the State of California under the Colorado River compact and the Boulder Canyon project act shall be apportioned to the respective interests below named and in amounts and with priorities therein named and set forth, as follows:

SECTION 1. A first priority to Palo Verde Irrigation District for beneficial use exclusively upon lands in said district as it now exists and upon lands between said district and the Colorado River, aggregating (within and without said district) a gross area of 104,500 acres, such waters as may be required by said lands.

SEC. 2. A second priority to Yuma project of the United States Bureau of Reclamation for beneficial use upon not exceeding a gross area of 25,000 acres of land located in said project in California, such waters as may be required by said lands.

SEC. 3. A third priority (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the "Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District for beneficial consumptive use, 3,850,000 acre-feet of water per annum less the beneficial consumptive use under the priorities designated in sections 1 and 2 above. The rights designated (a) and (b) in this section are equal in priority. The total beneficial consumptive use under priorities stated in sections 1, 2, and 3 of this article shall not exceed 3,850,000 acre-feet of water per annum.

SEC. 4. A fourth priority to the Metropolitan Water District of Southern California and/or the City of Los Angeles, for beneficial consumptive use, by themselves and/or others, on the coastal plain of Southern California, 550,000 acre-feet of water per annum.

SEC. 5. A fifth priority (a) to the Metropolitan Water District of Southern California and/or the City of Los Angeles, for beneficial consumptive use, by themselves and/or others, on the coastal plain of southern California, 550,000 acre-feet of water per annum and (b) to the City of San Diego and/or County of San Diego, for beneficial consumptive use, 112,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 6. A sixth priority (a) to Imperial Irrigation District and other lands under or that will be served from the All-American Canal in Imperial and Coachella Valleys, and (b) to Palo Verde Irrigation District for use exclusively on 16,000 acres in that area known as the "Lower Palo Verde Mesa," adjacent to Palo Verde Irrigation District, for beneficial consumptive use, 300,000 acre-feet of water per annum. The rights designated (a) and (b) in this section are equal in priority.

SEC. 7. A seventh priority of all remaining water available for use within California, for agricultural use in the Colorado River Basin in California, as said basin is designated on map No. 23000 of the Department of the Interior, Bureau of Reclamation.

SEC. 8. So far as the rights of the allottees named above are concerned, the Metropolitan Water District of Southern California and/or the City of Los Angeles shall have the exclusive right to withdraw and divert into its aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said district and/or said city (not exceeding at any one time 4,750,000 acre-feet in the aggregate) by reason of reduced diversions by said district and/or said city; provided, that accumulations shall be subject to such conditions as to accumulation, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion, and his determination thereof shall be final; provided further, that the United States of America reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between said district and/or said city and such users resulting therefrom.

SEC. 9. In addition, so far as the rights of the allottees named above are concerned, the City of San Diego and/or County of San

Diego shall have the exclusive right to withdraw and divert into an aqueduct any water in Boulder Canyon Reservoir accumulated to the individual credit of said city and/or said county (not exceeding at any one time 250,000 acre-feet in the aggregate) by reason of reduced diversions by said city and/or said county; provided, that accumulations shall be subject to such conditions as to accumulations, retention, release, and withdrawal as the Secretary of the Interior may from time to time prescribe in his discretion, and his determination thereof shall be final; provided further, that the United States of America reserves the right to make similar arrangements with users in other States without distinction in priority, and to determine the correlative relations between the said city and/or said county and such users resulting therefrom.

SEC. 10. In no event shall the amounts allotted in this agreement to the Metropolitan Water District of Southern California and/or the City of Los Angeles be increased on account of inclusion of a supply for both said district and said city, and either or both may use said apportionments as may be agreed by and between said district and said city.

SEC. 11. In no event shall the amounts allotted in this agreement to the City of San Diego and/or to the County of San Diego be increased on account of inclusion of a supply for both said city and said county, and either or both may use said apportionments as may be agreed by and between said city and said county.

SEC. 12. The priorities hereinbefore set forth shall be in no wise affected by the relative dates of water contracts executed by the Secretary of the Interior with the various parties.

ARTICLE II

That each and every party hereto who has heretofore filed an application or applications for a permit or permits to appropriate water from the Colorado River, requests the Division of Water Resources to amend such application or applications as far as possible to bring it or them into conformity with the provisions of this agreement; and each and every party hereto who has heretofore filed a protest or protests against any such application or applications of other parties hereto, does hereby request withdrawal of such protest or protests against such application or applications when so amended.

ARTICLE III

That each and all of the parties to this agreement respectfully request that the contract for delivery of water between the United States of America and the Metropolitan Water District of Southern California under date of April 24, 1930, be amended in conformity with Article I hereof.

In witness whereof, the parties hereto have caused this agreement to be executed by their respective officers thereunto duly authorized, the day and year first above written. Executed in seven originals.

Recommended for execution:

PALO VERDE IRRIGATION DISTRICT,
By ED. J. WILLIAMS,
ARVIN B. SHAW, Jr.

IMPERIAL IRRIGATION DISTRICT,
By MARK ROSE,
CHAS. L. CHILDERS,
M. J. DOWD.

COACHELLA VALLEY COUNTY
WATER DISTRICT,
By THOS. C. YAGER,
ROBBINS RUSSEL.

METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA,
By W. B. MATTHEWS,
C. C. ELDER.

CITY OF LOS ANGELES,
By W. W. HURLBUT,
C. A. DAVIS.

CITY OF SAN DIEGO,
By C. L. BYERS,
H. N. SAVAGE.

COUNTY OF SAN DIEGO,
By H. N. SAVAGE,
C. L. BYERS.

[The agreement was thereafter ratified by each of the seven parties.]

[APPENDIX 41]

DECISION OF THE SECRETARY ON
OBJECTIONS TO THE ALL-AMERICAN
CANAL CONTRACT

NOVEMBER 4, 1931

561

MEMORANDUM

THE SECRETARY OF THE INTERIOR,
Washington, D. C., November 4, 1931.

On October 3 there was submitted to me for approval as to form, a draft of proposed contract between the Imperial Irrigation District of California and the United States for repayment of the cost of the All-American Canal authorized by the Boulder Canyon project act (act of December 21, 1928, C. 42; 45 Stat. 1057). In general, this draft provides for the construction on American soil of a diversion dam ("Imperial Dam") across the Colorado River above the present Laguna Dam, and a main canal of 15,000 second-feet capacity from Imperial Dam to Siphon Drop, at which point up to 2,000 second-feet are to be diverted into the Yuma Main Canal and conveyed by siphon under the river for Yuma project in Arizona; construction of a section of 13,000 second-feet capacity down to Pilot Knob, California, where the canal turns westward with a capacity of 10,000 second-feet into Imperial and Coachella Valleys (after dropping the surplus back into the river at Pilot Knob, where the district plans to build a power plant). The main canal branches into two parts when it has crossed the sand hills, one branch connecting with the present Imperial canal system and the other passing through Coachella Valley to the north for the irrigation of that valley. Both valleys are below sea level and drain into the inland Salton Sea. The construction is to be accomplished by the Reclamation Bureau of the Interior Department at a total cost not to exceed the authorization of the act, \$38,500,000, which the district is to repay in not more than 40 years after completion, commencing with installments of 1 per cent annually for 5 years, 2 per cent annually for the next 10, and 3 per cent annually for the next 25 years. As required by the act, the construction money is interest free, but delinquency penalties are provided. Merger of all lands into one district is required, resulting in a merger of the Imperial Irrigation District and Coachella Valley County Water District into an enlarged Imperial Irrigation District for the purposes of this contract. The obligation will be that of the district, regardless of default of individual landowners in their payments to the district. A large area of public lands is required to be included. On completion of the works, the district will assume operation and maintenance, but the United States may resume operation of Imperial Dam in its discretion and may resume operation of all works, in the event of breach by the district of the contract provisions. The district undertakes to carry Yuma project's water to Siphon Drop, where, because of the increased elevation of Imperial Dam over Laguna Dam, an increased power drop is accorded Yuma free of charge. Although Imperial will not use Laguna Dam, it will continue to pay, under its contract of 1918, \$1,600,000 toward the cost of that dam. About half that sum has already been paid. The district agrees to save the United States harmless against all claims for damages.

The United States reserves the right to enlarge the canal, prior to completion, to carry water for other contractors, subject to the Colorado River compact. The United States agrees to deliver water

from Hoover Dam in sufficient quantities to make the total available for district diversions for its own use correspond to the water allocation recommended by the State division of water resources, as per agreement among the allottees of August 18, 1931. Power possibilities, as required by the act, are reserved for the United States down to and including Siphon Drop, and for the district from that point on. The district's power development will be apart from this contract, but all net power profits will be paid the United States for credit on the district's annual obligation. The United States will measure water diversions and uses wherever advisable. Water deliveries to the district may be refused or reduced pro tanto in case of default. Title to all works will remain in the United States until paid for, when, in the Secretary's discretion, title to works beyond Siphon Drop may be transferred to the district. Construction is made contingent on appropriations.

This contract, after approval as to form by the Secretary, does not become effective until executed by the district and the Secretary, ratified by a vote of the district's electors under the laws of California, confirmed by a court decree and until certain public lands are included in the district.

Upon submission of the contract to me I set October 22 as a date for public hearing on any objections or protests, and notified all parties who had expressed an interest. Among those notified were the Palo Verde irrigation district, the Yuma County Water Users' Association, First Yuma Mesa Unit Holders' Association, Water Rights Protective Association, Coachella Valley Landowners' Association, the county of San Diego, city of San Diego, the Imperial irrigation district, Coachella Valley county water district, and several individuals who had written, including F. W. Greer and J. C. Allison. All of those replied, some filing briefs and letters, and letters were also filed by Charles N. Stahl, S. S. M. Jennings, and Fred L. Brainerd. Numerous individual indorsements need not be tabulated here. Palo Verde irrigation district, Imperial irrigation district, and Coachella Valley county water district were personally represented.

I have given careful consideration to all of the objections made, the most important of which are discussed below. The protests will be discussed separately.

SAN DIEGO

The city of San Diego and the county of San Diego have advised that they have no objections.

COACHELLA VALLEY LANDOWNERS' ASSOCIATION

The chief objection of this association is the proposed combination of the Imperial and Coachella Valleys in one contract, the inclusion of new lands, and the apprehension that 10,000 second-feet of water will be insufficient to irrigate the 1,000,000 acres of land ultimately proposed. This association admits that Colorado River water is indispensable to Coachella Valley's further and complete development. It is generally agreed that the Coachella Valley would be unable to finance or furnish security for construction of a separate canal from the Colorado River. If water from this river is to be secured, the only feasible plan appears to be the construction of a

joint canal along the lines of the present contract. The water allocated (which, by the way, is not 10,000 second-feet, as stated) is regarded as sufficient for the irrigation of all land to be included in the Imperial district when its boundaries are extended to include Coachella Valley and other lands.

Postponement until further soil surveys and economic studies are made, as suggested by the association, seems unnecessary and inadvisable. Soil surveys heretofore made and the economic studies conducted are regarded as fully adequate to justify proceeding along the lines contemplated. Some other objections made by this organization are discussed under the next heading.

WATER RIGHTS PROTECTIVE ASSOCIATION

This association also wishes separate contracts for the Imperial and Coachella Valleys and objects to the lands of the present district being obligated for the new lands' share of the cost of canal construction and power development.

Unified control is regarded as desirable, both from the standpoint of the Government and that of the landowners. General liability is a requirement of the reclamation law and practice. Segregation of costs between the various units provided by the contract is considered fair and reasonable. Under this arrangement there is no reason to apprehend that any undue hardship will be worked upon any given area. It is legally feasible for such adjustment to be carried out. This is largely an internal matter which should be adjusted by the landowners themselves through the district organization.

The association desires an allocation of water greatly in excess of any that could be made and leave water available for other California interests which can not be ignored. The allocation embodied in the contract is in accordance with the recommendation of the Chief of the Division of Water Resources of the State of California, who made an investigation and submitted findings at my request, and is adopted as being fair and equitable to all concerned. The allocation made to the district is regarded as sufficient for its legitimate requirements.

As to the economic objections made by the Protective Association and the Coachella Valley Landowners' Association, it should be pointed out here that the maximum annual payment to the United States (commencing 15 years after construction is completed) will be 3 per cent of \$38,500,000, or \$1,155,000, assuming that the project costs the maximum authorized. As the district now has assessment-paying land in excess of 450,000 acres, the maximum per acre annual charge would be less than \$3, even if no new lands are added. Actually, an ultimate acreage of about 1,000,000 is expected. As to Coachella, the matter is one of necessity in view of the area's dependence on pumping from a rapidly falling water plane. Imperial also faces a necessity which can not be reckoned solely in terms of cost. It is under court injunction to remove its temporary diversion works, and permanent works to replace them will run into many millions. Further, a silt-removal cost in excess of \$500,000 annually to the district and in a probably larger amount to the individual farmer will be materially lessened when Hoover Dam's desilting effect comes into operation.

Entirely aside from power revenue, savings in silt costs, savings from the alternative requirement of new diversion works, elimination

of levee flood control costs and of the Mexican carrying costs, and assuming that the cultivated area never expands and that all of the cost is borne by the farmer on an acreage basis (actually, all cities in the district contribute on an ad valorem basis), nevertheless, the gross annual charge per acre would be less than \$1 for each of the first 5 years, less than \$2 for each of the next 10, and less than \$3 for each of the next 25. That the lands are amply able to carry these charges, our soil and economic surveys show.

As for the argument that drainage will be inadequate, the United States reserves the right to measure water uses at any points it pleases, and as water deliveries depend largely on releases from Hoover Dam, the water will be fairly used. It should no longer be necessary to sluice out canals to free them of silt. But if drainage is a problem, it is obviously essential that all lands be furnished water from one irrigation district controlling all individual deliveries.

It is impossible to reserve to the district the right to sell water to Mexico, as the Protective Association asks. There is no basis for such action. No treaty has been made with Mexico for the division and delivery of water. No one can foretell how much water will be awarded Mexico under such treaty, if and when made, where water will be delivered, or any of the other details necessarily involved.

All of these objections minimize the controlling reason for enactment of this legislation by Congress, which was substitution of an American-controlled water system for a foreign-controlled one. The present canal runs through Mexico and one condition of the Mexican concession is the right to take out half the water carried, at rates determined by Mexico.

As to the argument that new agricultural lands should not be brought into production, the question is entirely one for consideration of Congress. The same arguments were advanced in opposition to the legislation under which we are proceeding, and were answered to the satisfaction of the Congressional committees. Among these answers are the facts that Imperial Valley and Coachella crops are largely specialties and come into the market too early to compete with eastern crops even if their markets and varieties overlapped.

Minor objections made to the form of contract and the changes suggested are not regarded as of sufficient importance to warrant detailed discussion. It is sufficient to say that most of them can not be adopted because contrary to law, regulations, and established practice and precedent.

YUMA WATER USERS' ASSOCIATION AND FIRST YUMA MESA UNIT HOLDERS' ASSOCIATION

These associations suggest that the diversion and carriage works should be operated by the United States instead of by the district. This suggestion is not in harmony with the act authorizing the construction of the works. This act contemplates construction by the United States but operation by the parties in interest. Division of water between the Yuma project and the other interested parties, concerning which apprehension is expressed by the associations, will be made under the supervision of the secretary, who is authorized, in addition to the other remedies provided in this contract, to take over and operate the works in the event of failure on the part of the district to comply with the terms of the contract. He may resume

operation of Imperial Dam in his discretion. The rights and interests of the associations are adequately safeguarded.

The associations suggest that the Yuma project should possibly share to a greater extent than is provided in the contract in the power development to take place at Pilot Knob and elsewhere on the canal in closer keeping with the plan provided by the contract of October 23, 1918 between the United States and the Imperial Irrigation district. All power rights from the dam to and including Siphon Drop are reserved by the United States for the benefit of the Yuma project. This is done without expense to the project for construction of the Imperial Diversion Dam and All-American Canal. This greatly increases the power capable of development at Siphon Drop. In addition, all power required for project purposes, not exceeding 4,000 horse power (in addition to that to be developed at Siphon Drop), shall be furnished at cost plus 10 per cent. This is regarded as more favorable to the Yuma project than the plan contemplated by the 1918 contract, which requires the project to finance its proportionate part of the cost of power development, including canal enlargement, in order to share in the profits to be realized. It does not appear feasible for the water users of the Yuma project to finance operations so as to share in the possible power profits, and even though this could be done, the arrangement clearly would not be as favorable as that provided by the proposed contract.

Moreover, the Imperial district agrees to carry out the provisions of the 1918 contract by which the district pays for the benefit of the Yuma project \$1,600,000 towards the cost of the Laguna Dam, which Imperial has never used and will not use under this contract.

The associations suggest the Yuma project should share in the benefits that might accrue from power generated by water carried through the diversion works for Mexico. There is no present assurance that water for Mexico will be carried through these works. The remarks heretofore made concerning this feature are also applicable here.

The statement of water priorities in article 17 places Yuma lands in California ahead of all other users save Palo Verde Irrigation district. These Yuma lands are within a Bureau of Reclamation project. The acreage, 25,000, is ample to take care of all Indian as well as white development. The priority is more than adequate to insure a full supply, according to the water studies of the Bureau of Reclamation upon which other California interests are relying in agreeing to allocations of several million acre-feet, all junior to Yuma's allocated priority.

Particular consideration has been given to the interests of the Yuma project in the drafting of this contract with a view to adequately safeguarding the rights and interests of that project. The proposed contract is regarded as particularly favorable to that project. It was only after extensive negotiations that the Imperial district officials agreed to the concessions contained in the contract.

PALO VERDE IRRIGATION DISTRICT

This district objects to the limitation incorporated in the contract regarding assignability of the water rights allocated to the district. The allocation is based upon a compromise recommended by the division of water resources of the State of California whereby the other allottees are alleged to have been willing to concede to this district a

larger quantity of water than that district can establish a legal right to, provided only the water is used on the project as an incident to which other allottees further down the river would, as a natural result, secure certain advantages from return flow. The other allottees are not willing to concede a right in the district to such extent if the water is to be transferred to another place of use in connection with which no advantages from return flow could be expected or realized. But the contract provides, as a further protection to Palo Verde, that the Secretary may contract with the Palo Verde district either in accordance with the recommended allocation or, in event that such allocation as to Palo Verde is superseded by an agreement among all the allottees or by final judicial determination, he may contract with the district in accordance with such agreement or determination. The result is that this district is restricted only against transfer and assignment of the enlarged right. No such restriction applies to the water to which the district may establish a right by means other than the allocation which is conceded to be a compromise. This is believed to offer adequate protection of the rights of this district, particularly as a judicial determination would be a necessary step in an assignment under California law in any event, and such determination need not precede the making of a water contract between Palo Verde and the United States nor delay present ratification by Palo Verde of the 7-party water allocation, recommended by the State authorities. Suitable reference to a future determination of assignable rights may be attached to Palo Verde's ratification and to any contract that that district makes with the United States.

Palo Verde also asks that a limit be placed on the height of Imperial Dam and that Imperial Irrigation district assume a direct liability for back-water damage to Palo Verde.

There is a division of opinion concerning whether the Imperial Dam if constructed as contemplated will adversely affect conditions in the Palo Verde Valley. Engineers of the Reclamation Bureau and those of the Imperial district express the opinion that the Palo Verde Valley on the whole will be benefited by this construction, particularly after completion of the Hoover Dam, which, it is predicted, will result in lowering and stabilization of the river channel in the vicinity of this valley because of regulation of floods and desilting of the water. But assuming, without conceding, that the lands of this valley may be damaged, the contract contains provisions obligating the Imperial district to hold the United States harmless as to any damage to persons and property which may arise out of the care, operation, and maintenance of the diversion works and canal. Under these provisions any damage that might be sustained by the Palo Verde district or its landowners could be adjusted by the United States and the amount of award charged back to the Imperial district. This is believed to be as far as it is feasible to go in the contract, much more practicable than individual litigation between numerous Palo Verde landowners and Imperial Irrigation district. No reason is apparent why this should not adequately protect the Palo Verde district.

PLAN SUBMITTED BY J. C. ALLISON

The plan submitted by J. C. Allison for use of Laguna Salada, in Mexico, involves, among other things, a treaty with Mexico, amendatory legislation by Congress, and revision of the whole plan hereto-

fore considered for the Metropolitan water district's water supply. This would undoubtedly mean a delay of several years, with uncertainty regarding the ultimate result. He has stated that he does not wish the All-American Canal project delayed by consideration of his plan.

SUGGESTIONS OF F. W. GREER

Mr. Greer suggests that no construction work be done until power contracts are executed sufficient to guarantee all costs, that the present water rights of the district remain unaffected, and that present lands be guaranteed against seepage damage.

It is impracticable at the present time to secure power contracts of the character suggested. The plan, therefore, would necessarily involve delay, the extent of which it is impossible to foretell.

It is not believed that the present water rights of the district or its landowners will be adversely affected by the present contract. On the contrary, it seems obvious that these rights will be infinitely improved and safeguarded by the furnishing of storage water, the provision of adequate diversion and carriage works, and in other ways.

The item of seepage damage is one that the district can adjust internally without reference in this contract.

CONCLUSION

After very careful consideration, it is my conclusion that none of the protests present adequate reasons for further modification of the proposed contract. They are accordingly overruled and the contract is approved as to form.

Recommended:

- (Sgd.) ELWOOD MEAD,
Commissioner of Reclamation.
(Sgd.) P. W. DENT,
Assistant Commissioner of Reclamation.
(Sgd.) E. C. FINNEY,
Solicitor, Interior Department.
(Sgd.) CHAS. A. DOBBEL,
Executive Assistant.
(Sgd.) NORTHCUTT ELY,
Executive Assistant.

(Signed) RAY LYMAN WILBUR,
Secretary.

VI. DATA SUBMITTED TO THE HOUSE AND SENATE COMMITTEES ON APPROPRIATIONS IN SUPPORT OF THE FIRST APPROPRIATION

(Omitting duplications of substantially the same data presented to the other of the two committees).

- 42. Letter of June 16, 1930, Secretary Wilbur to the Senate Committee on Appropriations.
- 43. Memorandum: Financial operation.
- 44. Memorandum: Analysis of power contracts.
- 45. Letter of June 17, 1930, Secretary Wilbur to the Senate Committee on Appropriations.
- 46. Letter of May 14, 1930, Secretary Wilbur to Governor Phillips, of Arizona.

[APPENDIX 42]

REPORT OF THE SECRETARY
JUNE 16, 1930
TO THE SENATE COMMITTEE
ON APPROPRIATIONS

573

THE SECRETARY OF THE INTERIOR,
Washington, D. C., June 16, 1930.

THE CHAIRMAN,
Committee on Appropriations, United States Senate.

MY DEAR MR. CHAIRMAN: Estimates for construction work on the dam and incidental works authorized by the Boulder Canyon project act (45 Stat. 1057) for the fiscal year commencing July 1, 1930, have been submitted to Congress and referred to your committee. The amount asked is \$10,660,000. I recommend the appropriation of that amount and will, if it is appropriated, direct the early commencement of construction.

All conditions required by the Boulder Canyon project act to be performed prior to appropriation for such construction have been fulfilled. There are four such conditions, as follows:

(1) As required by section 4 (a) of the Boulder Canyon project act, six of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, including the State of California, ratified the Colorado River compact, mentioned in section 13 of the act, and consented to waive the provisions of the first paragraph of Article XI of the compact, which makes the same binding and obligatory only when approved by each of the seven States signatory thereto, and approved the compact without conditions, save that of such six-State approval.

Copies of the statutes of the six States of California, Colorado, Nevada, New Mexico, Utah, and Wyoming, effecting such ratification are handed to this committee, herewith.

(2) As provided by section 4 (a) of the act, the President, by public proclamation dated June 25, 1929, has declared the approval of the compact by six States, including California.

True copy of the proclamation is handed the committee herewith.

(3) As required by section 4 (a) of the act, the State of California, in the statute copy of which has been handed you, has agreed irrevocably and unconditionally with the United States and for the benefit of the States of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, that the aggregate annual consumptive use of water of and from the Colorado River shall not exceed four million four hundred thousand acre-feet of the waters apportioned to the lower basin States by paragraph A of Article III of the Colorado River compact, plus not more than one-half of any excess or surplus waters unapportioned by the compact, such uses always to be subject to the terms of the compact.

(4) As required by section 4 (b) of the Boulder Canyon project act, I have made provision for revenues by contract in accordance with the provisions of the act, adequate, in my judgment to insure payment of all expenses of operation and maintenance of the dam and power plant incurred by the United States, and the repayment within fifty years from the date of the completion of said works of all amounts advanced to the Colorado River Dam fund under subdivision (b) of section 2 of the project act for such works, together with interest thereon made reimbursable under that act.

These contracts are two in number: (1) A contract for lease of power privilege executed severally by the City of Los Angeles and the Southern California Edison Co. (Ltd.), and (2) a contract for electrical energy executed by the Metropolitan Water District of Southern California. In addition, under authority of section 5 of the act, I have executed with the Metropolitan Water District of Southern California a contract for the delivery of water to be stored in the Boulder Canyon Reservoir.

True copies of the two-power contracts required by section 4 (b) of the act, and of the contract for delivery of water, are submitted to the committee herewith.

With particular reference to the power contracts, I wish to advise you that—

(a) The power contracts between the United States and the Metropolitan Water District of Southern California, the City of Los Angeles, and the Southern California Edison Co. (Ltd.) are adequate in my judgment to insure payment of all expenses of operation and maintenance of the dam and power plant incurred by the United States and the repayment within fifty years from the date of the completion of said works of all amounts advanced to the Colorado River Dam fund under subdivision (b) of section 2 of the project act for such works, together with interest thereon reimbursable under that act. This finding applies to the contracts both as originally drawn, and amended as suggested before the House Committee on Appropriations.

(b) The finding stated above is reported to you regardless of whether the City of Los Angeles, or only its Department of Water and Power, or both the city and the department, as separate entities, are thereby obligated.

(c) The finding stated in paragraph (a) would be reported to you regardless of whether or not the Metropolitan Water District of Southern California was thereby obligated.

As required by S. J. Resolution 164, Seventieth Congress, approved May 29, 1928 (45 Stat. 1011), the Secretary of the Interior, with the sanction and approval of the President, appointed a board of five eminent engineers and geologists, one of whom is an engineer officer of the Army on the retired list, who examined the proposed site of the dam to be constructed under the Boulder Canyon project act, reviewed the plans and estimates made therefor, advised the Secretary as to matters affecting the safety, the economic and engineering feasibility, and adequacy of the proposed structure and incidental works, and approved the plans for construction to date. Plans are proceeding satisfactorily, and construction can start as soon as this appropriation is available.

Report of this board (commonly known as the Sibert board) was submitted to the Secretary, November 24, 1928, and transmitted by him to the Speaker of the House on December 3, 1928. The Boulder Canyon project act thereafter became law. A supplemental report of the board was submitted to the Secretary on April 16, 1930.

True copies of both reports are handed to this committee herewith.

Annexed to this report, as a part of it, are two memoranda on the following subjects:

- I. Financial operation of the project.
- II. Analysis of the power contracts.

Submitted separately are the following memoranda:

ENGINEERING

1. Present status of Boulder Dam designs.
2. Hydrology of Boulder Canyon Reservoir.
3. Basis of the rates for power.
4. Charts on financial operation.

LEGAL

1. Opinion of the Attorney General on authority of the contractors and minimum obligations of the contracts.
2. Opinion of the Attorney General on funds required by the act to be repaid.
3. Opinion by the Solicitor of the Interior Department on sixteen questions involving construction of the act.

ECONOMIC

1. Audit of the Los Angeles Bureau of Power and Light, 1929.
2. Annual Report of the Southern California Edison Co., 1929.

Very truly yours,

RAY LYMAN WILBUR.

(For enclosures see Appendixes 43, 44.)

[APPENDIX 43]

MEMORANDUM: FINANCIAL OPERATION

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FINANCIAL OPERATION

Statement accompanying report of the Secretary of the Interior to the Committee
on Appropriations

(1) Revenue from 64 per cent of firm energy alone will more than repay the entire estimated cost of the project in 50 years, exclusive of the \$25,000,000 allocated to flood control.

The financial situation—in case only 64 per cent of firm energy were paid for, and no secondary energy and no water sold—would be as follows:

FINANCIAL OPERATION—BOULDER CANYON PROJECT

Table No. 4. Plate No. 12

Revenue from 64 per cent of firm energy only.		
No revenue from sale of water.		
No revenue from sale of secondary energy.		
Machinery investment repaid separately by lessees of power plant within 10 years.		
Repayment of \$25,000,000 allocated to flood control, including interest charges thereon deferred.		
Repayment period 50 years.		
Revenue from sale of 64 per cent of firm energy at 1.63 mills per kilowatt-hour.....		\$209, 406, 100
Operation and maintenance.....	\$7, 132, 902	
Depreciation.....	8, 641, 293	
Interest charges on all except the \$25,000,000 allocated to flood control.....	106, 289, 395	
Interest on accumulated deficit.....	2, 714, 542	
Repayment (exclusive of flood control).....	81, 273, 674	
Payments to Arizona and Nevada.....	1, 257, 558	
		207, 309, 464
Surplus.....		2, 096, 636

The income above stated for 64 per cent of the firm energy accords with the minimum obligations of the city (37 per cent) and company (27 per cent) and would be derived as follows:

Table No. 4. Plate No. 12

City of Los Angeles.....	\$121, 057, 666
Southern California Edison Co.....	88, 348, 434
Total.....	209, 406, 100
	581

(2) There is, however, under these contracts a firm obligation to pay for 100 per cent of all firm energy, which would result as follows:

FINANCIAL OPERATION—BOULDER CANYON PROJECT

Table No. 1. Plate No. 9

Revenue from 100 per cent of firm energy only.	
No revenue from sale of water.	
No revenue from sale of secondary energy.	
Machinery investment repaid separately by lessees of power plant within 10 years.	
Repayment period 50 years.	
Gross revenue from sale of energy at 1.63 mills per kilowatt-hour	\$327, 866, 350
Operation and maintenance	\$7, 262, 857
Depreciation	8, 875, 553
Interest charges on all except the \$25,000,000 allocated to flood control	108, 107, 007
Repayment (exclusive of flood control)	82, 674, 907
Interest charges on flood control	20, 981, 303
Interest charges on accumulated deficit	63, 973
Repayment of flood control	25, 000, 000
Payments to Arizona and Nevada	45, 330, 881
	<u>298, 296, 181</u>
Surplus	29, 570, 169

NOTE.—If surplus is applied to repayment, the entire cost of the project would be repaid in about 43 years.

In this case the revenue would be derived as follows:

Table No. 1. Plate No. 9

City of Los Angeles	\$121, 310, 549
Metropolitan Water District	118, 031, 886
Southern California Edison Co.	88, 523, 915
Total	<u>327, 866, 350</u>

The revenue from all firm energy alone will repay the entire estimated cost of the project and give Arizona and Nevada an average of \$450,000 per year each in addition to amortizing the flood-control allocation.

In the 50-year period following completion of the dam, in excess of \$29,000,000 would be paid into the Colorado River Dam fund from these power revenues, excluding revenue from water.

The income stated above, from power only, would appear as follows if an average of 1,550,000,000 kilowatt-hours of secondary energy were taken in addition:

Table No. 3. Plate No. 11

City of Los Angeles	\$133, 625, 075
Metropolitan Water District	130, 013, 586
Southern California Edison Co.	97, 510, 189
Total	<u>361, 148, 850</u>

In the 50-year period, in excess of \$50,000,000 would be paid into the Colorado River Dam fund from these power revenues, excluding revenue from water, and the average annual payment to Arizona and to Nevada would be in excess of \$550,000 each.

(3) The estimates of cost included in the above data are as follows:

Estimated cost of Boulder Canyon project exclusive of interest during construction.....	\$109, 446, 000
Interest during construction.....	11, 554, 000
Total estimated cost.....	121, 000, 000
Amount added to cover cost of raising dam 25 feet (Sibert board said higher dam can be built within original estimate).....	4, 392, 000
	125, 392, 000
Less \$25,000,000 allocated to flood control.....	25, 000, 000
	100, 392, 000
Less cost of machinery which is to be repaid separately in 10 years.....	17, 717, 000
Net investment, exclusive of \$25,000,000 allocated to flood control and investment in machinery.....	82, 675, 000

These estimates of cost are made sufficiently high to include the following safety factors:

	Per cent
15 per cent allowed for contingencies in original estimates becomes 17.5 per cent due to fact that machinery is to be repaid separately.....	17. 5
\$4,392,000 added to cover cost of 25-foot raise in height of dam (Sibert board says higher dam can be built within estimates for low dam).....	4. 2
Placing power plant on both sides of river will shorten tunnels and save \$3,600,000.....	3. 5
Additional head due to scour of river channel 20 feet.....	3. 8
	29

(4) It has been stated that income from firm energy allocated to the city and company would alone be adequate. The average annual payments for firm energy by each will be approximately:

City.....	\$2, 427, 070
Company.....	1, 770, 180

With reference to the amount of the city payment, please see audit which has been submitted of the accounts of the city's bureau of power and light for the year ending June 30, 1929, from which it appears that—

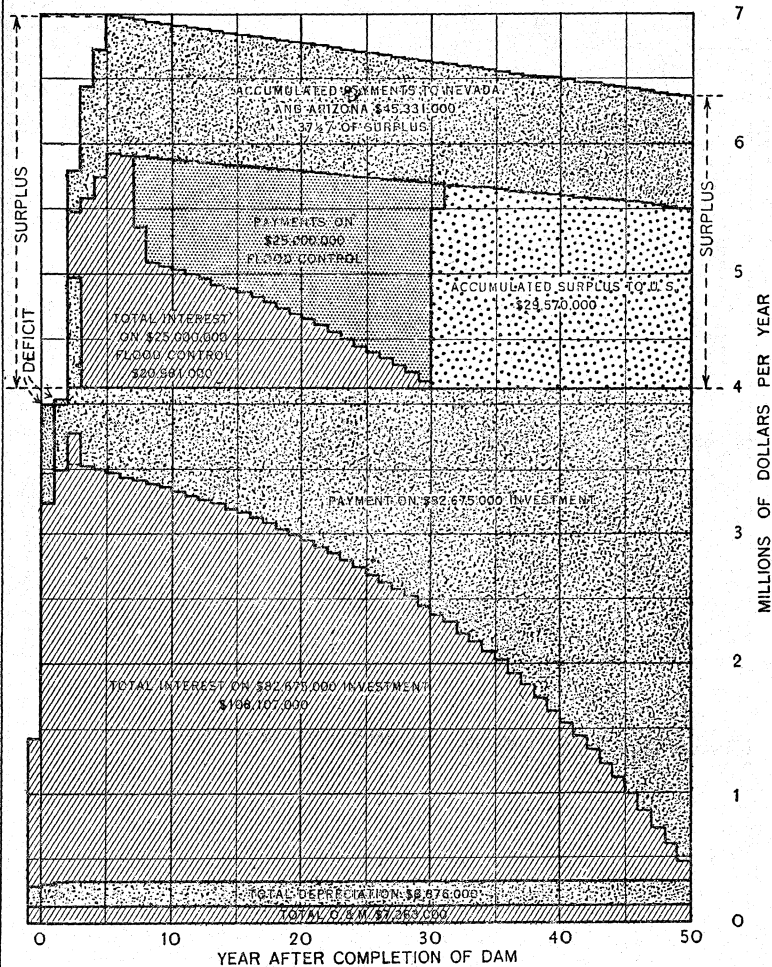
Surplus of.....	\$3, 626, 972. 23
Was available after payment to the Edison Co. for energy which Boulder Dam purchases will supplant in the amount of.....	3, 422, 642. 37
Or a total which would have been available for purchase of Boulder Dam energy of.....	7, 049, 614. 60
As compared with an actual average bill due the United States for firm energy of.....	2, 427, 070. 00
And without, of course, depleting the bureau's surplus built entirely out of power revenues, of.....	24, 024, 249. 75
And: See the certified Edison Co. statement that the Edison Co. carried to surplus.....	15, 701, 283. 06
Had total assets of.....	361, 266, 756. 34

(5) "Firm energy" as used above represents 4,330,000,000 kilowatt-hours per year, upon completion of the dam, which will raise the water surface 582 feet, as authorized by the Sibert board. This amount of firm energy will decrease at the rate of 8,760,000 kilowatt-hours per year due to upstream consumptive use of water. This estimate of available firm energy is based upon exhaustive hydrographic studies of the river, and will not encroach on flood control.

The annual decrease just stated is taken into consideration in the revenue estimates.

(6) The quoted estimates of the financial operation of the Boulder Canyon project are based upon a rate for firm energy of 1.63 mills, and of 0.5 mill for secondary energy. The act provides for readjustment of these rates 15 years from execution of the contracts and every 10 years thereafter "upon the demand of either party thereto." As the readjustment so provided for is to be "either upward or downward as to price, as the Secretary of the Interior may find to be justified by competitive conditions at distributing points or competitive centers," the future maintenance of the rates now set is a matter which can not be determined in advance.

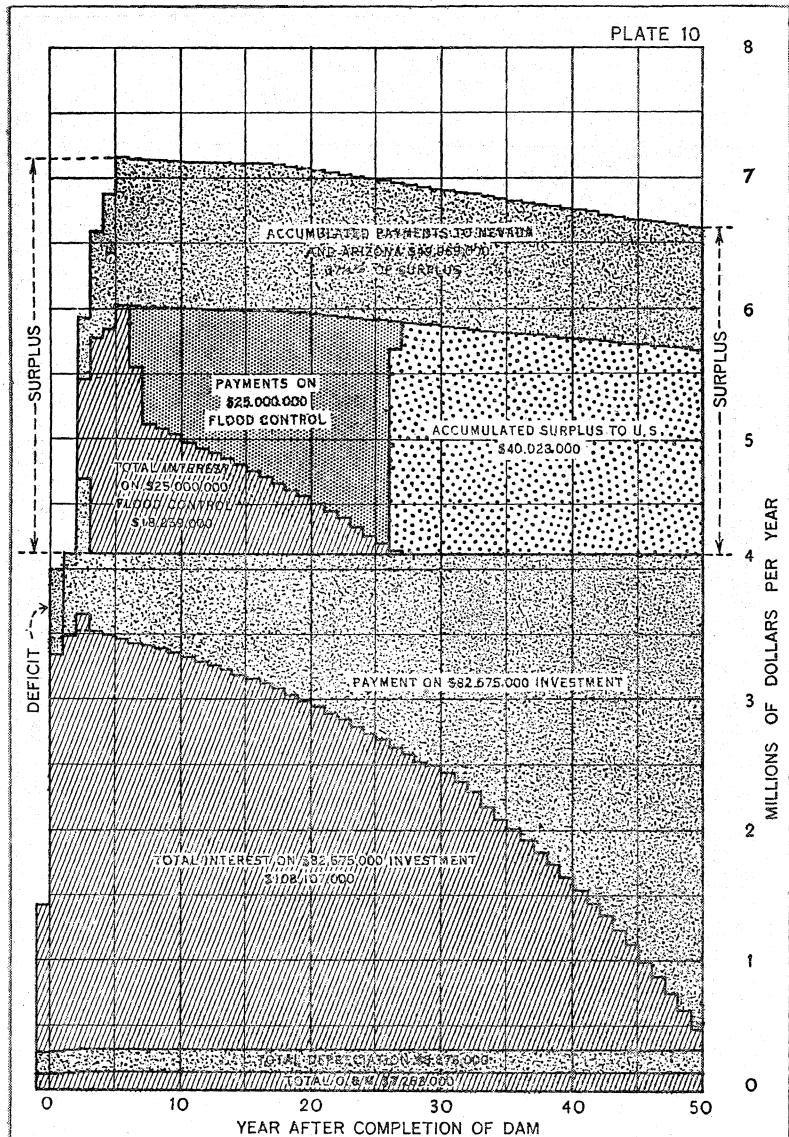
PLATE 9



BOULDER CANYON POWER DEVELOPMENT

Revenue from sale of firm power only at 1.63 mills per kw-hr.
Firm power defined as 4,330,000,000 kw-hr. per year at
completion of Dam, and decreasing at rate of 8,760,000
kw-hr. per year thereafter.

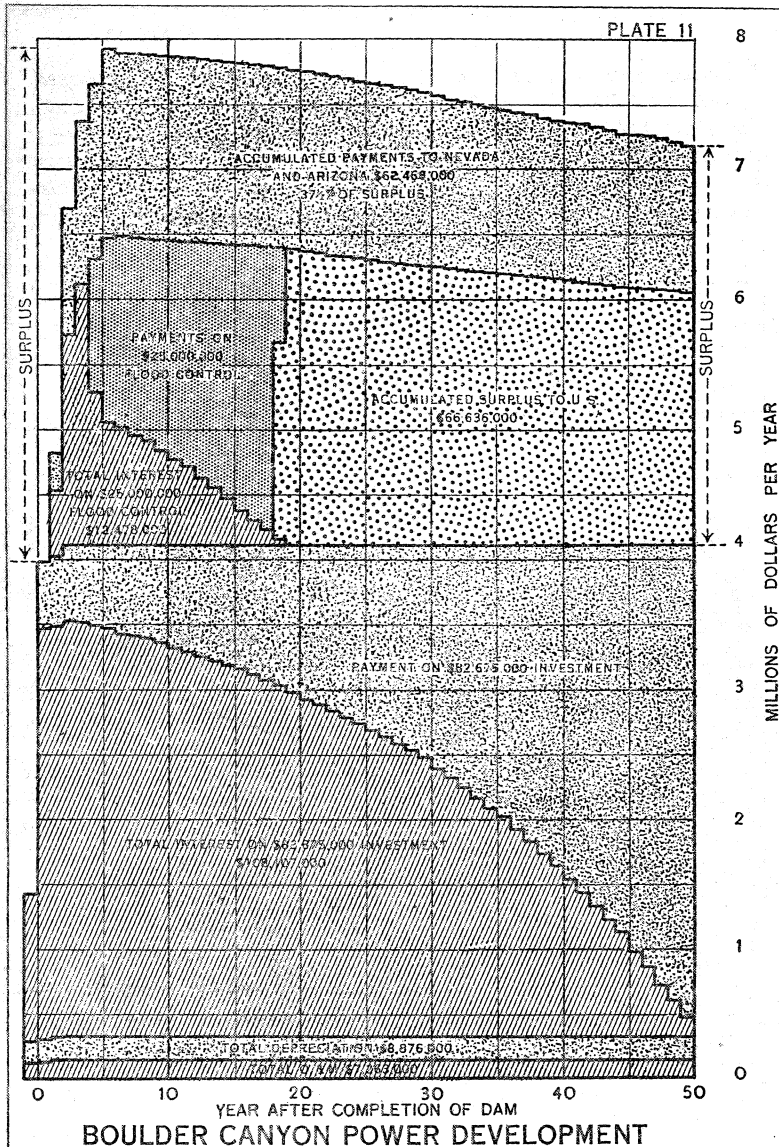
SEE TABLE B-1 FOR DATA



BOULDER CANYON POWER DEVELOPMENT

Revenue from sale of firm power at 1.63 mills per kw-hr. and sale of water at \$0.25 per acre-foot. Firm power defined as 4,330,000,000 kw-hr. per year at completion of dam and decreasing at rate of 8,760,000 Kw-hr. per year thereafter. Sale of water taken as 640 sec.ft. first year and increasing uniformly over a 16yr. period to 1500 sec.ft.

SEE TABL B-2 FOR DATA



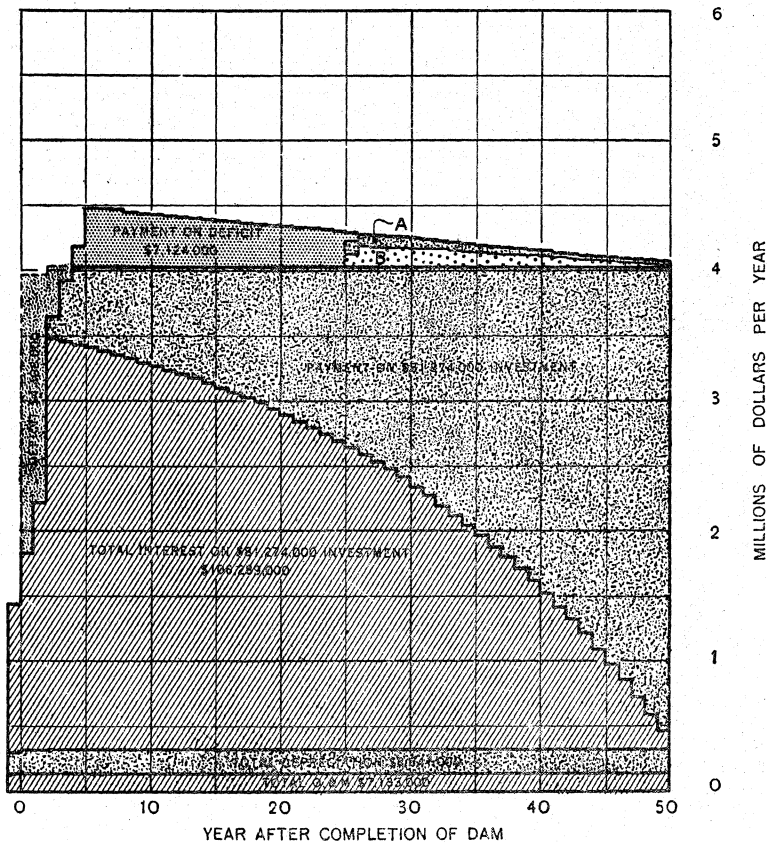
Revenue from sale of firm power at 1.63 mills per kw. hr., sale of secondary power at 0.5 mills per kw. hr., and sale of water at \$0.25 per acre foot. Firm power defined as 4,330,000,000 kw. hr. per year at completion of dam, and decreasing at rate of 8,760,000 kw. hr. per year thereafter. Secondary power average taken as 1,550,000,000 kw. hr. per year at completion of dam and decreasing at rate of 8600,000 kw. hr. per year thereafter. Sale of water taken as 640 sec. ft. of water first year and increasing uniformly over a 16 year period to 1500 sec. ft.

SEE TABLE B-3 FOR DATA

PLATE 12

Revenue from sale of Firm Power at 1.63 mills per kw. hr. based on sale of 64% of Firm Power as absorbed by the City of Los Angeles and the Southern California Edison Co. with no payments on \$25,000,000 Flood Control. Firm Power defined as 4,330,000,000 kw. hr. per year at Completion of Dam, and decreasing at rate of 8,760,000 kw. hr. per year thereafter.

SEE TABLE B-4 FOR DATA



BOULDER CANYON POWER DEVELOPMENT

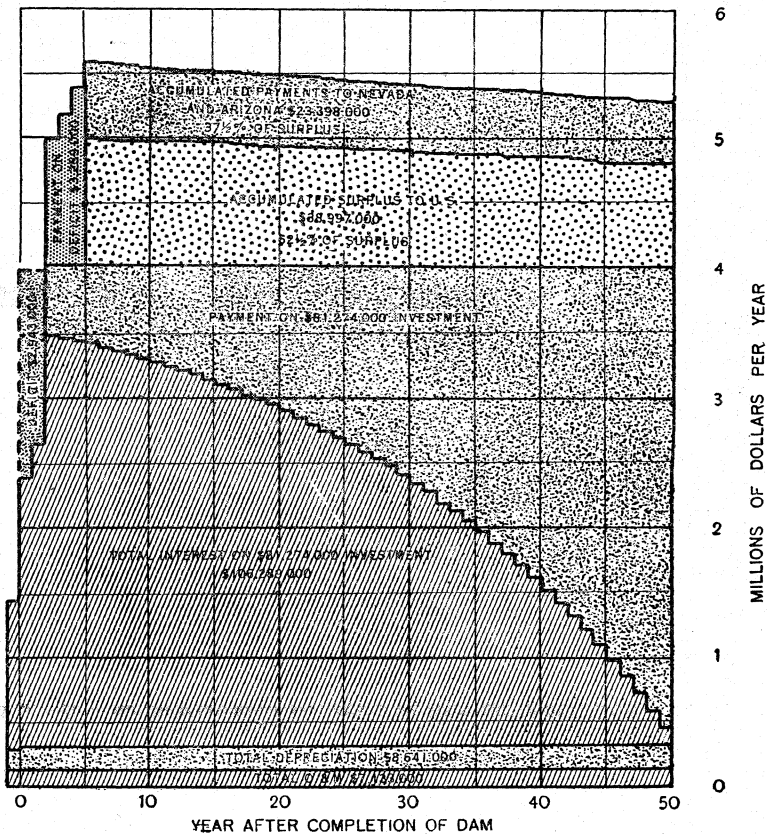
"A"=Accumulated Payments to Nevada and Arizona \$1,258,000
37½% of Surplus.

"B"=Accumulated Surplus U.S. \$2,096,000 62½% of Surplus.

PLATE 13

Firm power defined as 4,330,000 kw.hr. per year at completion of dam, and decreasing at rate of 8,760,000 kw.hr. per year thereafter. Secondary power average taken as 1,550,000,000 kw.hr. per year at completion of dam and decreasing at rate of 8,600,000 kw.hr. per year thereafter.

SEE TABLE B-5 FOR DATA



BOULDER CANYON POWER DEVELOPMENT

Revenue from sale of firm power at 1.63 mills per kw. hr. and sale of secondary power at 0.5 mills per kw. hr., based on sale of 64% of firm power as absorbed by the city of Los Angeles and the Southern California Edison Co., with no payments on \$25,000,000 flood control.

[APPENDIX 44]

MEMORANDUM: ANALYSIS OF POWER CONTRACTS

591

ANALYSIS OF CONTRACTS

A lease with the City of Los Angeles and the Southern California Edison Co., and a contract for electrical energy with the Metropolitan Water District.

Statement accompanying report of the Secretary of the Interior to the Committee on Appropriations

GENERAL

One hundred per cent of the firm energy generated at Boulder Dam is guaranteed to be paid for under these contracts, although 36 per cent for Nevada and Arizona, and 6 per cent for smaller cities must be yielded if demanded. The city's obligation is 37 per cent (13 per cent for itself, 6 per cent for other municipalities, and one-half of the 36 per cent allocated to the States until they use it). The company's obligation is 27 per cent (9 per cent for itself and other utilities, plus payment for one-half the unused State power until the States require it). The district's is 36 per cent. The total amounts received by the United States under the two power contracts (if the power rates of 1.63 mills per kilowatt-hour for falling water for generation of firm energy, and 0.5 mill for water for secondary energy, fixed under the contracts, continue to be justified by competitive conditions when the rates are readjusted as required by the act), will vary between \$327,000,000 and \$361,000,000, depending upon the quantity of secondary energy and stored water sold.

The Metropolitan Water District is a municipal corporation now comprising 12 cities in Southern California, with an assessed valuation in excess of \$2,300,000,000.

The City of Los Angeles is now in the power business and its total payments for purchase of power from other sources which Boulder Dam energy will supplant are in excess of the amounts which will be annually due the United States. In the operation of this power department it is adding over \$3,000,000 each year to its present surplus of over \$20,000,000.

The Southern California Edison Co. has assets in excess of \$300,000,000, is owned by 123,000 stockholders, and serves 450,000 consumers.

If these rates continue, performance by the two lessees will amortize the estimated cost within the required 50 years from completion of the dam, regardless of performance of any other allottee of power, and regardless of whether any secondary energy or stored water is sold. Similarly, performance by the Metropolitan Water District and the City of Los Angeles, even if all other allottees fail, will accomplish this result. Similarly, performance by the company and by the district under its power and water contracts will suffice even if all other contractors fail. These statements are based on maintenance of the rates established in the power contracts; these rates are, however, under the terms of section 5 of the act, subject to adjustment 15 years from the date of execution, and each 10 years

thereafter, either upward or downward, as may be justified by competitive conditions at distributing points or competitive centers.

As the price as readjusted can not exceed the standard fixed by competitive conditions at distributing points or competitive centers, these estimates are necessarily conditioned on maintenance of the present prices of competitive energy.

In the event that only 2 of these 3 primary contractors perform, postponement of amortization of some part of the flood control allocation will be required, but such postponement is permissible under the opinion of the Attorney General.

The rate fixed for storage of water for the Metropolitan Water District is 25 cents per acre-foot.

On the basis of the rates now set and the estimated costs there will have been paid into the Colorado River Dam fund out of excess revenues during the 50 years following completion of the dam, as provided in section 2 (b) of the act, between \$29,000,000 and \$66,000,000, depending on the quantity of secondary energy and stored water sold.

During the same period there will have been paid to each of the States of Arizona and Nevada under section 4 (b) of the act between \$22,000,000 and \$31,000,000 depending on the same factors.

The amount which would be paid by the Metropolitan Water District for power and water under present rates, if they should continue to be justified by competitive conditions, during the 50-year period would vary between \$118,000,000 and \$130,000,000. The amount similarly paid by the City of Los Angeles and the smaller municipalities would vary between \$121,000,000 and \$133,000,000, and the amount similarly paid by the utilities for their smaller allocation would vary between \$88,000,000 and \$97,000,000.

None of these contracts become effective until the first act of Congress making an appropriation for construction of the dam has become law.

Particular provisions.—(References are to articles of the lease.)

Machinery: Installation, repayment of cost, title, and recapture.—As required by section 6 of the act, title to the dam and power plant will forever remain in the United States.

Machinery will be installed and owned by the United States. (Art. 8.) As compensation for its use, the two lessees will pay an amount equivalent to the cost thereof, in 10 equal annual installments at the beginning of the lease period, amounting to a prepayment or rent for the whole lease period. This is in addition to the charge for falling water.

Under this arrangement no equitable interest in the machinery ever vests in the lessees and in the event of recapture no payment will be owing to them on account of the original installation.

Operation of the power plant.—The lease is a several, not joint, lease on separate units of a Government-built plant to the city and to the company (art. 10), operated separately by the two lessees under the general supervision of a director appointed by the Secretary. (Arts. 10 (c), 12.)

The two lessees will generate at cost for all other allottees. (Arts. 10, 12.) The cost will be determined by the Secretary. (Arts. 10 (iii), 12.)

Repairs and replacements.—In articles 12 and 13 the lessees assume the obligation to operate and maintain the plant, including repairs and replacements, at their own expense; except that replacements made after the last readjustment of rates will be considered at the end of the lease period and compensation made to the lessees for the unused life of such replacements.

Provisions in favor of States.—Under the allocation of energy made in article 14 Arizona and Nevada are each allocated 18 per cent, without the obligation to now contract for it. Each State may withdraw and relinquish energy in any amount until its full allocation is in use, on six months' notice if the amount required is 1,000 horsepower or less, until it has withdrawn 5,000 horsepower in any one year, and on two years' notice if larger quantities. Whatever right may be available to either State to execute a firm contract instead of accepting this drawback arrangement is left unimpaired. But under such a firm contract if, say, made for 33½ per cent of the energy, the minimum obligation of the States over the 50-year period may be compared with minimum payments expected from the Metropolitan Water District for 36 per cent of the firm energy, which amount to \$118,000,000, a firm obligation whether the energy is wanted or not. All the contracts of the States for electrical energy, like the contracts of all other contractors, will be made directly by the Secretary and enforced by the Government director at the plant. Generation for all allottees must be effected at actual cost, determined by the Secretary.

Either State may increase its allocation up to 22 per cent after 20 years if the other State does not take its full 18 per cent by that time.

Generation for other contractors.—Under article 14 the lessees undertake to generate at cost energy which the Secretary may contract to furnish to the other allottees, as follows: Metropolitan Water District, 36 per cent of the firm energy plus all the secondary energy, plus first call on unused State allocations, all limited to use for pumping; 11 smaller municipalities, 6 per cent of the firm energy; the States, 36 per cent of the firm energy. The City of Los Angeles generates, in addition to these allocations, 13 per cent for itself. The company generates 9 per cent for itself and other public utilities. The division of the 64 per cent allocated California is in accord with agreements submitted to the Secretary by all these California interests on March 20 and April 7.

Quantity and rates for energy.—Firm energy is defined as 4,240,000,000 kilowatt-hours (art. 15) based on a 575-foot dam and the best available studies of the river flow over the past 35-year period, decreasing annually not more than 8,760,000 kilowatt-hours, in anticipation of increasing upper-basin use. Additional energy is considered as secondary energy. Nevertheless, if the United States builds a higher dam and thus provides a greater quantity of firm energy it reserves the right to dispose of the excess to any municipality independently of the above allocations. The rate for falling water for firm energy is 1.63 mills; for secondary energy 0.5 mill (art. 16). These rates, as required by the act, will be readjusted at the end of 15 years and every 10 years thereafter, either upward or downward, as justified by competitive conditions at competitive centers but not to exceed the standard so fixed.

Minimum annual payments: Load-building provisions.—A minimum annual payment is required of each contractor for the firm energy allocated, equivalent to the number of kilowatt-hours allocated to it multiplied by 1.63 mills. Nevertheless, to provide an absorption period at the beginning of each lease period the requirement for the first year is fixed at 55 per cent of the ultimate obligation; for the second year, 70 per cent; for the third year, 85 per cent; and for the fourth year and subsequent years, 100 per cent. Energy taken in excess of these quantities will be paid for at the rate of secondary energy.

Duration of the leases.—Under article 9 the first energy available (expected some time in advance of completion of the dam) shall go to the city, with the district commencing to take one year thereafter and the company three years thereafter. Under article 26 all contracts terminate when the city contract ends, which means that the company is given a 47-year lease and the district a 49-year contract. Nevertheless, the rental paid by the company for its 47-year term is the same as that paid by the city for its 50-year term, per kilowatt of capacity; that is, an amount equal to the cost of the machinery used. (Art. 9.)

Remedies of the United States.—Under articles 19 and 20 generation of energy for any allottee in arrears must be stopped on demand by the Secretary. If the lessees themselves are in arrears more than 12 months or fail to furnish energy in accordance with the allocations to other contractors, the United States can enter and operate the plant and, on two years' notice, terminate the lease and make other disposition of the power, subject to a 10-year right of redemption under the lease. The lessees' prepayment of rent for the whole 50-year period in the first 10 years (art. 9) leaves the United States in possession of the machinery as a substantial guarantee of performance.

A provision for posting of security bond when and if required by the United States is inserted in the district contract, as it provides no machinery.

Monthly payments and penalties.—Under article 18 power bills must be paid monthly, subject to a 1 per cent penalty per month in arrears.

Interruptions in the delivery of water.—Under article 21 the United States is not liable for interruptions in the delivery of water caused by drought, act of God, etc., but the power bills are reduced to the extent of such interruption. All contracts are made subject to the Colorado River compact, subordinating the use of water for power to use for irrigation, flood control, navigation, etc.

Measurement and record of energy.—Records of energy generated and its distribution to the various allottees are to be kept by the lessees and reported monthly. (Arts. 22, 23.) Meters will be Government tested and inspected.

Inspection by the United States.—Full right of entry and inspection of all machinery and books is reserved by the United States. (Art. 24.)

Transmission.—The city agrees to transmit for the district and the smaller municipalities. The company agrees to transmit for the other utilities. Transmission for the States will be a separate problem, as the lines will run in different directions from those of the city, company, and the district. (Art. 25.)

Title to remain in the United States.—Under article 27 title to the dam, power plant, and incidental works, as required by section 6 of the act, remain in the United States forever.

Power reserved for United States.—Five thousand kilowatts from each lessee is reserved for the United States for construction purposes on this or other dams. (Art. 28.)

Use of public lands for transmission lines, as provided in the act (sec. 5), is permitted. (Art. 29.)

Claims of the United States have priority over all others, as required by section 17 of the act. (Art. 30.)

Contracts between the city and the company now in force are modified so as to remove any restrictions on either of them from entering into this contract with the United States. (Art. 31.)

Transfers of interests under these contracts are forbidden without the Secretary's consent. (Art. 32.)

The contracts are subject to the Secretary's rules and regulations, with a right of hearing to the contractors before modifications are made. (Art. 33.)

Agreement is subject to the Colorado River compact (art. 34).

Arbitration of disputes between contractors is provided; and also the procedure for arbitration between the United States and contractors, if both the United States and the disputant agree to arbitrate. (Art. 35.)

Performance by the United States and contractors is made contingent on appropriations. (Art. 36.)

Modifications in favor of one contractor shall not be denied to another. (Art. 37.)

Members of Congress are excluded from benefits in the contracts, except as shareholders of corporations, in accordance with specific statutory requirement.

[APPENDIX 45]

LETTER OF JUNE 17, 1930
SECRETARY WILBUR TO THE SENATE
COMMITTEE ON APPROPRIATIONS

599

THE SECRETARY OF THE INTERIOR,
Washington, D. C., June 17, 1930.

THE CHAIRMAN,
Committee on Appropriations, United States Senate.

MY DEAR MR. CHAIRMAN: Supplementing my formal report to your committee, and with reference to the Boulder Dam power contracts, I would suggest that analysis of these contracts will be assisted by keeping certain points in mind which were made objectives in drafting these instruments.

1. A wide regional benefit from this power was desired and obtained. Eighteen per cent is allocated to Arizona; 18 per cent to Nevada; 36 per cent to the Metropolitan Water District of Southern California for pumping a domestic water supply from the Colorado; 13 per cent to Los Angeles; 6 per cent to 11 smaller cities; in all, 91 per cent of the firm energy to 15 public agencies, to be generated by machinery leased and operated by the City of Los Angeles. The remaining 9 per cent was allocated to four public utilities who alone can serve the great agricultural back country.

2. This wide distribution was not possible, however, if the States of Arizona and Nevada were required to firmly obligate themselves now for power which they can not yet use. The same was true to a lesser extent of the 11 smaller cities. Yet the act requires firm contracts in advance of appropriations, adequate to return the Government's investment. It was found that sale of 64 per cent of the firm energy would accomplish this. Two applicants had sufficient resources and market to be able to guarantee to take that amount of power, which is in excess of two-thirds of the entire present Southern California consumption. These were the City of Los Angeles and the Southern California Edison Co. But to allot 64 per cent to these two agencies would have meant a restriction of the regional spread of this power. The problem was solved by requiring the city to underwrite purchase of 37 per cent and the company 27 per cent of the firm power, of which these two only acquired title respectively to 13 per cent and 9 per cent; the balance of the 64 per cent being available to them only until the States of Arizona and Nevada and the smaller municipalities might need it. The smaller municipalities were allowed one year within which to contract for their 6 per cent, and the two states the entire 50-year period of amortization within which to contract for their 36 per cent. And this State power may be taken and relinquished, taken again and relinquished again, on notice, as the cycles of mining or other development in these two growing States may require; their energy will thus be available for them for the entire 50 years, without any firm obligation to take it. This arrangement was only made possible by the earnest desire of the city and the company to facilitate the building of the dam as a solution of the water problem of the coastal plain.

Solution of the water problem is undertaken with the balance of the power, 36 per cent, which is allocated to the Metropolitan Water District, a municipal corporation comprising 11 cities with an assessed

valuation of \$2,300,000,000, which has firmly contracted for this 36 per cent and will use it to pump Colorado River water through an aqueduct. It is also allotted all the secondary power (surplus power fluctuating with wet and dry season cycles). But as this district, although capable of making this firm contract has not yet undertaken to finance its aqueduct and indeed could not be expected to do so until it was assured of a power and water supply by contract with the United States, this 36 per cent was not considered in our estimates of the minimum assured return to the Government of the United States. As previously stated, it was found that without this 36 per cent and without any revenues from the sale of secondary power or the sale of stored water, we were still assured of all the revenues required by the act. Nevertheless, revenues under the district's power contract and from secondary energy and stored water will provide a large surplus available for payment to the States of Arizona and Nevada and to the Colorado River Dam fund.

Allocation of the California power among the City of Los Angeles, the 11 smaller cities, the Metropolitan Water District, and the four utilities, follows exactly two agreements among them which they submitted to the Secretary of the Interior. Faced by a common water problem whose solution required the marketing over an oil and gas field of power generated 250 miles away, in sufficient quantity to make the building of Boulder Dam possible, these various elements—large cities, small cities, public utilities, municipal power systems, water supply organizations—have resolved their power problem in a way which appeared to them to best afford a basis for solution of the dominant water question.

Copies of these two agreements are inclosed, and in addition, a letter to me from the chairman of the board of the Southern California Edison Co., all of which will indicate the background of cooperation on which the financial structure of these contracts is based.

Very truly yours,

RAY LYMAN WILBUR.

(For enclosures see Appendixes 34, 35, 36.)

[APPENDIX 46]

LETTER, SECRETARY WILBUR
TO GOVERNOR PHILLIPS, OF ARIZONA
MAY 14, 1930

603

MEMORANDUM FOR THE PRESS

[Submitted to the Appropriations Committees]

Ray Lyman Wilbur, Secretary of the Interior, to-day made public the following letter which he wrote Gov. John C. Phillips of Arizona, on May 9, 1930, with relation to Boulder Dam:

I have read the statement by your Colorado River Commission of May 2 and a supplemental statement published May 3, which has just reached me.

The burden of these statements seems to be an objection that the Boulder Dam contracts, which carry out the outline forwarded you on October 23, modified as the result of the hearing here November 12, which Arizona declined to attend, have been concluded by the Secretary prior to the conclusion of negotiations between California and Arizona, which negotiations your commission thinks might have resulted in a compact covering power questions as well as water. At any rate, I assume that that is why section 8 (b) of the project act is quoted.

But your commission has neglected to quote the full language of section 8 (b) which includes the important phrase quoted below, but omitted from your commission's statement. It provides as follows, in case the 3-State compact is not made before January 1, 1929:

"Provided, that in the latter case such compact shall be subject to all contracts, if any, made by the Secretary of the Interior under section 5 hereof prior to the date of such approval and consent by Congress."

And the complaint of "haste" can not be meant seriously. The construction of this great work, authorized by an act approved in December of 1928, is necessarily at a standstill until the Secretary signs the required power contracts, for, under the act, no appropriations could be made before that time. I have now signed such contracts and made it possible for this work to proceed. But before doing so, not only did this department wait until the States had had an opportunity under section 8 (b) to compact on or before January 1, 1929, as the law allows, but I delayed my action until April 28, 1930, or 13 months after taking office, in the earnest hope that the States would be able to work out their problems. Last June, as in the preceding March, under the auspices of this department, a conference between the States was called for that purpose and every assistance given them by the department and its bureaus to that end. It was fruitless. Nevertheless, I did not accept that failure of the States to come together as being final, nor did I, by proceeding immediately with the power contracts, as I might have done, foreclose them from agreeing on the power question. Instead, four months later, I, on October 19, 1929, announced a tentative allocation of power and a price for power and a price for the storage of water, and set November 12 as a hearing date for any protest. Every attempt was made to bring Arizona to the conference table and give her an opportunity to be heard on the points mentioned above. Not only was a formal notification extended to your State on October 23, which you acknowledged on October 30, but, in addition, I telegraphed you on November 4, and wrote you on that date, and wrote you again on November 7. In the latter letter I said, "As I wish to make no final allocation until after this hearing (November 12) and desire to give all parties an opportunity to be heard at that time, I wish to again formally advise you of the date and of the invitation to Arizona to be heard." Nevertheless, no one was present to represent Arizona. Nor was any application for power presented by your State. Yet, on November 14, after the hearing, I telegraphed you, saying that "there will be a period of some days before final determination will be made. Personally I can not help but hope that the great significance of this project to the whole southwest will bring everyone in the territory together." Arizona's refusal to assist in working out these problems, when asked three times, is difficult to reconcile with the present complaint that they have been worked out without her. In the meantime, I had sent you the engineering study upon which the power price was based and I had the pleasure of receiving your very courteous letter of November 16, stating that inasmuch as Arizona denies the validity of the Boulder Canyon project act, she "can not consistently take any action which might assume

the validity of it," and stating, further, "that since matters are *now* apparently progressing towards the early consummation of definite contracts covering these matters, Arizona's right to compact in relation thereto would be made valueless, and in that situation her only available recourse is to the courts." (Italics supplied.) That was nearly six months ago. But to make plain to you that I had no intention of foreclosing Arizona, I forwarded to you on December 2 a transcript of the record of the November 12 hearing, which closed with my following statement to the representatives present: "I propose not to complete these contracts before the second week in December, in the hope that we can bring Arizona into the picture, and I assign each of you and all of those who represent you as agents to make this, if possible, a 7-State compact." I carried out that pledge. I waited not only until the second week in December but until the last week in February before initiating the contract negotiations, and even that step was not taken until the department had taken the initiative in attempting to give the States an opportunity to settle this question by compact, by arranging an interstate conference in January and February (my suggestions of earlier dates having proved inconvenient for the States), which convened at Reno and adjourned to Phoenix. I specifically advised you that the field for agreement on power as well as water was wide open. That conference, like its predecessors, was fruitless. I do not wish you to feel that I attach any blame to Arizona for the outcome of this conference, nor of any others which have been held; I only want you to quite clearly understand that I have been patient and have borne the responsibility for delay for many months in order to give your State a chance to work out its problems.

Negotiations of the power contracts in Los Angeles consumed two months, a minimum time for contracts of this magnitude, as I think you will agree. Nevertheless, because of the delay in initiating these negotiations, occasioned by the keeping of my promise to the States at the November hearing that I would give them a chance to meet, the closing of the Los Angeles negotiations could not be effected until dangerously near the end of the present session of Congress. The contracts were concluded, as you were notified on October 23 that they would be; I signed them on April 28; and Congress has been requested for an appropriation. I have acted; but not until 16 months after the last date upon which the States, under section 8 (b) could have foreclosed the Secretary from acting. The success of this whole project means too much to the whole southwest, including very particularly your own State, to justify postponing this flood-control and irrigation measure another year to give opportunity for more interstate conferences.

I have spoken before of the fact that Arizona, although invited, has never come to the conference table to help me in working out these power problems and has never made an application for power. Yet a large part of the time consumed at Los Angeles was required by the insistence of this department on inclusion in the contracts of clauses protecting the future of Arizona and Nevada. Although your State has never asked for any power, you were allocated 18 per cent of the firm energy, or in excess of 100,000 horsepower, and, unlike all the other contractors, Arizona and Nevada are each given an allocation which does not require their firm obligation for 50 years, but gives them a 50-year option in the form of a right to contract on certain notice for blocks of power, as power is needed, and to relinquish it on like notice when the need ceases, without prejudice to the right to again take the power when wanted; and this process can be repeated indefinitely. But this is not the only contract provision in your favor. You will recall that section 5 (c) of this act permits the States of Arizona, California, and Nevada to contract for energy for use within the State on a preferential status within six months after notice from the Secretary. I might have started that period of limitation running against your State by promulgating notice at any time. Instead, I did not do so until the contracts were actually signed, after I had required incorporation in them of a specific recognition of this 6-month privilege.

Before closing I think it is desirable that you have a clear picture of the revenue situation as it affects your State. There is no mandate in the act that I exact any sums from the power purchasers for the benefit of Arizona and Nevada. I refer you to the opinion of the Attorney General of the United States, rendered December 26, 1929, stating as follows:

"Manifestly, it was not the intention of Congress that section 4 (b) should require the Secretary of the Interior to make provision by his contracts to insure any payments to those States during the 50-year period. This was recognized in the debates on the bill."

Nevertheless, I have succeeded in negotiating contracts under which firm energy is sold at a price in excess of that for which the power can now be generated by the contracting parties by steam, and succeeded in selling secondary energy at a favorable price. In consequence, the revenues accruing to your State, if these prices are maintained when the readjustment periods required by the act are reached (and, of course, I can make no guarantee that such prices will be maintained, as the act requires that they must be readjusted upward or downward at that time to accord with competitive prices at distributing points or competitive centers), during the 50-year period of amortization, will range from \$22,000,000 to \$31,000,000, depending on the amount of secondary energy utilized. In addition, an amount ranging between \$29,000,000 and \$66,000,000, depending on the same factors, will have been paid into the Colorado River Dam fund for other developments on the river, in which your State will have a share. In other words, your State, without guaranteeing a penny toward the success of this project, is handed a sum ranging from \$350,000 to upwards of \$600,000 per year and given a free option on over 100,000 horsepower. The share of the firm power given Arizona and Nevada together is 36 per cent. Compare your position, as stated above, with that of the Metropolitan Water District, which pays for an exactly equivalent amount (36 per cent) about \$118,000,000 over the period of its contract, under a firm obligation which must be fulfilled whether the power is needed or not. These privileges in favor of your State mean a corresponding assumption of burdens by the California purchasers of power; and it would have been impossible to finance this project as a power project, pure and simple, under such burdens. It is a water problem in its various phases—flood control, the necessity for domestic water on the Southern California plain, and the necessity for irrigation—that has made it possible for these purchasers to assume this burden. Remember that we are transmitting power 250 miles and selling it over an oil and gas field; remember also that the quantity of fuel required per kilowatt-hour has gone down from the equivalent of 3.2 pounds of coal in 1919 to 1.76 pounds in 1928, and that even to-day the over-all efficiency of steam-electrical units is only about 27 per cent. Recollection of these facts may help your people to recall that this is a water project and not a power project. Power is being sold to build the dam; the dam is not being built to sell power.

Finally, one word about the price being charged to the Metropolitan Water District for storage of water. That price is 25 cents per acre-foot, plus the value of power lost if the water is taken out above the dam. From past communications from your commission, I gather that you want the price fixed at a higher rate so that the excess revenues coming to Arizona will be increased. I doubt whether your people have a proper vision of what they are doing when they make that request. The act provides that no charge shall be made for water furnished to Imperial and Coachella Valleys. But the act gives your State no such protection. It is in exactly the same status as the Metropolitan Water District. It is left to the discretion of the Secretary to determine the charge against you, as also against that district. As I understand it, you are asking upward of 3,000,000 acre-feet of main-stream water. Your State will some day come to the Secretary of the Interior for a contract for delivery of your water, just as the Metropolitan Water District has done. If you receive 3,000,000 acre-feet and are charged what we are charging the district for water delivered below the dam, 25 cents per acre-foot, the charge will be \$750,000 per year. If we charge you what you have asked us to charge the district, that is, from \$1 up, the charge against you will be upwards of \$3,000,000 per year. Which of these two precedents do you wish established? Which shall pay the way: Power, which you do not want, or water, which you do? I think that consideration of these questions may help you in coming to the conclusion that I have given some thought to the future of your State.

In closing this somewhat direct statement to you I wish to reiterate my appreciation of your personal grasp of the entire situation and of the capacity shown by the members of your commission. There are, however, a number of facts which it is about time that the people of your State should know, in view of your commission's closing statement that it hopes that "when the facts of the controversy are brought to the attention of Congress, the request for this appropriation will be denied."

Very truly yours,

RAY LYMAN WILBUR,
Secretary.

VII. OPINIONS ON QUESTIONS OF LAW IN CHRONOLOGICAL ORDER

- 47. Opinion of the Attorney General, December 26, 1929.
- 48. Opinion of the Solicitor of the Department of the Interior, January 17, 1930.
- 49. Opinion of the Attorney General, June 9, 1930.
- 50. Opinion of the Comptroller General, October 10, 1930.
- 51. Opinion of the United States Supreme Court in the case of *Arizona v. California et al.*

[APPENDIX 47]

OPINION OF THE ATTORNEY GENERAL
DECEMBER 26, 1929

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DEPARTMENT OF JUSTICE,
Washington, D. C., December 26, 1929.

SIR: I have the honor to comply with the requests contained in your letters of August 3 and August 8, 1929, for my opinion upon certain questions arising under the Boulder Canyon project act (45 Stat. 1057), which you state as follows:

1. Whether or not advances from the General Treasury to the Colorado River Dam fund for construction costs of the All-American Canal, and disbursements from the Colorado River Dam fund for that purpose, should be interest-bearing.

2. In fixing the sale rates for power to be generated at Boulder Dam, must provision be made for amortization within 50 years of the \$25,000,000 allocated by the act to flood control?

3. Must provision be made for payment out of power proceeds, during the 50-year period of amortization, of interest upon the principal of the \$25,000,000 allocated to flood control? If so, should interest start to run from the first appropriation made from the General Treasury to the Colorado River Dam fund?

The provisions of the Boulder Canyon project act which are especially relevant to these questions are the following:

*Be it enacted * * ** That for the purpose of controlling the floods, improving navigation and regulating the flow of the Colorado River, providing for storage and for the delivery of the stored waters thereof for reclamation of public lands and other beneficial uses exclusively within the United States, and for the generation of electrical energy as a means of making the project herein authorized a self-supporting and financially solvent undertaking, the Secretary of the Interior, subject to the terms of the Colorado River compact hereinafter mentioned, is hereby authorized to construct, operate, and maintain a dam and incidental works in the main stream of the Colorado River at Black Canyon or Boulder Canyon adequate to create a storage reservoir of a capacity of not less than twenty million acre-feet of water and a main canal and appurtenant structures located entirely within the United States connecting the Laguna Dam, or other suitable diversion dam, which the Secretary of the Interior is hereby authorized to construct if deemed necessary or advisable by him upon engineering or economic considerations, with the Imperial and Coachella Valleys in California, the expenditures for said main canal and appurtenant structures to be reimbursable, as provided in the reclamation law, and shall not be paid out of revenues derived from the sale or disposal of water power or electric energy at the dam authorized to be constructed at said Black Canyon or Boulder Canyon, or for water for potable purposes outside of the Imperial and Coachella Valleys: *Provided, however,* That no charge shall be made for water or for the use, storage, or delivery of water for irrigation or water for potable purposes in the Imperial or Coachella Valleys; also to construct and equip, operate, and maintain at or near said dam, or cause to be constructed, a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from said reservoir; * * *

SEC. 2. (a) There is hereby established a special fund, to be known as the "Colorado River Dam fund" (hereinafter referred to as the "fund"), and to be available, as hereafter provided, only for carrying out the provisions of this act. All revenues received in carrying out the provisions of this act shall be paid into and expenditures shall be made out of the fund, under the direction of the Secretary of the Interior.

(b) The Secretary of the Treasury is authorized to advance to the fund, from time to time and within the appropriations therefor, such amounts as the Secretary of the Interior deems necessary for carrying out the provisions of this act, except that the aggregate amount of such advances shall not exceed the sum of

\$165,000,000. Of this amount the sum of \$25,000,000 shall be allocated to flood control and shall be repaid to the United States out of 62½ per centum of revenues, if any, in excess of the amount necessary to meet periodical payments during the period of amortization, as provided in section 4 of this act. If said sum of \$25,000,000 is not repaid in full during the period of amortization, then 62½ per centum of all net revenues shall be applied to payment of the remainder, interest at the rate of 4 per centum per annum accruing during the year upon the amounts so advanced and remaining unpaid shall be paid annually out of the fund, except as herein otherwise provided.

(c) Moneys in the fund advanced under subdivision (b) shall be available only for expenditures for construction and the payment of interest, during construction, upon the amounts so advanced. No expenditures out of the fund shall be made for operation and maintenance except from appropriations therefor.

(d) The Secretary of the Treasury shall charge the fund as of June 30 in each year with such amount as may be necessary for the payment of interest on advances made under subdivision (b) at the rate of 4 per centum per annum accrued during the year upon the amounts so advanced and remaining unpaid, except that if the fund is insufficient to meet the payment of interest the Secretary of the Treasury may, in his discretion, defer any part of such payment, and the amount so deferred shall bear interest at the rate of 4 per centum per annum until paid.

(e) The Secretary of the Interior shall certify to the Secretary of the Treasury, at the close of each fiscal year, the amount of money in the fund in excess of the amount necessary for construction, operation, and maintenance, and payment of interest. Upon receipt of each such certificate the Secretary of the Treasury is authorized and directed to charge the fund with the amount so certified as repayment of the advances made under subdivision (b), which amount shall be covered into the Treasury to the credit of miscellaneous receipts.

* * * * *

Sec. 4. (b) Before any money is appropriated for the construction of said dam or power plant, or any construction work done or contracted for, the Secretary of the Interior shall make provision for revenues by contract, in accordance with the provisions of this act, adequate in his judgment to insure payment of all expenses of operation and maintenance of said works incurred by the United States and the repayment, within fifty years from the date of the completion of said works, of all amounts advanced to the fund under subdivision (b) of section 2 for such works, together with interest thereon made reimbursable under this act.

Before any money is appropriated for the construction of said main canal and appurtenant structures to connect the Laguna Dam with the Imperial and Coachella Valleys in California, or any construction work is done upon said canal or contracted for, the Secretary of the Interior shall make provision for revenues, by contract or otherwise, adequate in his judgment to insure payment of all expenses of construction, operation, and maintenance of said main canal and appurtenant structures in the manner provided in the reclamation law.

If during the period of amortization the Secretary of the Interior shall receive revenues in excess of the amount necessary to meet the periodical payments to the United States as provided in the contract, or contracts, executed under this act, then immediately after the settlement of such periodical payments he shall pay to the State of Arizona 18¼ per centum of such excess revenues and to the State of Nevada 18¼ per centum of such excess revenues.

Sec. 5. That the Secretary of the Interior is hereby authorized, under such general regulations as he may prescribe, to contract for the storage of water in said reservoir and for the delivery thereof at such points on the river and on said canal as may be agreed upon, for irrigation and domestic uses, and generation of electrical energy and delivery at the switchboard to States, municipal corporations, political subdivisions, and private corporations of electrical energy generated at said dam, upon charges that will provide revenue which, in addition to other revenue accruing under the reclamation law and under this act, will in his judgment cover all expenses of operation and maintenance incurred by the United States on account of works constructed under this act and the payments to the United States under subdivision (b) of section 4. * * *

After the repayments to the United States of all money advanced with interest, charges shall be on such basis and the revenues derived therefrom shall be kept in a separate fund to be expended within the Colorado River Basin as may hereafter be prescribed by the Congress. * * *

SEC. 7. That the Secretary of the Interior may, in his discretion, when repayments to the United States of all money advanced, with interest, reimbursable hereunder, shall have been made, transfer the title to said canal and appurtenant structures, except the Laguna Dam and the main canal and appurtenant structures down to and including Syphon Drop, to the districts or other agencies of the United States having a beneficial interest therein in proportion to their respective capital investments under such form of organization as may be acceptable to him. * * *

SEC. 9. That all lands of the United States found by the Secretary of the Interior to be practicable of irrigation and reclamation by the irrigation works authorized herein shall be withdrawn from public entry. Thereafter, at the direction of the Secretary of the Interior, such lands shall be opened for entry, in tracts varying in size but not exceeding one hundred and sixty acres, as may be determined by the Secretary of the Interior, in accordance with the provisions of the reclamation law, and any such entryman shall pay an equitable share in accordance with the benefits received, as determined by the said Secretary, of the construction cost of said canal and appurtenant structures; said payments to be made in such installments and at such times as may be specified by the Secretary of the Interior, in accordance with the provisions of the said reclamation law, and shall constitute revenue from said project and be covered into the fund herein provided for: * * *

SEC. 12. * * *
"Reclamation law" as used in this act shall be understood to mean that certain act of the Congress of the United States approved June 17, 1902, entitled "An act appropriating the receipts from the sale and disposal of public land in certain States and Territories to the construction of irrigation works for the reclamation of arid lands," and the acts amendatory thereof and supplemental thereto. * * *

SEC. 14. This act shall be deemed a supplement to the reclamation law, which said reclamation law shall govern the construction, operation, and management of the works herein authorized, except as otherwise herein provided.

* * * * *

I

Your first question is as follows:

Whether or not advances from the General Treasury to the Colorado River Dam fund for construction costs of the All-American Canal, and disbursements from the Colorado River Dam fund for that purpose, should be interest-bearing.

The All-American Canal is one of the works which the Secretary of the Interior is authorized to construct under section 1 of the act, being therein described as "a main canal and appurtenant structures located entirely within the United States connecting the Laguna Dam [near the Mexican boundary], * * * with the Imperial and Coachella Valleys in California." The other physical constructions thereby authorized are "a dam and incidental works at Black Canyon or Boulder Canyon" and a power plant at or near that dam. Section 1 recites the purposes of these constructions as controlling the floods, improving navigation, and regulating the flow of the Colorado River, providing for storage and for the delivery of the stored waters thereof for reclamation of public lands and other beneficial uses, and for the generation of electrical energy as a means of making the project a self-supporting and financially solvent undertaking.

The "Colorado River Dam fund," to which your question relates, is established by section 2 (a) of the act as a special fund to be available only for carrying out the provisions of the act. It is further provided that "revenues received in carrying out the provisions of this act shall be paid into and expenditures shall be made out of the fund, under the direction of the Secretary of the Interior." It is thus apparent that a single fund is provided into which and out of which all receipts and disbursements connected with any phase of the project must

flow, regardless of source. By section 2 (b) the Secretary of the Treasury is authorized to advance to the fund, from time to time and within the appropriations therefor, such amounts, not exceeding \$165,000,000, as the Secretary of the Interior deems necessary.

Section 2 (b) further provides:

Interest at the rate of 4 per centum per annum accruing during the year upon the amounts so advanced and remaining unpaid shall be paid annually out of the fund, except as herein otherwise provided.

The question is, therefore, whether the act should be construed as providing that interest is not to be paid on moneys advanced to the fund for the cost of construction of the All-American Canal.

The act nowhere so provides in express terms, and there are provisions in section 2 relating to the fund which, taken literally, would require that all moneys advanced by the Treasury for any part of the authorized project should bear interest. By section 2 (d) the Secretary of the Treasury is directed to charge the fund as of June 30 in each year "with such amount as may be necessary for the payment of interest on advances made under subdivision (b) at the rate of 4 per centum per annum accrued during the year upon the amounts so advanced and remaining unpaid, except that if the fund is insufficient to meet the payment of interest the Secretary of the Treasury may, in his discretion, defer any part of such payment, and the amount so deferred shall bear interest at the rate of 4 per centum per annum until paid." It may be suggested that the phrase "except as herein otherwise provided" in section 2 (b) should be deemed to refer only to the exception with respect to the deferment of interest provided in section 2 (d), just quoted. The references in section 2 (c) to "the payment of interest, during construction, upon the amounts so advanced," and in section 2 (e) to "payment of interest," are not expressly qualified. An inference that all sums advanced from the Treasury for any part of the project are to be interest-bearing may also be drawn from the reference in section 5 to "the repayments to the United States of all money advanced with interest" and the provision of section 7 that the Secretary of the Interior may, in his discretion, "when repayments to the United States of all money advanced, with interest, reimbursable hereunder, shall have been made, transfer the title" to the said canal and appurtenant structures, with certain exceptions, to the districts or other agencies of the United States having a beneficial interest therein.

On the other hand, there are other provisions of the act which provide an entirely different plan of reimbursement of expenditures for the canal and appurtenant structures than those which govern the reimbursement of the cost of the dam and power project. Section 1 provides that "the expenditures for said mail canal and appurtenant structures are to be reimbursable, as provided in the reclamation law, and shall not be paid out of revenues derived from the sale or disposal of water power or electric energy at the dam authorized to be constructed at said Black Canyon or Boulder Canyon, or for water for potable purposes outside of the Imperial and Coachella Valleys." No such provision is made with respect to the dam or power plant, and it is manifest from the act as a whole that the expenditures for their construction are to be paid mainly, if not wholly, from those revenues which were excluded as a source of reimbursement of ex-

penditures for the canal. In section 4 (b), which requires the Secretary of the Interior to make certain provisions for revenues before any money is appropriated for the construction of the works comprised in the project or any construction work is done thereon, the dam and power plant and the main canal and appurtenant structures are treated in separate paragraphs, which differ materially in their provisions. The first paragraph, dealing with the dam and power plant, requires that the Secretary make provision for revenues, adequate in his judgment to insure, among other things, "the repayment, within fifty years from the date of the completion of said works, of all amounts advanced to the fund under subdivision (b) of section 2 for such works, together with interest thereon made reimbursable under this act;" whereas in the second paragraph, dealing with the main canal and appurtenant structures, the requirement is that he shall make provision for revenues adequate in his judgment "to insure payment of all expenses of construction, operation, and maintenance of said main canal and appurtenant structures in the manner provided in the reclamation law;" and interest is not mentioned.

Thus, while the dam and reservoir were to provide for the storage of waters for the purpose of reclamation of public lands as well as for flood control, improvement of navigation, generation of electrical energy, and the other purposes recited in section 1, the main canal was singled out and treated as a purely reclamation project, the expenditures for which were to be reimbursable in the same manner as those for other projects administered under the reclamation law.

The reclamation law is defined by section 12 as meaning the act of June 17, 1902 (ch. 1903, 32 Stat. 388), and the acts amendatory thereof and supplemental thereto. The plan set forth in those acts, so far as here material, is as follows: By section 1 of the act of June 17, 1902, a special fund was created in the Treasury known as the "reclamation fund," consisting of moneys received from the disposal of public lands in certain States and certain fees and commissions; other sources of revenue were added by supplemental acts. The moneys in this fund are used for the construction of irrigation projects which the Secretary of the Interior determines to be practicable, and the fund is then reimbursed by charges made upon the lands designated by the Secretary by public notice as irrigable under the project, whether held by entrymen or in private ownership. Those charges are to be determined "with a view of returning to the reclamation fund the estimated cost of construction of the project," and are to be apportioned equitably. (*Id.*, secs. 2, 3, 4, and 5; see also act of August 13, 1914, 38 Stat. 690; act of December 5, 1924, section 4, 43 Stat. 702.) By the act of May 25, 1926, section 46 (44 Stat. 647), no water is to be delivered upon the completion of the project until contracts approved by the Secretary shall have been made with irrigation districts providing for the payment, among other things, "of the cost of constructing" the works in not more than forty years from the date of the public notice. The reclamation fund is thus a permanent revolving fund, created in the first instance by an appropriation of public moneys and used for the financing of reclamation projects.

This fund is not to be used for the works authorized by the Boulder Canyon project act, which are financed instead through the Colorado River Dam fund created by section 2, and that act contemplates (see

secs. 5 and 9) that revenues received under the reclamation law in connection with this project are to be covered into that fund. The provisions of section 9, however, closely parallel those of the reclamation law, and the references in sections 1 and 4 (b) to the reimbursement of the cost of construction of the main canal and appurtenant structures in the manner provided by the reclamation law manifestly refer to the charging of the cost of construction upon the lands benefited as therein described.

The reclamation law contains no provision for the payment by the land owners of any interest upon the sums advanced from the reclamation fund, and I am advised that the term "construction charge" as used in the reclamation law has never been construed by the Interior Department as including an interest charge upon the cost of construction. Congress must be deemed to have been familiar with the reclamation law, to which frequent references are made in the act, and with the practical interpretation thereof by the Interior Department as not authorizing the charging of interest upon the cost of construction of a reclamation project against the lands benefited thereby. In this view, the omission of any mention of interest in the second paragraph of section 4 (b), in contradistinction to the express mention thereof in the first paragraph, is significant, and strongly indicative of an intention of Congress that interest upon the construction cost of the All-American Canal should not be charged against lands benefited.

If interest is not to be charged against the land, the act designates no source of revenue from which interest might be paid to the General Treasury upon sums advanced for the construction costs of the canal. Section 1 explicitly provides that the expenditures for the canal shall not be paid out of revenues from the sale or disposal of water power or electric energy at the dam or for water for potable purposes outside of the Imperial and Coachella Valleys. It is reasonable to presume that, since Congress forbade the use of such revenues for payment of the principal of such expenditures, it did not intend that they should be reached to pay interest thereon. It appears that the cost of the canal and appurtenant structures is expected to be nearly \$40,000,000. Under the reclamation law repayment may not be accomplished for forty years. Interest at four per cent upon that sum for that period would constitute an amount of such magnitude that the failure of Congress to specify any revenues out of which it could probably be paid creates a strong inference that it was not intended to be paid.

The apparent conflict between the provisions of the act above discussed is, in large part, explained by its legislative history, which in my judgment, makes it clear that it was the intention of Congress that advances for the cost of construction of the All-American Canal should not bear interest.

The bills originally introduced by Senator Johnson in the Senate (S. 728, 70th Cong., 1st sess.) and by Congressman Swing in the House (H. R. 5773, 70th Cong., 1st sess.) did not differentiate the manner in which the expenditures for the canal were to be reimbursed from that which was to govern the repayment of the expenditures for the dam and power plant, and it was plain that interest was to be paid upon all sums advanced from the Treasury for the construction of any of the works thereby authorized. Section 1 did not contain the words—

The expenditures for said main canal and appurtenant structures to be reimbursable, as provided in the reclamation law, and shall not be paid out of revenues derived from the sale or disposal of water power or electric energy at the dam authorized to be constructed at said Black Canyon or Boulder Canyon, or for water for potable purposes outside of the Imperial and Coachella Valleys.

The last sentence of section 2 (b), requiring the payment of interest upon advances, was not qualified by the words "except as herein otherwise provided." Section 4 (b) contained but one paragraph, reading as follows:

(b) Before any money is appropriated or any construction work done or contracted for, the Secretary of the Interior shall make provision for revenues, by contract or otherwise, in accordance with the provisions of this act, adequate, in his judgment, to insure payment of all expenses of operation and maintenance of said works incurred by the United States and the repayment, within fifty years from the date of the completion of the project, of all amounts advanced to the fund under subdivision (b) of section 2, together with interest thereon.

Section 7 did not contain the words "reimbursable hereunder" following the word "interest." Sections 5, 9, and 14 (originally numbered 13) were, so far as here material, substantially in their present form. It was thus anticipated that revenues would be received by the fund under the reclamation law. But those revenues and the revenues from power and other sources were to be used indiscriminately for the repayment of advances to the fund and interest thereon.

The report of the Senate Committee on Irrigation and Reclamation (Rept. No. 592, 70th Cong., 1st sess., March 20, 1928), however, recommended several amendments, of which the following are here significant: To insert in section 1 part of the language above quoted, namely, "the expenditures for said main canal and appurtenant structures to be reimbursable, as provided in the reclamation law," the committee explaining the purpose of this amendment as "avoiding conflict with well-established precedent" (Rept., p. 4); to add to the last sentence of section 2 (b) the words "except as herein otherwise provided"; to add to section 4 (b) the words "made reimbursable under this act"; and in section 7 to insert, after the words "with interest," the words "reimbursable hereunder."

The Senate bill, with these proposed amendments, was thereafter extensively debated in that body, but no action was taken thereon before adjournment *sine die* on May 29, 1928. (Cong. Rec., vol. 69, p. 10678.) Meanwhile, the House had passed its bill, unamended in any respect here material, on May 25, 1928. (*Id.*, p. 9990.) After the commencement of the second session of the Seventieth Congress in December, 1928, the Senate substituted the House bill for the Senate bill, Senator Johnson offering an amendment striking out all after the enacting clause and substituting therefor the Senate bill with the proposed amendments. (Cong. Rec., vol. 70, p. 68.) The subsequent debates hereinafter referred to were in the Senate on the House bill as thus amended.

The committee amendments above discussed, which segregated the canal project and made the land benefited bear the cost of its construction were apparently proposed for the purpose of meeting opposition to the use of revenues from power for any payment on account of the canal, which was regarded as a reclamation project for the benefit of the Imperial and Coachella Valleys in California. (See Minority Views, Sen. Rept. 592, pt. 2, pp. 25-26; see also Cong. Rec., vol. 69, pp. 9457-9, 10295, 10495; vol. 70, pp. 230-1, 236, 244.)

The committee report contains language indicating that it regarded the effect of the amendment as also making expenditures for the reclamation features noninterest bearing. The statement is made (Rept., p. 7) that "this tremendous enterprise * * * will cost the Federal Government nothing except loss of interest on reclamation features, the same as in all other works of this kind." The report further states (pp. 7-8):

While the Government will in the first instance advance funds for the construction of the works, all advancements will be repaid to the Government within 50 years and those for purposes other than reclamation, with interest at 4 per cent per annum.

The report is not wholly clear on this subject because it goes on (p. 8) to refer to the authorized appropriation as including an item for interest during construction of the then estimated cost of the works including the canal. It is to be observed that the items embraced in the appropriation were made up before the committee amendments segregating the canal were proposed (*id.*, p. 27), and it is probable that the committee overlooked the fact that its discussion of the interest item was not consistent with its earlier language regarding loss of interest on reclamation features. The report, moreover, refers to the interest item as "largely a bookkeeping arrangement to fix the amount for which beneficiaries of the project will be charged." In the subsequent debates, Senator Johnson, who was in charge of the bill, in a colloquy with Senator King on May 1 (Cong. Rec., vol. 69, p. 7623), made the direct statement that the payments by the landowners, the beneficiaries of the canal, were to be without interest. The colloquy is as follows:

Mr. KING. I think the Senator ought to state that with respect to the All-American Canal it is not contemplated that interest shall be charged upon any advancement, even if the people in the valley are ever able to pay it; in other words, that the interest is to be remitted, and that they are to have an indefinite period—40 years at least—within which to make payment.

Mr. JOHNSON. No; they are to repay under the reclamation law.

Mr. KING. That means without interest.

Mr. JOHNSON. Exactly.

(See also *id.*, pp. 7389-7390, 7627, 9457.)

While there are other statements in the debates during April and May from which it might be implied that it was not clearly understood that interest was not to be payable upon advances for the construction cost of the canal (*id.*, pp. 7389, 7536, 7538), this was definitely recognized in the debates in December which immediately preceded the passage of the bill. During the discussion on December 11 Senator Johnson referred to the report of the Board of Engineers appointed by the Secretary of the Interior, with the approval of the President, under authority of joint resolution approved May 29, 1928 (Doc. No. 446, H. R., 70th Cong., 2d sess.), and the following colloquy then occurred between him and Senator King (Cong. Rec., vol. 70, p. 402):

Mr. KING. It is important in the discussion of the question of amortization. The Senator stated that under the plan suggested by the commission the All-American Canal would be constructed under the reclamation project and therefore nothing would be a charge under the terms of the bill. The Senator forgot for the moment, I think, that the interest would have to be borne by the Government for the advances which were made for the construction of the All-American Canal.

Mr. JOHNSON. The Senator is right, but it would be only the interest which would have to be borne.

Mr. KING. But it would be several million dollars.

On December 13 Senator King pointed out the difference between the reclamation fund, which under the reclamation law was a revolving fund produced from the sale of public lands, oil royalties, and so forth, and the Colorado River Dam fund, which was created by direct advances from the Treasury. He said (*id.*, p. 519):

It is true that the Secretary of the Interior is required to make contracts with those whose lands are to be irrigated from the canal for the repayment to the Government of the cost of the canal, covering a period of 40 years, but without interest. It seems, therefore, that the Government derives no interest whatever from the \$38,500,000, or the \$11,000,000 should the canal to the Coachella Valley be constructed.

The following colloquy then took place between Senator King and Senator Phipps, who was Chairman of the Committee on Irrigation and Reclamation (*id.*, p. 521):

Mr. KING. Is not the Senator in error in stating that the Government receives interest upon the entire amount of \$140,000,000 being the \$165,000,000 provided in the bill, less \$25,000,000 allocated thereby to flood control? According to the amendment of the Senator, \$25,000,000 is deducted for the moment. Then the Government makes the advancement for the construction of the All-American Canal, and that is not to draw interest. That is to say, we are to pay it out of the fund, but the Government does not get back interest for the amount which is utilized in the construction of the canal.

Mr. PHIPPS. No; that would come under the reclamation act under the provisions of this bill.

Mr. KING. The Senator knows that while we label it as coming under the reclamation act, as a matter of fact the amount needed for the construction of the All-American Canal does not come from the reclamation fund, but comes from this \$165,000,000, and no payment is made to the Government of interest upon the advance. In other words, the All-American Canal will be constructed with moneys taken from this fund, and no interest whatever will be paid to the Government by those who get that enormous sum.

Mr. PHIPPS. The Senator is correct.

Mr. KING. So that the \$140,000,000, then, does not draw interest.

Mr. PHIPPS. No; it does not all draw interest. The Senator is correct in that regard.

The bill passed the Senate the day following the discussions above quoted.

Just before its passage two amendments, offered by Senator Pittman, were adopted which further clarified the differentiation of the canal from the dam and power-plant project and the question whether interest was to be paid upon advances for construction of the canal. In the earlier discussions concern had been expressed that the amendments proposed by the committee did not sufficiently segregate the canal and that there was danger that revenues from power might be reached to guarantee or underwrite any deficiency in the moneys received under the reclamation law to pay for the canal. (Cong. Rec., vol. 69, pp. 9456-7, 9458, 10495; vol. 70, p. 288; see also Minority Views, Sen. Rept. 592, pt. 2, pp. 25-26.)

Senator Pittman's first amendment (*id.*, vol. 70, p. 575) was to insert in section 1, following the committee amendment that expenditures for the canal should be reimbursable as provided in the reclamation law, the provision—

and shall not be paid out of revenues derived from the sale or disposal of water power or electric energy at the dam authorized to be constructed at said Black Canyon or Boulder Canyon, or for water for potable purposes outside of the Imperial and Coachella Valleys.

Explaining that amendment, he said:

It has been understood that the cost of building the All-American Canal will not be imposed as an obligation on the revenues derived from the power developed at the power house at the Boulder or Black Canyon Dam. I desire now to offer an amendment which will make that entirely clear. Although the bill already has a provision of that kind, it is not as yet sufficiently definite.

After the adoption of that amendment Senator Pittman immediately introduced an amendment to section 4 (b), changing it to the form in which it now appears in the law. In explaining that amendment, he said (*id.*, p. 576):

MR. PITTMAN. Now, Mr. President, in order to make the bill harmonious, having segregated the All-American Canal, the reclamation project, from the Boulder Dam, the Black Canyon Dam, and the power-house project, it is essential to make subdivision (b) in section 4, on page 5, to conform to that.

The amendment was adopted and the bill as so amended passed the Senate on December 14, 1928 (*id.*, p. 603). The House concurred in the Senate amendments and passed the bill on December 18 (*id.*, pp. 830-838) without specific discussion of the interest question.

I have above pointed out that the first paragraph of section 4 (b), as thus amended and passed, requires the Secretary of the Interior to make provision for revenues adequate in his judgment for the repayment of the advances for the dam and power plant "with interest thereon, made reimbursable under this act," whereas the second paragraph, relating to repayment of the costs of construction of the main canal and appurtenant structures "in the manner provided in the reclamation law" makes no reference to interest. In view of the legislative history and especially of the debates in the Senate immediately preceding the adoption of the amendment to section 4 (b), I can not regard this differentiation as accidental. Its purpose was to harmonize that section with the rest of the bill treating the canal as a purely reclamation project, and the provisions that the sums expended for its construction should be "reimbursable as provided in the reclamation law" were, in my judgment, intended to relieve advances from the Treasury for that purpose from any interest charge.

In view of the legislative history above outlined, I think that the qualification, "except as herein otherwise provided," to the requirement in section 2 (b) of the payment of interest on all sums advanced can not be regarded as referring exclusively to the case of the deferment of interest payments under section 2 (d). In my judgment, Congress must be considered to have "otherwise provided" with respect to interest on the cost of construction of the All-American Canal, and the expressions in section 2 (c), (d), and (e), section 5, and section 7, must be deemed to refer only to such interest as is made payable by the act construed as a whole.

It is my opinion, therefore, that advances from the General Treasury to the Colorado River Dam fund for construction costs of the All-American Canal are not interest bearing.

With respect to the branch of your question which relates to whether disbursements from the fund for that purpose should be interest-bearing, I understand from your letter of December 11 that the only purpose of that inquiry was to bring up the question of the time from which interest on advances from the General Treasury

should be computed if interest is chargeable at all. In view of my opinion, above expressed, consideration of that question is not necessary.

II

Your second question is as follows:

In fixing the sale rates for power to be generated at Boulder Dam, must provision be made for amortization within fifty years of the \$25,000,000 allocated by the act for flood control?

The provisions of the act requiring the Secretary of the Interior to make provision for revenues to insure repayment of sums expended for the various constructions contemplated by the act are found in section 4 (b). Flood control is one of the purposes recited in section 1 and was to be secured chiefly by means of the dam and incidental works at Black Canyon or Boulder Canyon. The first paragraph of section 4 (b) relates to those works and, if it stood alone, would require the Secretary of the Interior to make provision for revenues by contract adequate in his judgment to insure repayment within fifty years of all amounts advanced from the Treasury under section 2 (b) for their construction.

Section 2 (b) itself, however, after authorizing the Secretary of the Treasury to advance to the fund such sums as the Secretary of the Interior deems necessary for carrying out the provisions of the act, not exceeding \$165,000,000, provides:

Of this amount the sum of \$25,000,000 shall be allocated to flood control and shall be repaid to the United States out of 62½ per centum of revenues, if any, in excess of the amount necessary to meet periodical payments during the period of amortization, as provided in section 4 of this act. If said sum of \$25,000,000 is not repaid in full during the period of amortization, then 62½ per centum of all net revenues shall be applied to payment of the remainder.

The above language provides a plan of repayment of the \$25,000,000 allocated to flood control which is different from the method prescribed in section 4 (b). Congress manifestly contemplated that 62½ per cent of the excess revenues might not be sufficient to repay this sum within the fifty-year period of amortization therein specified, and provided that in that event 62½ per cent of all net revenues should be devoted to its payment. These special provisions are controlling.

The language of section 2 (b) shows clearly that Congress did not regard the \$25,000,000 thereby allocated to flood control as falling within the amortization plan embodied in section 4 (b). If this \$25,000,000 were regarded as falling within the requirements of the first paragraph of section 4 (b), the revenues which the Secretary of the Interior would thereby be required to provide therefor would be embraced in the words, "the amount necessary to meet periodical payments during the period of amortization, as provided in section 4 of this act," in section 2 (b), and the provision in the latter section that during this fifty-year period repayment should be made only out of 62½ per centum of the revenues, if any, "in excess" of that amount would be meaningless. Section 4 (b) can not be construed as embracing the sum allocated for flood control without producing plain repugnance between that section and section 2 (b). I am therefore of the opinion that the \$25,000,000 allocated to flood control must be regarded as falling outside of the words "all amounts

advanced to the fund under subdivision (b) of section 2 for such works" in section 4 (b).

This construction of the act is confirmed by reference to its legislative history.

The provision of section 2 (b), above quoted, was brought into the act by an amendment offered only a few days before the passage of the bill, by Senator Phipps, the Chairman of the Committee on Irrigation and Reclamation, which reported out the bill. Up to that time section 2 (b) had consisted only of the first and last sentences thereof. Prior to the presentation of Senator Phipps's amendment, Senator Ashurst had offered an amendment on the same subject which would have allocated \$30,000,000 to flood control and made this sum not reimbursable at all. (Cong. Rec., vol. 69, p. 10466.) The first form of the amendment offered by Senator Phipps, on December 11, 1928, was to insert after the first sentence of section 2 (b) a single sentence as follows:

Of this amount the sum of \$25,000,000 shall be allocated to flood control, and shall not be repaid to the United States except out of revenues, if any, in excess of the amount necessary to meet periodical payments during the period of amortization as provided in section 4 of this act.

In supporting this proposed amendment Senator Phipps said (Cong. Rec., vol. 70, p. 399):

I have given my reason for believing that the amount of \$25,000,000 included in that figure should be considered as a deferred payment, namely, that the Federal Government certainly has an obligation resting upon it to provide flood control for the lower reaches of the Colorado River territory; and the figure of \$25,000,000 is a little less than the figure which has been estimated as the cost of a dam located at the most convenient and available point for the purposes of flood control alone.

The next day, December 12, the amendment was altered to the form in which it now appears in the act. (*Id.*, p. 459.) On the day following, December 13, the proposed amendment was debated and passed the Senate. (*Id.*, pp. 520-522.)

In the discussion of Senator Phipps's amendment in both forms, the understanding was expressed by several of the Senators that the proposed \$25,000,000 allocation would be substantially a contribution by the United States for flood control. (*Id.*, pp. 399-401.) The amendment was supported not only on the ground that the Government owed an obligation to provide flood control, but on the ground that the amortization plan might not be feasible unless such a contribution were made. The Report of the Board of Engineers (Doc. No. 446, H. R., 70th Cong., 2d sess.), referred to in my discussion of your first question, which was submitted on December 3, 1928, and related to the House bill, concluded with the following language:

Based on the foregoing and the shortage of power which will occur at low flow, the board is of the opinion that if the Boulder Canyon project is completed and put in operation, carrying as it does the costs of flood-protection works and the All-American Canal, it will be impossible to meet operation, maintenance, interest, and a sufficient sinking fund to retire the cost of the project within a 50-year period.

4. It is obvious that the power which can be generated from Boulder Dam is a valuable resource. If the income from storage can be reasonably increased and the capital investment reduced by the cost of the All-American Canal, together with a reduction for all or a part of the cost properly chargeable to flood protection, it would be possible to amortize the remaining cost with the income from power.

This report was reprinted in the Congressional Record (vol. 70, pp. 280-285) and reference was made in the debate to the above recommendation, as it related to flood control. (Cong. Rec., vol. 70, pp. 71, 399, 521-2.)

The change made in the first sentence of the amendment was thus explained by Senator Johnson (*id.*, p. 520):

The reason for that insertion, I assume, of 62½ per cent of the revenues is because in the bill section 4 (b), last paragraph 37½ per cent of what I may term the excess revenues, or what I think might be designated as profit, are allocated to the two States of Arizona and Nevada in equal shares, and I assume that the purpose of the amendment is out of the remainder of this 62½ per cent to pay, if it can be paid, the allocation of \$25,000,000 for flood control.

The same explanation had been made by Senator Phipps. (*Id.*, p. 473.)

It is apparent that the so-called excess revenues, out of 62½ per cent of which alone was to come repayment during the period of amortization of any part of the \$25,000,000 allocated to flood control, were the same excess revenues which under the last paragraph of section 4 (b) were to be paid as to 18¼ per cent to the State of Arizona and as to 18¼ per cent to the State of Nevada. Manifestly, it was not the intention of Congress that section 4 (b) should require the Secretary of the Interior to make provision by his contracts to insure any payments to those States during the fifty-year period. This was recognized in the debates on the bill. (Cong. Rec., vol. 69, pp. 7390-1, 10502.) There is no greater reason to suppose that Congress intended that he should be required to make provision for repayment of the sums allocated to flood control. The "revenues in excess of the amount necessary to meet periodical payments" which during the fifty-year period of amortization were to be the sole source both of the payments to the States of Arizona and Nevada and of the repayment of the \$25,000,000 allocated to flood control were by necessary implication excluded from the revenues for which the Secretary of the Interior was required to make provision under the first paragraph of section 4 (b).

It is my opinion, therefore, that the Secretary of the Interior is not required, in fixing the sale rates for power to be generated at Boulder Dam, to make provision for the amortization within the fifty years of the \$25,000,000 allocated by the act to flood control.

III

Your third question is as follows:

Must provision be made for payment out of the power proceeds, during the fifty-year period of amortization of interest upon the principal of the \$25,000,000 allocated to flood control? If so, should interest start to run from the first appropriation made from the General Treasury to the Colorado River Dam fund?

With respect to the matter of interest upon the principal of the \$25,000,000 allocated to flood control, the act is very ambiguous. I have had great difficulty in reaching a satisfactory conclusion as to what Congress intended in respect of this item. The act is susceptible of any one of three interpretations:

First. That no interest is to be paid under any circumstances or out of any source of revenue on the \$25,000,000 allocated to flood control, or

Second. That such interest must be paid and that it is payable annually during the fifty-year period of amortization and that the power rates should be fixed at a high enough figure to pay such interest during the fifty-year period, or

Third. That it was the intention of Congress that interest should be paid on the principal of the amount allocated to flood control, but that such interest is not required to be paid absolutely during the fifty-year period and is only to be paid, as is the principal of the item, out of 62½ per cent of excess earnings, if any, during the fifty-year period and out of the 62½ per cent net earnings after the expiration of that period.

It does not seem reasonable to suppose that Congress intended to make the payment of interest on the \$25,000,000 allocated to flood control an absolute charge during the fifty years when it left the payment of the principal to the chance that there might be excess earnings during that period. I am inclined to believe that Congress intended that interest should be ultimately paid on the \$25,000,000 allocated to flood control from the same source as is provided for the payment of the principal, to wit: Out of 62½ per cent of the excess earnings during the fifty-year period and out of 62½ per cent of the net earnings thereafter.

The word "thereon" in section 4 (b) following the word "interest" in the phrase "all amounts advanced to the fund under subdivision (b) of section 2 for such works, together with interest thereon made reimbursable under this act" apparently limits the requirement, with respect to interest, to interest on such principal sums as are embraced within the scope of the paragraph.

A construction of the act as not absolutely requiring the fixing of rates high enough to cover the payment of interest during the fifty-year amortization period upon the \$25,000,000 allocated to flood control is entirely consonant with the apparent purposes of Congress in adopting the amendment which made that allocation, namely, to discharge a governmental obligation to provide flood control, and to make the project more probably feasible by reducing the amount which would have to be amortized out of revenues obtained from power and water at the dam.

It does not seem necessary to pass further upon the question of the ultimate payment of interest, as I am of the opinion that if such interest is ultimately payable, the act does not require you to make provision for its payment out of power proceeds during the fifty-year period of amortization.

Respectfully,

WILLIAM D. MITCHELL,
Attorney General.

The honorable the SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR, *Washington, D. C.*

[APPENDIX 48]

OPINION OF THE SOLICITOR
OF THE DEPARTMENT OF THE INTERIOR
JANUARY 6, 1930

627

UNITED STATES DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SOLICITOR,
Washington, D. C., January 6, 1930.

The honorable the SECRETARY OF THE INTERIOR.

MY DEAR MR. SECRETARY: You have asked me to consolidate in one memorandum my views on the following 16 questions, the majority of which have been covered in separate memoranda submitted to you from time to time as the problems arose.

Your questions and my opinions on them follow:

(1) What is meant by the term "public interest" as used in the act? What body of people comprises the public as the act uses the term? Is the "interest" referred to as "public" the Government's responsibility to the whole people of the United States, or is it the interest of the area to be immediately served by Boulder Dam power, or is it the interest of a particular part of that area?

The term "public interest" is used in section 5 (c) of the Boulder Canyon project act as follows:

In case of conflicting applications, if any, such conflicts shall be resolved by the said Secretary, after hearing, *with due regard to the public interest*, and in conformity with the policy expressed in the Federal water power act as to conflicting applications for permits and licenses except that preference to applicants for the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy or for delivery at the switchboard of a hydroelectric plant shall be given, first, to a State for the generation or purchase of electric energy for use in the State, and the States of Arizona, California, and Nevada shall be given equal opportunity as such applicants.

The same term "public interest" is used in the Federal water power act, as follows:

Preferences in issuance of preliminary permits or licenses.—* * * the commission shall give preference to applications therefor by States and municipalities, provided the plans for the same are deemed by the commission equally well adapted, or shall within a reasonable time, to be fixed by the commission, be made equally well adapted to conserve and utilize in the *public interest* the navigation and water resources of the region; * * *.

"Public interest" is one of those broad terms like "public policy" capable of different legitimate interpretations in the discretion of the officer called upon to administer it. The "interest" referred to is, primarily, the Government's responsibility, financial and otherwise, to all the people of the United States for the greatest good to be derived from this project, the cost of which is to be advanced from the Public Treasury. Secondly, the term excludes confinement of the benefits of Boulder Dam power to one locality out of the many which comprise the "region" capable of service. The term "public interest" is the dominant consideration, a check upon the preferences mentioned in the two acts. It is necessarily a source of broad discretionary power in the Secretary.

(2) Does "public interest" include the necessity for making a good business contract which will guarantee the return of the investment within fifty years? If the "preference right" of States and municipalities would require the making of a contract which is less sound as a matter of business than a contract offered by a privately owned public utility, which consideration is the Secretary required to regard as dominant, the public interest or the preference right of the State or municipality?

To the first question I answer yes. Money provided by taxes from the entire United States constitutes the sum placed at risk by this Federal investment. When contracts are made for its repayment as required by section 4 (b) the primary "public interest" is in the soundness of the contracts and the solvency of the contractor, not in the corporate or municipal character of that contractor. If one bidder can obligate itself by a contract whose enforceability is unquestionable, and the financial future of another bidder is uncertain or its legal capacity is questionable, public interest obviously requires acceptance of the sounder bidder. All preferences are subordinate to this public interest. It is only when two bidders can both offer a satisfactory contract from a business viewpoint that the Secretary must or should base his choice between them on claimed preferences.

(3) Is the Secretary required to accept the highest bid made for power by a reputable bidder, or must he take into consideration what constitutes a reasonable return under all attendant circumstances, including "competitive conditions at distributing points or competitive centers"?

The Secretary is not required to accept the highest bid if that bid is in excess of the price which can be realized for the power under competitive conditions at competitive centers.

The act specifically provides [sec. 5 (a)]—

Contracts made pursuant to subdivision (a) of this section shall be made with a view to obtaining reasonable returns and shall contain provisions whereby at the end of fifteen years from the date of their execution, and every ten years thereafter, there shall be readjustment of the contract, upon the demand of either party thereto, either upward or downward as to price, as the Secretary of the Interior may find to be justified by competitive conditions at distributing points or competitive centers and with provisions under which disputes or disagreements as to interpretation or performance of such contract shall be determined either by arbitration or court proceedings, the Secretary of the Interior being authorized to act for the United States in such readjustments or proceedings.

The selling standard is to be "reasonable returns," not "all the traffic will bear." The phrase "shall be made with a view to obtaining reasonable returns" was in fact a specific amendment to this section (Cong. Rec., Senate, Dec. 14, 1928, p. 618), and clearly indicates the selling basis deemed to be feasible and most in line with public interest and the equitable distribution of benefits of Boulder Dam power. In deciding what a "reasonable return" may be it is proper to look to the language of the same section respecting renewals; 15 years from the date of execution of the original contract it may be renewed at a price revised "either upward or downward," as the Secretary of the Interior may find to be "justified by competitive conditions at distributing points or competitive centers." If this is to be the standard 15 years after execution, it is just to assume that it would also be a fair standard at the time of execution. Indeed, it is the only standard consistent with sound business and the execution of an enforceable contract with a solvent bidder. If the bidder can not sell his power in competition with other sources he is not a desirable source for reimbursement of the Federal expenditure. A "reasonable return" must be justified by "competitive conditions" or it is not reasonable. An unreasonably high return at the risk of bankruptcy of the bidder is not a sound basis for a contract required to be made in the "public interest."

(4) Does a municipality or a State have a preference for power which it proposes to sell outside its boundaries, as against a bid for power by a privately

owned utility proposing to sell in the same area outside the boundaries? May an allocation of power to a municipality be conditioned on use within the city limits?

The preference of either a State or municipality for allocation of power in conflict with a privately owned public utility must rest upon section 5 (c) of the Boulder Canyon project act. That section provides:

In case of conflicting applications, if any, such conflicts shall be resolved by the said Secretary, after hearing with due regard for the public interest, and in conformity with the policy expressed in the Federal water power act as to conflicting applications for permits and licenses, except that preference to applicants for the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy and for delivery at the switchboard of a hydroelectric plant shall be given, first, to a State for the generation or purchase of electric energy for use within the State, and the States of Arizona, California, and Nevada shall be given equal opportunity as such applicants.

By this section the policy of the Federal water power act is made the standard, with one exception in favor of States. The water power act's (41 Stat. 1063) provisions regarding preferences are again quoted below for convenience (sec. 7):

Preferences in issuance of preliminary permits or licenses.—In issuing preliminary permits hereunder or licenses where no preliminary permit has been issued and in issuing licenses to new licensees under section 808 of this chapter the commission shall give preference to applications therefor by States and municipalities, provided the plans for the same are deemed by the commission equally well adapted, or shall within a reasonable time to be fixed by the commission be made equally well adapted, to conserve and utilize in the public interest the navigation and water resources of the region; and as between other applicants, the commission may give preference to the applicant the plans of which it finds and determines are best adapted to develop, conserve, and utilize in the public interest the navigation and water resources of the region, if it be satisfied as to the ability of the applicant to carry out such plans.

The exception may be disposed of first. It is "preference * * * shall be given, first to a State for the generation or purchase of electric energy for use in the State and the States of Arizona, California, and Nevada shall be given equal opportunity as such applicants." As this exception specifically confines the States' preference to "energy for use in the State" it is clear that a State is entitled to no preference for power which it proposes to sell outside its borders unless that preference can be found in the Federal water power act.

What is the "policy" of that act as regards preferences? It is clear that certain conditions precedent are to be met by any preference claimant before the preference will be recognized:

(1) The "public interest" is the paramount consideration, to which the preference is subordinate and with which it must not conflict. The meaning of "public interest" has been suggested in answer to your first question.

(2) The preference applicant's "plans" must be "equally well adapted" or within a reasonable time "made equally well adapted, to conserve and utilize in the public interest the navigation and water resources of the region."

When a body of citizens organized as a municipality or State indicate, by establishment of a publicly owned power system, their preference to buy power from themselves for use in the State or city, as against buying it from a public utility owned by others, it is clear that the "public interest" should sanction that choice.

But does the "public interest" require that consumers living outside the municipality or State should be required to obey the choice of those living within it and buy power from that source rather than from a privately owned public utility? The "preference" of the municipality is a preference in consumptive right, not in merchandizing advantage. Outside its own borders, a State or municipal corporation, reselling power, is on a parity with any other public utility selling in that territory. It is not entitled to elect, on behalf of consumers who are not its citizens, whether those consumers shall buy from it or from another company. If it does seek to make that election for them, its decision has not the dignity of a "preference" within the "policy of the Federal water power act," but has the status of a competitive offer. That "policy" is to conserve and utilize in the public interest the navigation and water resources "of the region"; consumers outside the State or city limits, but within the "region" accessible to Boulder Dam power, are as much within the protection of that policy as consumers within it. It is open to question whether, if all the power available were requested by a municipality for its own use, on the one hand, and all the power were requested by a public utility for use outside the city limits, on the other hand, whether the "public interest" would permit the water resources "of the region" (the "region" including by hypothesis both municipal and suburban territory) to be preempted by the urban body of citizens as against the suburban simply on the ground that the first body was organized as a municipal corporation, whereas the second body of consumers is served by a privately owned public utility. Certainly as between these two bodies of consumers the Secretary has discretion to make an equitable apportionment of the power if it is not sufficient to satisfy the demands of both. *A fortiori*, if a city claims the right, in addition to serving its own citizens, to demand power for resale outside its borders to consumers now served by a public utility which is applying for the same power, no preference need be recognized.

See *Mono Power Co. et al. v. City of Los Angeles et al.* (284 Fed. 784, C. C. A., 9th, 1922; certiorari denied, 262 U. S. 751.) In that case the City of Los Angeles brought condemnation proceedings against water rights and rights of way owned by the Mono Power Co., and the Southern Sierras Power Co., all outside the city limits, for use of the city. It was alleged by the city that "it is necessary for the city to provide additional electric energy for the present and future needs of said city and its inhabitants, for the purpose of heat, light, and power," and that the "public interest" required the city to condemn all rights to the waters of the Owens River, and also the company's right of way adjoining it. The company, in answer, alleged that the right of way sought to be condemned had been appropriated by the company as a public utility to the use of other towns to which it furnished electricity. The trial court permitted condemnation of the water rights and right of way. The Circuit Court of Appeals reversed this decision.

After citing code sections, including C. C. P., section 1240, to the effect that property appropriated to the use of a county, city and county, incorporated city or town, or municipal water district, can not be taken by any other county, etc., while such property is so appropriated and used for public purposes, the Circuit Court of Appeals said:

The theory upon which a municipal corporation may condemn and appropriate to a public use the property of a private corporation engaged in serving such municipality or its inhabitants is that the private corporation is using its property for a public use for a profit, and that the municipality has the right, in the interest of itself and its inhabitants, as an economical administrator of municipal affairs, to perform this public service itself and thus eliminate the profits of the private corporation.

That is not this case. The defendant is not rendering any public service to the City of Los Angeles or its inhabitants, and it does not propose to do so. Defendant's transmission and distributing lines do not extend into the City of Los Angeles, and it has not proposed to so extend them. The property of the defendant has been appropriated to the public use of other counties, municipalities, incorporated cities and towns, and the inhabitants thereof, and not for the City of Los Angeles or its inhabitants. * * *

In other words, it was held (by the trial court) that the public use of a municipal corporation for the City of Los Angeles was a more necessary use than the public use of a private corporation for any other county, municipality, incorporated city or town.

Counsel for the plaintiff stated their contention upon this question very succinctly as follows:

The law of the State presumes that the use of property by a municipality is a higher use than the use of it by a private corporation.

The court asked: "Suppose that they" (referring to the defendant) "show that their use is for a municipality?" to which counsel replied:

We anticipated that counsel would urge that point, and we are prepared to show your honor that that is not the law as we conceive it, and confidently believe that the preference is between a private corporation and a public corporation, regardless of who that private corporation may be serving.

Referring to the trial court's decision, the court said (p. 795):

"* * * we are of the opinion that the legislature recognized the distinction, and purposely used the broader phrase, 'property appropriated to the use of' to include an appropriation by a private corporation, as well as an appropriation by a county, city and county, etc." * * *

In short, this case holds that the statutes of California specifically prohibit condemnation by a municipality of property owned outside its borders by a privately owned public utility, which property is already appropriated to the use of other counties or incorporated cities by the company. If the statutes of California, in a case where the city of Los Angeles claims a preference to water rights outside its borders, as against a privately owned public utility serving other communities, specifically prohibit the recognition of such a preference, it is not clear why the "policy of the Federal water power act" should grant a greater preference in a similar "region."

It is true, of course, that in the case of *Mono Power Co. v. City of Los Angeles*, the city endeavored to condemn a vested right of the public utility, whereas in this case the city and the utility are competing for a right not yet vested in either of them. But the policy to be honored in either case is the same: If the city may not even by due process of law and for adequate compensation take away the power resources by which a public utility serves other communities, no reason appears why it should have a preference for their acquisition in the first instance. If the "public interest" will not divest other municipalities of the service of a privately owned public utility, it is not apparent why it should prevent them from acquiring that service. The theory in the one case, says the court, is that "the municipality

has the right, in the interest of itself and its inhabitants, as an economical administrator of municipal affairs, to perform this public service itself and thus eliminate the profits of the private corporation." But a preference right to eliminate the profits of the private corporation exacted from the municipality's citizens is not a preference right to go outside the municipal boundaries and substitute itself for the corporation as a profit taker, no saving being worked to the benefit of the suburban area. That area has no interest in increasing the revenues of Los Angeles in preference to maintaining the revenues of the public utility now serving them under State regulation.

In conclusion, although a municipality, like any other corporation, may be allocated power for resale in the Secretary's discretion, it is not entitled to any preference as a matter of right for power which it proposes to sell outside the city limits. The allocation of power by the Secretary to the municipality may therefore be conditioned on use within the city limits, and, indeed, should be, as against a competing bidder which already has a distribution system in the area in which the city would have to dump the power unused by itself. There may be cases in which this limitation should be relaxed and the city permitted to resell small fluctuating excesses, in order to equalize the load. Such a relaxation would not extend to granting the city a preference for the full amount of its peak load. A municipality, like any marketer of power, must expect to provide adequate stand-by service for the protection of its consuming public. The suburban consuming area of its public utility rival is not a legitimate dumping ground for unused power. So much for municipalities, in view of the cited decision. As for States, their rights appear to be coupled by the language of the Federal water power act with those of municipalities. The same two conditions precedent, "public interest" and conservation of the "water resources of the region" must be met. Having met them, a State would appear to be in the same shoes as a municipality as far as any of the preceding discussion goes, except that in the case of conflict between a State and one of its own municipalities it seems that the State would have a preference, because it would have the capacity by legislation to deprive the municipality of legal capacity to compete with it as a bidder.

But as between a State and a municipality of any other State, the two would be on a parity; and neither the State nor the municipality would have a preference against one another or against a public utility as to power which the State or municipality may propose to sell outside its borders.

(5) Does section 5 (c) of the act give the States of Nevada, Arizona, and California, or any other State, two separate and independent preference rights, as follows: (a) One under section 7 of the Federal water power act, under which power purchased may be sold either within the State or outside wherever a market may be found; and (b) another under the clause beginning with the word "except" occurring about the middle of this subsection?

No.

A strong reason would be required to justify a conclusion that in one act the one subject of preference to States should be treated in two independent and parallel channels, one being the normal one adopted from the Federal water power act and the other a new preference, and that the restrictions of the act as to the exercise of States' preference should be meant to apply only to this new creature.

The Boulder Canyon project act's language is as follows:

In case of conflicting applications, if any, such conflicts shall be resolved by the said Secretary, after hearing, with due regard to the public interest, and in conformity with the policy expressed in the Federal water power act as to conflicting applications for permits and licenses, except that preference to applicants for the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy, or for delivery at the switchboard of a hydroelectric plant, shall be given, first, to a State for the generation or purchase of electric energy for use in the State, and the States of Arizona, California, and Nevada shall be given equal opportunity as such applicants.

This is followed by the qualification:

The rights covered by such preference shall be contracted for by such State within six months after notice by the Secretary of the Interior and to be paid for on the same terms and conditions as may be provided in other similar contracts made by said Secretary.

Whatever preference is given to the States by the Federal water power act is carried over into the Boulder Canyon project act; and clearly this would be the only preference which might be claimed if the language quoted stopped with the word "except." This exception is in favor of a State for generation or purchase of electric energy *for use in the State*. It is claimed that this *exception* constitutes an *addition*; or entirely separate preference in favor of Arizona, California, and Nevada, unrelated to that granted by the Federal water power act, and that the restriction "for use in the State" applies only to the exception; that the State may, if it wishes, ignore this new preference and apply for power in accordance with the preference given by the Federal water power act; and that that preference is unrestricted as to the place where the power may be used.

Such a construction is strained and unnecessary. The primary intention of the exception was apparently to place a State in a preferred position, as opposed to a competing municipality, in view of the possible parity of these two classes of applicants under the language of the Federal water power act, previously quoted.

The words "for use in the State" provided as assurance that the State, by this concession, was not to be enabled to embark on the power-distribution business outside its borders and indicated an intent by Congress to devote power secured under this preference to intrastate development and benefit. It has been argued that the addition of this phrase here means that the preference conferred by the water power act is not so limited, and therefore that there are two preferences available, one unrestricted as to use and the other restricted. If so, the preference specifically created by the project act, restricted as to use, is less valuable than that previously available. Analysis thus indicates that the importance of the new preference language lies in its distinction between States and municipalities, not in any distinction as to place of use. This distinction was important in view of the fact that competing applications were expected from the States of Arizona and Nevada, on the one hand, and the municipality of Los Angeles, organized under the laws of California, on the other hand. Had the only anticipable conflict been between a municipality and a State to which it was subject, this exception would have been unnecessary, the State being in such case unquestionably dominant. This language preserved the rights of Arizona and Nevada as superior to those of Los Angeles, provided both should meet the conditions of the Federal water power act. But to indicate that no greater conces-

sion from the policy of the Federal water power act was intended, the restriction "for use in the State" was added.

(6) If two separate and independent preference rights are given to the States as outlined in the preceding question, does not any State in the Colorado River Basin, or elsewhere, possess the same preference right that Nevada, Arizona, and California may claim? Under this provision, do not all States and all municipalities stand on a parity? To what extent, if any, are such rights qualified by the requirement that "due regard must be given to the public interest"?

As indicated in replies to other questions, it is my opinion that two separate and independent preference rights are not conferred upon the States interested. It appears to have been the intent of the language of section 5 (c) following the word "except" to convey a limited preference upon the three lower basin States. The compact divided the Colorado Basin into two parts, the upper and the lower basins. The lower basin comprised the three States named in said paragraph; the upper basin, the remaining four. A division of the water was effected by the upper and lower basins. The upper basin has its own power possibilities and certain provisions of the Boulder Dam act look to the ultimate utilization and development of those possibilities. Possibly for this reason as well as the relative remoteness of the other States, Congress confined the preference given in 5 (c) to the three lower basin States. Outside of the preference so conferred, the three States as well as the upper basin States are on a parity with municipalities under the provisions of the Federal water power act, subject to the limitations and conditions expressed in the answer to question 4.

As "the public interest" is made the dominant consideration in any event by the Boulder Canyon project act and by the "policy of the Federal water power act," the above language should not be construed to mean that any State as an applicant has an absolute right to all or any part of Boulder Dam power. If "the public interest" requires an allocation among various claimants, the Secretary is free to make it.

(7) Within what time must contracts be executed with States claiming a preference right? Does the word "such" in line 1, second paragraph, subsection 5 (c) refer to all preference rights that may be claimed by a State, whether asserted under the Federal water power act or the special preference right given by subsection 5 (c), if it be held that two separate and independent preference rights may be claimed by States?

The language of the Boulder Canyon project act referred to is as follows:

The rights covered by such preference shall be contracted for by such State within six months after notice by the Secretary of the Interior and to be paid for on the same terms and conditions as may be provided in other similar contracts made by said Secretary.

It may be assumed at the outset that a State is entitled to the same time within which to contract as is a municipality. No time limit is placed upon the power of a municipality to contract. The quoted time limitation against the State must therefore be construed to apply against the special exception made in favor of the State. This exception, as stated above, refers to a case of conflict between a State and a municipality outside the State. In other words, within six months, a State presenting plans equally well adapted as those of the competing municipality and equally consistent with the public interest, might claim power in preference to the municipality. After six months, the State reverts to the parity with outside municipalities established by

the Federal water power act. The State, after the lapse of six months, may, nevertheless, assert whatever preference a municipality might claim; prior to that time its preference right is superior to that of a competing municipality.

(8) In general, what discretion is permitted to the Secretary by the preference clauses of the act?

This general question is answered specifically under the foregoing questions. In general, the Secretary must be controlled by the public interest; the public interest requires the "conservation and utilization of the navigation and water resources of the region"; the "region" is the region having physical access to Boulder Dam. The public interest requires, first, financial security of the United States, and, second, equality of access to Boulder Dam power by areas composing the region in proportion to the needs of the applicants; provided, their plans for its utilization and conservation are equally well adapted. Once these conditions are met and the question is one of apportionment between the applicants whose demands for power are equally consistent with the public interest (meaning by that term the financial security of the United States and the equitable distribution of Boulder Dam benefits within the "region"), and only then does the allocation of power pass from the realm of the Secretary's discretion into the area of rigid legal rights.

In view of the contention submitted by the State of Nevada that it is entitled to preference for one-third of the power for sale where it pleases, as against the Secretary's tentative allocation to that State of 18 per cent of the power to be used within the State, it is interesting to refer to the following committee amendment offered in the House (Cong. Rec., May 25, 1928, p. 10232), as an amendment to section 8:

Page 13, line 9, strike out the period, insert a colon, and the following: "Provided further, that in the event no such compact is entered into prior to June 1, 1928, then there shall be reserved for acquisition by the States of Arizona and Nevada, their respective agents, licensees, or assignees, at the switchboard, at the plant or plants operated through the use of water impounded by said dam for each, electrical energy equivalent to 15 per cent of the total electrical energy made available by the use of such impounded water, to be contracted for by said respective States, or their agents, licensees, or assignees, within six months after notice by the Secretary of the Interior, and to be paid for as and when said electrical energy is ready for delivery. If said plant or plants are operated by the Government, then said electrical energy shall be delivered on the terms and charges provided in the general regulations for delivery of electrical energy at the switchboard to municipal corporations and political subdivisions."

Mr. SWING. Mr. Chairman, the committee amendment just reported by the Clerk has been recalled by the committee, and we wish to have that amendment voted down.

The CHAIRMAN. The question is on agreeing to the committee amendment. The committee amendment was rejected.

Rejection by Congress of an amendment which would have substituted a specific allocation in lieu of the Secretary's discretion is some indication of the extent of the discretionary power to make allocations which the act intended to vest in him. If Congress declined to allocate 15 per cent of the total to Nevada, and the Secretary in his discretion has tentatively allocated 18 per cent, no good reason appears for reading into the act a mandate that Nevada shall be entitled to 33½ per cent.

(9) Need a municipality applying for power be granted a preference if the plan for utilization of power which it presents conflicts with a plan presented by another

applicant, which the Secretary regards as better adapted to conserve and utilize the power capable of development? In considering which plan is better adapted for such utilization and conservation, what factors should be considered: Production, transmission, distribution (i. e., meeting the needs of the region), financing, or only some of these elements?

The first part of this question can be answered categorically "No," in view of the discussion above. All preferences are conditioned under the Federal water power act upon satisfaction of the public interest, and equal adaptability to conservation and utilization of the navigation and water resources of the region. If the plan of one applicant in these respects is superior to the other the question of preference does not arise, because conditions precedent to its exercise have not been discharged. As to the second part of the question, the Secretary has the broadest possible discretion in deciding which of two conflicting plans is better adapted for such utilization and conservation. If they are identical in financial security to the United States, the contest between them may be as to their economic value to the "region." Decision of this question, of course, is entirely within the discretion of the Secretary. If one applicant proposes to use all the power at the dam in promoting new industries and another applicant proposes to use a part of the power for distribution of water for human use, and a third applicant wishes to use the power for irrigation, pumping and the needs of established industries, and a fourth asks the power for use of an urban population, manifestly there is no rule of thumb which will dictate what allocation to each of these purposes best "utilizes and conserves" the "water resources" assuming that the "region" means the region having physical access to Boulder Dam power. If, in the Secretary's discretion, the competing plans are equal as to finances and economic justification, their physical features may be his reason for choice between them. Examining these features, even if the plans are identical in generating equipment, it does not necessarily follow that they are "equally well adaptable" to conserve the power, for they may differ in plans for transmission, distribution, etc. It has been suggested that if the dam and the power plant are erected by the United States and the electrical machinery must meet United States specifications, then the "plans" are identical, and the question is resolved into one of rigid legal preferences as between applicants, based on the Federal water power act. To state this contention is to refute it; it would require complete elimination of the "public interest" as a factor, whereas it is clear that under both acts it is the dominant factor.

(10) Is there any distinction between the preference to which the City of Los Angeles, on the one hand, and other municipalities, on the other hand, are entitled?

No. Any distinction between the city of Los Angeles, on the one hand, and other municipalities, on the other, would have to be clearly stated in the act before it could be recognized. No such distinction appears and the city of Los Angeles is nowhere mentioned by name. Both the city and other municipalities must meet the test of public interest and adaptability of their plants to conserve and utilize the water resources of the region. If municipalities were, for any reason, entitled to all of the power available, save for the preference of a State, Los Angeles and the other municipalities would be required to

yield pro rata to make up the allocation taken for the competing State.

(11) Is the Secretary authorized to fix reasonable requirements as to financing, which must be met by all applicants, whether municipalities or privately owned public utilities?

Yes. If, as assumed above, the dominant public interest is the obligation of the United States to the whole people, it necessarily follows that the financial obligation of the United States to secure the refunding of Federal moneys, as provided by the act, is one of the Secretary's primary responsibilities. The fixing of financial requirements and rigid examination of the financial status of competing bidders is not only within the Secretary's discretion but is an absolute obligation resting upon him. (See sec. 5, providing for "general and uniform regulations.") If a bidder can not meet the reasonable financial requirements of the Secretary, can not meet scrutiny of its organization or legal capacity, it does not satisfy the public interest and its claimed preference may be and should be ignored.

(12) Is a corporation whose stock is held by a State entitled to whatever preference the State would have if applying directly?

A corporation is not a State; it is a separate entity though all its stock be owned by a State. Specific preferences not granted to corporations are granted to States by the two acts. An amendment to include "legal subdivisions" along with "States" in the preference provision for States in section 5 (c) adopted in the House (Cong. Rec., p. 10024, May 24, 1928) does not appear in the act as passed. And a State-owned corporation performing nongovernmental functions is scarcely to be "preferred" to a State-created legal subdivision distributing power to its citizens as a quasi-administrative function.

The Secretary, in receiving the bid of a corporation, would not be required to go back of the corporate entity to discover who its stockholders might be, nor to grant the corporation a preferred status if such examination should disclose that a State is one stockholder or the only stockholder. Without specific recognition in either act of such unusual creature we may assume that a State, wishing to claim the benefits granted by the act to "States" should claim them in its own right and not in the right of its creature.

(13) Are the preference rights of the States or municipalities assignable? May an assignment of such preference rights be made before a valid, binding contract is executed with the State for the power claimed as a preference right?

This question must be answered in the negative. A preference right accorded a State is a preference "for the use of water and appurtenant works and privileges" or, in the alternative, "for delivery at the switchboard * * * of electric energy." [Sec. 5 (c)]. As to the manner by which such right shall be acquired see the first sentence of the same subsection 5 (c). That subsection begins "*Contracts* for the use of water * * * or for sale and delivery of electric energy shall be made with responsible applicants therefor who will pay the price fixed by the said Secretary * * *." These "applicants" are applicants for *contracts*. Manifestly, until a contract has been offered by an "applicant" who is a member of a preferred class no preference right has arisen. The whole policy of the Federal water power act in granting preferences to States and municipalities was to protect them in their right to eliminate private profit in the furnishing to their

citizens of services which they could themselves supply if given the opportunity. No intent is shown to pass this preference privilege on to corporations or private persons for their private profit. As such classes are not beneficiaries of the express policy of the Federal water power act they can not be made so by the wish of the State expressed in an assignment. Moreover it is a well-established principle that preference rights are not assignable.

So much for the situation before the State has actually executed a contract with the Secretary. After execution of such a contract the "policy of the Federal water power act," and the dominant public interest, remain in as full force as before. The State may assign its contract or resell its power; but the Secretary is not obligated to recognize in any assignee, sublessee, or purchaser, any rights superior to those of the original contractor as to place of use, quantity of power, or any other conditions which have been accepted by the State in the contract.

The preference right itself is not assignable either before or after the execution of a contract by the State. A contract obtained in exercise of this preference right is assignable, subject to all restrictions and conditions contained in the original contract, and without diminution of the State's liability to the United States and without waiver of the requirement of financial and legal capacity of the assignee.

(14) If a State presents an application under section 7, of the Federal water power act, which is in conflict with that of a municipality, is there any difference in status between the two applicants? If the plans are identical, is the Secretary required to allocate the power to the State? If so, would he be required to insert a stipulation that the power should be used within the State?

This question has been discussed in detail in answer to Questions 4, 5, and 6 above. The answer may be summarized: A State, and a municipality of another State, both presenting applications under section 7 of the Federal water power act, stand on a basis of equality. If the conflict is between applications of a State and a municipality of that same State, the right of the State is superior, inasmuch as the municipality is its creature and possesses the capacity to make application only by sufferance of the State. If the conflict is between a State and a municipality foreign to it, the Secretary may make an equitable allocation between them in accordance with the public interest and in accordance with what, in his discretion, appears the best method of conserving and utilizing the water resources of the region. If the municipality lies within the competing State, and these two are the only bidders, the power should be allocated in full to the State. Whether some or all the power is claimed by a State no preference right exists save as to power which the State proposes to use within its borders, whether the application is presented under section 7 of the Federal water power act or under a supposed distinct preference, arising out of section 5 (c) of the Boulder Canyon project act. The Secretary consequently may incorporate in the allocation to the State a stipulation that the power be used within the State.

(15) If Los Angeles and other municipalities, including the Metropolitan Water District, can not now execute enforceable contracts meeting reasonable financial requirements of the Secretary, what would be the duty of the Secretary under the provisions of the act that an application is not to be denied because of necessity for a bond issue, and providing for reasonable time for passage of such bond issue? Would he be authorized to make contracts with other bidders preserving to the preference claimants the right to contract for part of the power if enforceable contracts are tendered within a designated time?

Section 5 (c) contains the following proviso:

Provided, however, That no application of a State or a political subdivision for an allocation of water for power purposes or of electrical energy shall be denied or another application in conflict therewith be granted on the ground that the bond issue of such State or political subdivision, necessary to enable the applicant to utilize such water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy or the electrical energy applied for, has not been authorized or marketed, until after a reasonable time, to be determined by the said Secretary, has been given to such applicant to have such bond issue authorized and marketed.

This proviso does not relieve either the State or a political subdivision from the necessity for compliance of its application with the public interest nor from adaptability of its plans to the conservation and utilization of the water resources of the region. If these conditions have been met and the State or political subdivision has proved its right to an allocation, whether for power purposes or electrical energy, this proviso protects the State or political subdivision from foreclosure of such right on the ground of nonauthorization of a bond issue or failure to market a bond issue until the expiration of a reasonable time therefor is determined by the Secretary. As to what a reasonable time may be, probably the minimum time now provided by the laws of the State may be looked to. This proviso, however, is not designed to tie the hands of the Secretary pending the authorization and marketing of the bond issue, so long as the right of the preference claimants to contract for the power allocated to them is preserved. He can not grant "any other application in conflict therewith." As an "application" is an application for a contract, the prohibition against granting another application is a prohibition against execution of another contract "*in conflict therewith.*" But, if another applicant offers a contract which preserves in full the right of the preference claimant to contract within a reasonable time, when, as and if the necessary bond issue is authorized or marketed, the two applications are not "in conflict." The necessity for flood control makes it to the interest of all parties that the project be initiated and completed at the earliest possible date. To the furtherance of this end the Secretary is plainly empowered to make the necessary contracts required by section 4(b) at the earliest possible date. Contracts to that end which specifically reserve to the Secretary the power to make further contracts with the preference claimants for the power which he has allocated to them, since they are not "*in conflict therewith,*" are within his authority.

(16) What is the proper construction of section 16 of the act?

Section 16 of the act must be construed in connection with section 15. These two sections read:

SEC. 15. The Secretary of the Interior is authorized and directed to make investigation and public reports of the feasibility of projects for irrigation, generation of electric power, and other purposes in the States of Arizona, Nevada, Colorado, New Mexico, Utah, and Wyoming for the purpose of making such information available to said States and to the Congress, and of formulating a comprehensive scheme of control and the improvement and utilization of the water of the Colorado River and its tributaries. The sum of \$250,000 is hereby authorized to be appropriated from said Colorado River Dam fund, created by section 2 of this act, for such purposes.

SEC. 16. In furtherance of any comprehensive plan formulated hereafter for the control, improvement, and utilization of the resources of the Colorado River system and to the end that the project authorized by this act may constitute and

be administered as a unit in such control, improvement, and utilization, any commission or commissioner duly authorized under the laws of any ratifying State in that behalf shall have the right to act in an advisory capacity to and in cooperation with the Secretary of the Interior in the exercise of any authority under the provisions of sections 4, 5, and 14 of this act, and shall have at all times access to records of all Federal agencies empowered to act under said sections, and shall be entitled to have copies of said records on request.

Section 15 authorizes investigations with a view to "*formulating a comprehensive scheme* of control and improvement and utilization of the water of the Colorado River and its tributaries" and authorizes appropriation therefor. Section 16 provides certain steps in furtherance of any "*comprehensive plan formulated hereafter* for the control, improvement, and utilization of the resources of the Colorado River system and to the end that the project authorized by this act may constitute and be administered as a unit of such control, improvement, and utilization." The phrases "comprehensive scheme" and the "comprehensive plan formulated hereafter" both relate to the same thing.

The purpose of the two sections is to provide liaison between the present undertaking, administered by the Secretary of the Interior, and future development of the river during formulation of plans for such developments. It was not the intention of section 16 to superimpose upon the authority and discretion of the Secretary of the Interior, everywhere else made the basis of administration, the control and supervision of a group of commissioners whose number, place and time of meeting, responsibility and authority, are unprovided for. The right of the commissioners is to advise and cooperate in the correlation of the present undertaking with future undertakings; it is not a right to direct the Secretary in the administration of the present work. He is not required to convene these commissioners, nor to seek their approval or ratification for any act of his. He is only required to grant them access to the records of his department. They may tender him advice but he is in nowise obliged to act thereon contrary to his own judgment.

Respectfully,

(Signed)

E. C. FINNEY,
Solicitor.

[APPENDIX 49]

OPINION OF THE ATTORNEY GENERAL
JUNE 9, 1930

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DEPARTMENT OF JUSTICE,
Washington, D. C.

SIR: I have the honor to acknowledge receipt of your communication of June 6, 1930, transmitting a letter dated June 6, 1930, from the Secretary of the Interior, advising that, as required by section 4 (b) of the Boulder Canyon project act (45 Stat. 1057) a contract has been secured with the City of Los Angeles, its Department of Water and Power, and the Southern California Edison Co. (Ltd.), which will provide revenue adequate in his judgment to pay operation and maintenance costs and insure the repayment to the United States within fifty years from the completion of the dam, power plant, and related works, of all amounts to be advanced for the construction of such works, together with the interest thereon made reimbursable by the act, and that in addition two contracts have been secured with the Metropolitan Water District of Southern California which will provide additional revenues for such purpose, and requesting that the opinion of the Attorney General be obtained as to whether or not these contracts comply with all the requirements of section 4 (b) of the Boulder Canyon project act which are by that section made conditions precedent to the appropriation of money, the making of contracts, and the commencement of work for the construction of a dam and power plant in Boulder Canyon.

Responsive to your request for my opinion upon these questions, I have the honor to advise you as follows:

Section 4 (b) of the Boulder Canyon project act provides:

(b) Before any money is appropriated for the construction of said dam or power plant, or any construction work done or contracted for, the Secretary of the Interior shall make provision for revenues by contract, in accordance with the provisions of this act, adequate in his judgment to insure payment of all expenses of operation and maintenance of said works incurred by the United States and the repayment, within fifty years from the date of the completion of said works, of all amounts advanced to the fund under subdivision (b) of section 2 for such works, together with interest thereon made reimbursable under this act.

The contracts in question are:

(1) A contract dated April 26, 1930, between the United States of America and the City of Los Angeles and the Southern California Edison Co. (Ltd.), entitled "Contract for Lease of Power Privilege," as amended by supplemental contract dated May 28, 1930.

(2) A contract dated April 26, 1930, between the United States of America and the Metropolitan Water District of Southern California, entitled "Contract for Electrical Energy," as amended by a supplemental contract dated May 31, 1930.

(3) A contract dated April 24, 1930, between the United States of America and the Metropolitan Water District of Southern California, entitled "Contract for Delivery of Water."

The "Contract for Lease of Power Privilege," as amended, recites:

(1) This contract, made this 26th day of April, 1930, pursuant to the act of Congress approved June 17, 1902 (31 Stat. 388), and acts amendatory thereof and supplementary thereto all of which acts are commonly known and referred to as the Reclamation Law and, particularly, pursuant to the act of Congress approved June 21, 1928 (45 Stat. 1057), designated the Boulder Canyon project

act, between the United States of America, hereinafter referred to as the United States, acting for this purpose by Ray Lyman Wilbur, Secretary of the Interior, hereinafter styled the Secretary, and severally, the City of Los Angeles, a municipal corporation and its Department of Water and Power (said department acting herein in the name of the city but as principal in its own behalf as well as in behalf of the city; the term city as used in this contract being deemed to mean both the City of Los Angeles and its Department of Water and Power) and the Southern California Edison Co. (Ltd.), a private corporation, hereinafter styled the company, both of said corporations being organized and existing under the laws of the State of California and hereinafter styled the lessees.

The original and supplemental contracts for lease of power privilege were executed in the name of the City of Los Angeles, acting by and through its board of water and power commissioners, by the president of the board. The supplemental contract contains a recital that it was the intention that the Department of Water and Power of the City of Los Angeles, as well as the City of Los Angeles, should be firmly bound as principals by the original contract of April 26, 1930, and the parties adopt and reaffirm the original contract as amended. The Department of Water and Power Commissioners, by the president of the board, executed the supplemental contract.

There have been submitted to me certified copies of resolutions adopted by the board of water and power commissioners, and of resolutions and ordinances adopted by the council of the City of Los Angeles authorizing the execution of these contracts. Section 386 of the charter of the City of Los Angeles provides that contracts shall not be made without advertising for bids; but this section does not apply to contracts such as those here in question relating to a matter about which there is no competition and where advertising for bids would have been futile. *Los Angeles Gas & Electric Corp. v. City of Los Angeles*, 188 Cal. 307, 319. In my opinion the ordinances and resolutions were sufficient to authorize the president of the board of water and power commissioners to execute the contracts.

In substance the contract as amended imposes upon the city acting by and through its Department of Water and Power, and therefore upon the department itself—First: The obligation, when the dam is completed and the generating equipment has been installed by the Government, to take over as lessee the generating plant and operate it, paying as rental in ten annual installments the cost to the United States of the generating equipment, with interest at 4 per cent. Second: The obligation to pay for electrical energy, as furnished, at stated rates. Third: An obligation to operate and maintain at cost the transmission lines required for transmitting power to the pumping plants of the Metropolitan Water District, and to transmit over its main transmission line the power allocated to others, for compensation based on a reasonable share of the cost of construction, operation, and maintenance. As none of the transmission lines have been built, performance of these obligations will require their construction.

Under the provisions of the charter of the City of Los Angeles the Department of Water and Power is specifically authorized to construct, operate, maintain, extend, manage, and control works and property for the purpose of supplying the city and its inhabitants with water and electric energy. To this department of the city government is entrusted full responsibility and control in entering into such contracts as those here involved. Quite in conformity with the charter provisions the city, in its execution of the original and

supplemental contracts for lease of power privilege, is described as acting by and through its board of water and power commissioners. The contract as amended is therefore to be regarded as made in the name of the city, but subject to all of the provisions of the charter of the City of Los Angeles relating to contracts executed by the Department of Water and Power, and the question of the validity of this contract and the character of the resources available to secure its performance must be determined from a consideration of the power of the board of water and power commissioners of the Department of Water and Power to make such a contract, and the sufficiency of the resources of the city which are specifically allocated under the terms of the charter to its control and expenditure in the performance of the obligations of such contracts.

Under the charter of the City of Los Angeles revenues for such purposes as those contemplated by these contracts are provided through the operations of the Department of Water and Power, which, although an entity separate from the city for some purposes (*Shelton v. City of Los Angeles*, 275 Pac. 421) is a department of the city government. Its revenues are revenues of the city, but are allocated to the control and disposition of the department.

The charter provisions which are pertinent in this connection are as follows:

SEC. 220. The Department of Water and Power shall have the power and duty—

(1) To construct, operate, maintain, extend, manage, and control works and property for the purpose of supplying the city and its inhabitants with water and electric energy, or either, and to acquire and take, by purchase, lease, condemnation or otherwise, and to hold, in the name of the city, any and all property situated within or without the city, and within or without the State, that may be necessary or convenient for such purpose.

(2) To regulate and control the use, sale, and distribution of water and electric energy owned or controlled by the city; the collection of water and electric rates, and the granting of permits for connections with said water or electric works; and to fix the rates to be charged for such connections; and, subject to the approval of the council by ordinance, to fix the rates to be charged for water or electric energy for use within or without the city, and to prescribe the time and the manner of payment of the same. * * *

* * * * *

(7) To control and order, except as otherwise in this charter provided, the expenditure of all money received from the sale or use of water, or from any other source in connection with the operation of said water works, and all money received from the sale or use of electric energy, or from any other source in connection with the operation of said electric works; provided, that all such money pertaining to said water works shall be deposited in the city treasury to the credit of a fund to be known as the "water revenue fund," and all such money pertaining to said electric works shall be deposited in the city treasury to the credit of a fund to be known as the "power revenue fund"; and the money so deposited in each such fund shall be kept separate and apart from other money of the city, and shall be drawn only from said fund upon demands authenticated by the signature of the chief accounting employee of the board.

SEC. 221. None of the money in or belonging to the water revenue fund or the power revenue fund shall be appropriated or used for any purpose except the following purposes pertaining to the municipal works from or on account of which such money was received, to wit:

First. For the necessary expenses of operating and maintaining such works.

Second. For the payment of the principal and interest, or either, due or coming due upon outstanding notes, certificates, or other evidences of indebtedness issued against revenues from such works, in pursuance of Sec. 224, or bonds or other evidences of indebtedness, general or district, heretofore or hereafter issued for the purpose of such works, or parts thereof.

Third. For the necessary expenses of constructing, extending, and improving such works, including the purchase of lands, water rights, and other property; also the necessary expenses of conducting and extending the business of the department pertaining to such works; also for reimbursement to another bureau on account of services rendered, or material, supplies, or equipment furnished; also for expenditures for purposes for which bonds, or evidences of indebtedness provided for in section 224, shall have been authorized, subject to reimbursement as soon as practicable, from monies derived from the sale or issuance of such bonds or evidences of indebtedness.

Fourth. To return and pay into the general fund of the city, from time to time, upon resolution of the board, from any surplus money in either such revenue fund, any sums paid by the city from funds raised by taxation for the payment of the principal or interest of any municipal bonds issued by the city for or on account of the municipal works to which such revenue fund pertains, or of liability arising in connection with the construction, operation or maintenance of the municipal works to which said fund pertains.

Fifth. For defraying the expenses of any pension system applicable to the employees of the department, that shall be established by the city.

Fifth (a). For establishing and maintaining a reserve fund to insure the payment at maturity of the principal and interest on all bonds now outstanding or hereafter issued for the purpose of the municipal works, and such other reserve funds pertaining to such works as the board may provide for by resolution subject to the approval of the council by ordinance. The money set aside and placed in such fund or funds so created shall remain in said fund or funds until expended for the purposes thereof and shall not be transferred to the "reserve fund" of the city.

Sixth. To be transferred as provided in section 382 of this charter.

SEC. 222. The board shall provide for the cost of extensions and betterments of said water works and electric works from the funds derived from the sale of bonds, general or district, so far as such funds shall be made available for the use of the board for said purposes, and so far as such funds shall not be made available for the use of the board therefor, from revenues received from the works to which such extensions and betterments pertain, and from the proceeds of loans contracted as provided by section 224.

* * * * *

SEC. 382. At the close of each fiscal year the controller and treasurer shall transfer all surplus money remaining in each fund over and above the amount of outstanding demands and liabilities payable out of such fund to the "reserve fund," except such surplus money as is in the several bond funds, interest and sinking funds, trust funds, the fire and police pension fund, the harbor revenue fund, the library fund, the park fund, the permanent improvement fund, the playground and recreation fund, the power revenue fund and the water revenue fund, but the council may by ordinance direct that any or all said surplus money in either the harbor revenue fund, the power revenue fund or the water revenue fund be transferred to such reserve fund with the consent of the board in charge of such fund, but not otherwise.

Leaving entirely out of consideration the proceeds from the sale of bonds, which would no doubt require, under section 18 of article 11 of the State constitution, the approval of two-thirds of the electors, and leaving entirely out of consideration the proceeds of loans contracted as provided by section 224 of the city charter, which are authorized only for emergency purposes, and bearing in mind that the Department of Water and Power is not authorized to levy taxes; it is apparent that its resources are limited to its earnings from the sale or use of water and of electric energy, and that over these revenues it has complete control of expenditure for the construction, operation, and maintenance of all works and property for the purpose of supplying the city and its inhabitants with water and electric energy.

I am advised by the Secretary of the Interior that yearly revenues of this department are more than ample to meet all of its liabilities under the original and amended contracts, and, therefore, to relieve

the city of any necessity of financing the obligations which will arise under these contracts; that these revenues under the Department of Water and Power are not only amply sufficient for this purpose, but its yearly earnings will in his judgment be amply sufficient to provide for the construction of the transmission lines as well.

The only limitation upon the expenditure of such funds by this department is found in section 369 of the charter of the City of Los Angeles, which reads:

No department, bureau, division, or office of the city government shall make expenditures or incur liabilities in excess of the amount appropriated therefor.

The method of appropriation is, however, provided in section 83 as follows:

The board of each department * * * the finances of which are not included in the general budget, but which department itself has control of definite revenues or funds, as elsewhere in this charter set forth, shall, prior to the beginning of each fiscal year, adopt an annual departmental budget and make an annual departmental budget appropriation, covering the anticipated revenues and expenditures of said department. Such departmental budget shall conform, as far as practicable, to the forms and times provided in this charter for the general city budget. Each such budget shall contain a sum to be known as the "unappropriated balance," which sum shall be available for appropriation by the board later in the ensuing fiscal year to meet contingencies as they may arise. A copy of such budget, when adopted, and of every resolution subsequently adopted making appropriation from said unappropriated balance, shall promptly be filed with the mayor and controller, each. No expenditure shall be made or financial obligations incurred by any such department except as authorized by the annual departmental appropriation, or appropriations made subsequent to said annual budget.

Question arises under section 369 of the charter as to whether by the execution of the original and amended contracts a present liability was incurred for the payments to be made thereunder in the future. No authorities have been found construing this charter provision, but similar questions have often arisen under section 18 of article 11 of the constitution of the State of California, and although this constitutional limitation has no application to contracts made by the Department of Water and Power these authorities must be considered in determining the effect of section 369 of the charter upon the validity of the contracts here in question.

Section 18 of article 11 of the constitution of California provides:

No county, city, town, township, board of education, or school district shall incur any indebtedness or liability in any manner or for any purpose exceeding in any year the income and revenue provided for such year, without the assent of two-thirds of the qualified electors thereof, voting at an election to be held for that purpose, nor unless before or at the time of incurring such indebtedness provision shall be made for the collection of an annual tax sufficient to pay the interest on such indebtedness as it falls due, and also provision to constitute a sinking fund for the payment of the principal thereof on or before maturity, which shall not exceed forty years from the time of contracting the same; * * *. Any indebtedness incurred contrary to any provision of this section shall be void; * * *.

The obvious purpose of this limitation is to prevent the city from incurring indebtedness in excess of its yearly revenue, and the question has often arisen in the courts of California as to when an indebtedness or liability is incurred, within the meaning of this provision, when a contract is executed requiring payments to be made from time to time in the future.

There is authority for the proposition that when a municipality receives the entire consideration for its promise to make payments or incur expenditures in the future, a liability is immediately incurred under the provisions of the State constitution. See *Chester v. Carmichael*, 187 Cal. 287; *In re City and County of San Francisco*, 195 Cal. 426; *Mahoney v. City and County of San Francisco*, 201 Cal. 248. But a municipality does not incur an "indebtedness" or "liability" invalid under the constitutional provision when it enters into a contract to pay for services as and when rendered from time to time in the future. The obligations here involved to pay rental and power rates can not be said to be incurred until the rental accrues and the power is received. Such liabilities are held, for the purpose of this constitutional provision, to be incurred when the services have been rendered and the obligation to pay for them arises. See *McBean v. Fresno*, 112 Cal. 195; *Smilie v. Fresno County*, 112 Cal. 311; *Doland v. Clark*, 143 Cal. 176; *In re City and County of San Francisco*, 191 Cal. 172; compare *Walla Walla v. Walla Walla Water Co.*, 172 U. S. 1.

It may, however, be said that if a contract imposes upon the municipality liabilities to arise in the future which in any year will necessarily exceed the income and revenue provided for such year, it will be invalid. The courts have held that the aggregate of all payments which will be required under such a contract is not to be regarded as a liability presently incurred upon the execution of the contract, and thus incurred within the year of its execution; but they have not held that a municipality may, in the face of the constitutional limitation incur future liabilities which will exceed the income and revenue for the year in which payment thereof will be required, and so to hold would appear to be in direct contradiction of the express provision of the constitution.

The city acting through its Department of Water and Power will be under the necessity to construct transmission lines over which the power for which it has agreed to pay may be transmitted, but in so far as the parties to this contract are concerned it is under no express obligation to do so. Under no circumstances will it be necessary for the city to construct transmission lines in advance of the completion of the dam and generating equipment, and, if, therefore, it appears that during this period it will be able to finance such construction out of current revenues of its Department of Water and Power, I am of the opinion that no legal objection can be made to the contract as amended because of the necessity or liability which may arise to defray these construction costs.

Consideration of these authorities leads to the conclusion that the Department of Water and Power has not incurred a present liability upon the execution of these contracts, and therefore the only effect of section 369 is to require the appropriation in each annual budget of sufficient funds from the water and power revenues to meet the obligations which will arise under and in connection with the performance of these contracts. Inasmuch as the Secretary of the Interior is clearly of the opinion that such funds will be available and ample for all such purposes, I see no reason for doubting the validity of the contract or for questioning its effect in securing payment to the United States of the amounts of money which will become payable under its terms.

With reference to the validity of the obligation assumed by the Southern California Edison Co. (Ltd.), its execution of the original contract has been formally approved by its board of directors, and I am informed that the supplemental contract has been duly ratified by the board. There can be no question, therefore, as to the binding effect of this contract upon this corporation.

By the supplemental agreement amending the original Contract for Lease of Power Privilege all objections which might have been raised to the validity of this contract upon the ground that the city, the Department of Water and Power and the company were not bound to take or pay for any electrical energy except as they might wish, have been removed. Mutuality of obligation is not lacking, and the city and its department are firmly bound to take and/or pay for certain percentages of firm energy as stated and defined in the supplemental contract and the company is similarly bound to take or pay for certain percentages of such energy which are also defined and stated in the supplemental contract.

The Contract for Lease of Power Privilege between the United States, the City of Los Angeles, its Department of Water and Power, and the Southern California Edison Co. (Ltd.) is in my opinion a valid agreement binding upon the city and its department to the extent to which funds are available under the provisions of the charter to the department, and is in full compliance with section 4 (b) of the Boulder Canyon project act, since the revenues which it will provide out of such funds are in the judgment of the Secretary of the Interior adequate to meet the requirements of that section.

Objection has been made to the Metropolitan Water District power contract on the ground that the district has not yet voted bonds to provide funds to build the aqueduct on which this power would be used. It is unnecessary to consider which step must precede the other—provision for the aqueduct or provision for power and water—in view of the sufficiency of the city and company contracts to meet all requirements of the act. Even if the aqueduct financing were construed as being a prerequisite, the Secretary's reservation of energy for the District is within his authority under the second paragraph of section 5 (c) of the act.

Giving consideration only to the city and company contract, I am of the opinion that all the requirements of section 4 (b) of the Boulder Dam project act which are made conditions precedent to the appropriation of money, the making of contracts and the commencement of work for the construction of a dam and power plant in Boulder Canyon have been fully met and performed by the Secretary of the Interior in securing the contracts referred to in his letter.

Respectfully,

(Signed)

WILLIAM D. MITCHELL,
Attorney General.

The PRESIDENT,
The White House.

[APPENDIX 50]

OPINION OF THE COMPTROLLER GENERAL
OCTOBER 10, 1930

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COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D. C., October 10, 1930.

THE ATTORNEY GENERAL STATE OF ARIZONA,
Phoenix, Ariz.

SIR: Consideration has been given the contentions and arguments advanced on behalf of the State of Arizona in briefs and discussions by Mr. Dean G. Acheson, of the firm of Covington, Burling & Rublee, who it appears has been appointed special assistant to the attorney general of the State of Arizona, said contentions and arguments being to the effect that no part of the appropriation of \$10,660,000 made for the commencement of the Boulder Dam project in the deficiency act of July 3, 1930 (46 Stat. 877), should be expended for the construction work of the dam or power plant because the condition precedent to such expenditure, as required by section 4 (b) of the Boulder Canyon project act of December 2, 1928 (45 Stat. 1059), has not been complied with.

The provisions of said section 4 (b), relied upon by the State of Arizona, are as follows:

Before any money is appropriated for the construction of said dam or power plant, or any construction work done or contracted for, the Secretary of the Interior shall make provision for revenues by contract, in accordance with the provisions of this act, adequate in his judgment to insure payment of all expenses of operation and maintenance of said works incurred by the United States and the repayment, within fifty years from the date of the completion of said works, of all amounts advanced to the fund under subdivision (b) of section 2 for such works, together with interest thereon made reimbursable under this act.

The contention made on behalf of the State of Arizona is that the contracts entered into for the raising of revenues, in compliance with the provisions of this section, are not legally valid and enforceable contracts and, therefore, are not contracts in accordance with the provisions of the Boulder Canyon project act.

The instruments entered into by the Secretary of the Interior in order to comply with the provisions of section 4 (b) of the act are: (1) Contract lease and power privilege dated April 26, 1930, amended May 28, 1930, between the United States and the City of Los Angeles and Southern California Edison Co. (Ltd.); (2) contract for electrical energy dated April 26, 1930, amended May 28, 1930, between the United States and the Metropolitan Water District of Southern California; and (3) contract for delivery of water, dated April 24, 1930, between the United States and the Metropolitan Water District of Southern California.

It is admitted by all concerned that the last-mentioned contract is a mere option on the part of the Metropolitan Water District of Southern California to take water if and when available and with respect to that instrument, no question is raised or presented by the State of Arizona for consideration at this time. With respect to the contract with the Metropolitan Water District of Southern California for electrical energy the Secretary of the Interior has stated that such contract is not necessary in his judgment to provide adequate revenues to repay the United States for advances to be made, the first contract

with the City of Los Angeles and the Southern California Edison Co. being sufficient for the purpose. Therefore, the discussion herein will be limited to this last-mentioned contract. It should be noted in this connection that section 4 of the act, *supra*, leaves the matter as to adequacy of the revenues to the judgment of the Secretary of the Interior. It may be stated, also, that the amendment of May 28, 1930, in the two contracts first mentioned, was at the instance and direction of the Subcommittee of the House Committee on Appropriations when the appropriation item here under consideration was before it for hearings so as to provide in specific terms the minimum amount of power the contractors were required and obligated to take and/or pay for, no specific provision for that purpose being incorporated in the contracts as originally executed.

The opening clause of the contract with the City of Los Angeles and the Southern California Edison Co., in so far as concerns the City of Los Angeles, states that the contract is entered into with the City of Los Angeles, a municipal corporation, and its department of water and power, said department acting in the name of the city but as principal in its own behalf as well as in the behalf of the city, the term "city" as used in the contract being deemed to be both the City of Los Angeles and its department of water and power. It appears that section 18 of article 11 of the constitution of California forbids a city or other municipality from incurring any indebtedness exceeding in any one year the income and revenue provided in such year without the favorable vote of two-thirds of the electors. The courts have held, however, that this provision does not apply to the department of water and power of the city but only to the city corporation proper, the department of water and power having a separate legal entity and being authorized under the city charter to collect, obligate, and dispose of its funds for the purposes for which it was created. At the hearings before the Subcommittee of the House Committee on Appropriations it was stated that the City of Los Angeles, as a municipal corporation, was mentioned in the contract so as to provide a proper financial backing for the execution of the contract which is to last 50 years, but opinions have been expressed that the contract does not bind the city, in so far as concerns the taxing power, not only because of the provision in the constitution of California, herein cited, but because a contract such as has been entered into would be construed as a contract with the city with reference to its department of water and power.

The matter as to the validity of the contract was submitted to the Attorney General of the United States, at the instance of the Subcommittee of the House Committee on Appropriations. The Attorney General rendered an opinion on June 9, 1930, holding, in substance, that the contract for the lease and power privilege between the United States and the City of Los Angeles, its department of water and power, and the Southern California Edison Co. is a valid agreement binding upon the city and its department to the extent to which funds are available under the provisions of the charter to the department and is in full compliance with section 4 (b) of the Boulder Canyon project act, since the revenues which it will provide out of such funds are, in the judgment of the Secretary of the Interior, adequate to meet the requirements of that section. In the course of the opinion it was said:

In substance the contract as amended imposes upon the city acting by and through its Department of Water and Power, and therefore upon the department itself—First: The obligation, when the dam is completed and the generating equipment has been installed by the Government, to take over as lessee the generating plant and operate it, paying as rental in ten annual instalments the cost to the United States of the generating equipment, with interest at 4 per cent. Second: The obligation to pay for electrical energy, as furnished, at stated rates. Third: An obligation to operate and maintain at cost the transmission lines required for transmitting power to the pumping plants of the Metropolitan Water District, and to transmit over its main transmission line the power allocated to others, for compensation based on a reasonable share of the cost of construction, operation, and maintenance. As none of the transmission lines have been built, performance of these obligations will require their construction.

Under the provisions of the charter of the City of Los Angeles the Department of Water and Power is specifically authorized to construct, operate, maintain, extend, manage, and control works and property for the purpose of supplying the city and its inhabitants with water and electric energy. To this department of the city government is entrusted full responsibility and control in entering into such contracts as those here involved. Quite in conformity with the charter provisions the city, in its execution of the original and supplemental contracts for lease of power privilege, is described as acting by and through its board of water and power commissioners. The contract as amended is therefore to be regarded as made in the name of the city, but subject to all of the provisions of the charter of the City of Los Angeles relating to contracts executed by the Department of Water and Power, and the question of the validity of this contract and the character of the resources available to secure its performance must be determined from a consideration of the power of the board of water and power commissioners of the Department of Water and Power to make such a contract, and the sufficiency of the resources of the city which are specifically allocated under the terms of the charter to its control and expenditure in the performance of the obligations of such contracts.

Under the charter of the City of Los Angeles revenues for such purposes as those contemplated by these contracts are provided through the operations of the Department of Water and Power, which, although an entity separate from the city for some purposes (*Shelton v. City of Los Angeles*, 275 Pac. 421), is a department of the city government. Its revenues are revenues of the city, but are allocated to the control and disposition of the department.

The charter provisions which are pertinent in this connection are as follows:

SEC. 220. The Department of Water and Power shall have the power and duty—

(1) To construct, operate, maintain, extend, manage, and control works and property for the purpose of supplying the city and its inhabitants with water and electric energy, or either, and to acquire and take, by purchase, lease, condemnation or otherwise, and to hold, in the name of the city, any and all property situated within or without the city, and within or without the State, that may be necessary or convenient for such purpose.

(2) To regulate and control the use, sale, and distribution of water and electric energy owned or controlled by the city; the collection of water and electric rates, and the granting of permits for connections with said water or electric works; and to fix the rates to be charged for such connections; and, subject to the approval of the council by ordinance, to fix the rates to be charged for water or electric energy for use within or without the city, and to prescribe the time and the manner of payment of the same. * * *

(7) To control and order, except as otherwise in this charter provided, the expenditure of all money received from the sale or use of water, or from any other source in connection with the operation of said waterworks, and all money received from the sale or use of electric energy, or from any other source in connection with the operation of said electric works; provided, that all such money pertaining to said waterworks shall be deposited in the city treasury to the credit of a fund to be known as the "water revenue fund," and all such money pertaining to said electric works shall be deposited in the city treasury to the credit of a fund to be known as the "power revenue fund"; and the money so deposited in each such fund shall be kept separate and apart from other money of the city, and shall be drawn only from said fund upon demands authenticated by the signature of the chief accounting employee of the board.

SEC. 221. None of the money in or belonging to the water revenue fund or the power revenue fund shall be appropriated or used for any purpose except the following purposes pertaining to the municipal works from or on account of which such money was received, to wit:

First. For the necessary expenses of operating and maintaining such works.

Second. For the payment of the principal and interest, or either, due or coming due upon outstanding notes, certificates, or other evidences of indebtedness issued against revenues from such works, in pursuance of section 224, or bonds or other evidences of indebtedness, general or district, heretofore or hereafter issued for the purpose of such works, or parts, thereof.

Third. For the necessary expenses of constructing, extending, and improving such works, including the purchase of lands, water rights and other property; also the necessary expenses of conducting and extending the business of the department pertaining to such works; also for reimbursement to another bureau on account of services rendered, or material, supplies, or equipment furnished; also for expenditures for purposes for which bonds, or evidences of indebtedness provided for in section 224, shall have been authorized, subject to reimbursement as soon as practicable, from moneys derived from the sale or issuance of such bonds or evidences of indebtedness.

Fourth. To return and pay into the general fund of the city, from time to time, upon resolution of the board, from any surplus money in either such revenue fund, any sums paid by the city from funds raised by taxation for the payment of the principal or interest of any municipal bonds issued by the city for or on account of the municipal works to which such revenue fund pertains, or of liability arising in connection with the construction, operation, or maintenance of the municipal works to which said fund pertains.

Fifth. For defraying the expenses of any pension system applicable to the employees of the department that shall be established by the city.

Fifth (a). For establishing and maintaining a reserve fund to insure the payment at maturity of the principal and interest on all bonds now outstanding or hereafter issued for the purpose of the municipal works, and such other reserve funds pertaining to such works as the board may provide for by resolution subject to the approval of the council by ordinance. The money set aside and placed in such fund or funds so created shall remain in said fund or funds until expended for the purposes thereof and shall not be transferred to the "reserve fund" of the city.

Sixth. To be transferred as provided in section 382 of this charter.

SEC. 222. The board shall provide for the cost of extensions and betterments of said water works and electric works from the funds derived from the sale of bonds, general or district, so far as such funds shall be made available for the use of the board for said purposes, and so far as such funds shall not be made available for the use of the board therefor, from revenues received from the works to which such extensions and betterments pertain, and from the proceeds of loans contracted as provided by section 224.

* * * * *

SEC. 382. At the close of each fiscal year the controller and treasurer shall transfer all surplus money remaining in each fund over and above the amount of outstanding demands and liabilities payable out of such fund to the "reserve fund," except such surplus money as is in the several bond funds, interest and sinking funds, trust funds, the fire and police pension fund, the harbor revenue fund, the library fund, the park fund, the permanent improvement fund, the playground and recreation fund, the power revenue fund and the water revenue fund, but the council may by ordinance direct that any or all said surplus money in either the harbor revenue fund, the power revenue fund, or the water revenue fund be transferred to such reserve fund with the consent of the board in charge of such fund, but not otherwise.

Leaving entirely out of consideration the proceeds from the sale of bonds, which would no doubt require, under section 18 of article 11 of the State constitution, the approval of two-thirds of the electors, and leaving entirely out of consideration the proceeds of loans contracted as provided by section 224 of the city charter, which are authorized only for emergency purposes, and bearing in mind that the Department of Water and Power is not authorized to levy taxes—it is apparent that its resources are limited to its earnings from the sale or use of water and of electric energy, and that over these revenues it has complete control of expenditure for the construction, operation, and maintenance of all works and property for the purpose of supplying the city and its inhabitants with water and electric energy.

I am advised by the Secretary of the Interior that yearly revenues of this department are more than ample to meet all of its liabilities under the original and amended contracts, and, therefore, to relieve the city of any necessity of financing the obligations which will arise under these contracts; that these revenues under the Department of Water and Power are not only amply sufficient for this purpose, but its yearly earnings will in his judgment be amply sufficient to provide for the construction of the transmission lines as well.

The only limitation upon the expenditure of such funds by this department is found in section 369 of the charter of the City of Los Angeles, which reads:

No department, bureau, division, or office of the city government shall make expenditures or incur liabilities in excess of the amount appropriated therefor.

The method of appropriation is, however, provided in section 83 as follows:

The board of each department * * * the finances of which are not included in the general budget, but which department itself has control of definite revenues or funds, as elsewhere in this charter set forth, shall, prior to the beginning of each fiscal year, adopt an annual departmental budget and make an annual departmental budget appropriation, covering the anticipated revenues and expenditures of said department. Such departmental budget shall conform, as far as practicable, to the forms and times provided in this charter for the general city budget. Each such budget shall contain a sum to be known as the "unappropriated balance," which sum shall be available for appropriation by the board later in the ensuing fiscal year to meet contingencies as they may arise. A copy of such budget when adopted, and of every resolution subsequently adopted making appropriation from said unappropriated balance, shall promptly be filed with the mayor and controller, each. No expenditure shall be made or financial obligations incurred by any such department except as authorized by the annual departmental appropriation, or appropriations made subsequent to said annual budget.

Question arises under section 369 of the charter as to whether by the execution of the original and amended contracts a present liability was incurred for the payments to be made thereunder in the future. No authorities have been found construing this charter provision, but similar questions have often arisen under section 18 of article 11 of the constitution of the State of California, and although this constitutional limitation has no application to contracts made by the Department of Water & Power, these authorities must be considered in determining the effect of section 369 of the charter upon the validity of the contracts here in question.

Section 18 of article 11 of the constitution of California provides:

No county, city, town, township, board of education, or school district shall incur any indebtedness or liability in any manner or for any purpose exceeding in any year the income and revenue provided for such year, without the assent of two-thirds of the qualified electors thereof, voting at an election to be held for that purpose, nor unless before or at the time of incurring such indebtedness provision shall be made for the collection of an annual tax sufficient to pay the interest on such indebtedness as it falls due, and also provision to constitute a sinking fund for the payment of the principal thereof on or before maturity, which shall not exceed forty years from the time of contracting the same; * * *. Any indebtedness incurred contrary to any provision of this section shall be void; * * *.

The obvious purpose of this limitation is to prevent the city from incurring indebtedness in excess of its yearly revenue, and the question has often arisen in the courts of California as to when an indebtedness or liability is incurred, within the meaning of this provision, when a contract is executed requiring payments to be made from time to time in the future.

There is authority for the proposition that when a municipality receives the entire consideration for its promise to make payments or incur expenditures in the future, a liability is immediately incurred under the provisions of the State constitution. See *Chester v. Carmichael*, 187 Cal. 287; *In re City and County of San Francisco*, 195 Cal. 426; *Mahoney v. City and County of San Francisco*, 201 Cal. 248. But a municipality does not incur an "indebtedness" or "liability" invalid under the constitutional provision when it enters into a contract to pay for services as and when rendered from time to time in the future. The obligations here involved to pay rental and power rates can not be said to be incurred until the rental accrues and the power is received. Such liabilities are held, for the purpose of this constitutional provision, to be incurred when the services have been rendered and the obligation to pay for them arises. See *McBean v. Fresno*, 112 Cal. 195; *Smilie v. Fresno County*, 112 Cal. 311; *Doland v. Clark*, 143 Cal. 176; *In re City and County of San Francisco*, 191 Cal. 172; Compare *Walla Walla v. Walla Walla Water Co.*, 172 U. S. 1.

It may, however, be said that if a contract imposes upon the municipality liabilities to arise in the future which in any year will necessarily exceed the income and revenue provided for such year, it will be invalid. The courts have held that the aggregate of all payments which will be required under such a contract is not to be regarded as a liability presently incurred upon the execution of the contract, and thus incurred within the year of its execution; but they have not held that a municipality may, in the face of the constitutional limitation incur future liabilities which will exceed the income and revenue for the year in which payment thereof will be required, and so to hold would appear to be in direct contradiction of the express provision of the Constitution.

The city, acting through its Department of Water and Power, will be under the necessity to construct transmission lines over which the power for which it has agreed to pay may be transmitted, but in so far as the parties to this contract are concerned it is under no express obligation to do so. Under no circumstances will it be necessary for the city to construct transmission lines in advance of the completion of the dam and generating equipment, and, if, therefore, it appears that during this period it will be able to finance such construction out of current revenues of its Department of Water and Power, I am of the opinion that no legal objection can be made to the contract as amended because of the necessity or liability which may arise to defray these construction costs.

Consideration of these authorities leads to the conclusion that the Department of Water and Power has not incurred a present liability upon the execution of these contracts, and therefore the only effect of section 369 is to require the appropriation in each annual budget of sufficient funds from the water and power revenues to meet the obligations which will arise under and in connection with the performance of these contracts. Inasmuch as the Secretary of the Interior is clearly of the opinion that such funds will be available and ample for all such purposes, I see no reason for doubting the validity of the contract or for questioning its effect in securing payment to the United States of the amounts of money which will become payable under its terms.

In the brief submitted on behalf of the State of Arizona it is agreed that the instrument does not impose a present liability or indebtedness but that, as is conceded in the opinion of the Attorney General, it purports to impose a present obligation to incur future liabilities and indebtednesses when the United States shall have furnished the consideration of building the dam and the power plants and, it is contended in effect that since the city is limited in its power to obligate its funds, the performance of the contract will be subject to such limitation and that the carrying out of the contract will have to depend entirely upon the city or its department of water and power each year appropriating or making funds available for the purpose, there being nothing compulsory in so far as the municipality is concerned, and no redress in the United States if the city or its Department of Water and Power refuse to perform.

The objectionable feature pointed out by the State of Arizona appears to be present in all cases in which a municipality or other governmental corporation is involved. In those cases the good faith of the corporation to a certain extent must be relied upon. To hold otherwise in the present case would require the City of Los Angeles or its Department of Water and Power to make available at this time not only funds to build a transmission line to conduct the power contracted for to the gates of the city but, also, the full amount required to fulfill the contract, which covers a period of 50 years. Such requirement would be considered unconscionable, not only because it would amount to penalizing the municipal corporation in that such a requirement could not be made in the case of a private corporation, when, as a matter of fact, under section 5 of the Boulder Canyon project act municipalities are entitled to certain preferential rights under certain conditions therein set forth, but because there is no way the city

could compel the United States to perform its part of the agreement in the event it should be decided that the Boulder Canyon project should be abandoned and the money necessary to construct the dam and power plants not be appropriated. Furthermore, it is evident from the terms of the contract with the City of Los Angeles that payments thereunder, outside of the cost of the transmission line which is to be constructed by the city, are to be made, apparently, from the sale of the power furnished by the United States under the contract, and it appears that adequate provisions have been made for penalties and forfeitures in the event of nonpayment.

It should be noted in this connection that section 4 (b) of the Boulder Canyon project act provides that contracts for adequate revenues should be entered into before any money is appropriated for the construction of the dam and power plant, or any construction work done or contracted for. Notwithstanding an initial appropriation has now been made for the commencement of the work, which would apparently indicate that the Congress has determined that the condition has been complied with in so far as concerns the making of the appropriation, it is contended on behalf of the State of Arizona that the fact that such an appropriation has been made is not conclusive evidence or proof that valid contracts have been entered into nor even that the appropriation was made based upon such promises and that the condition precedent applies to the different steps set forth in the act, namely (1), the making of appropriations, (2) the undertaking of construction work, and (3) the contracting for such construction work.

Whatever force these arguments may have, the condition precedent applies equally and with the same force and effect to the three steps. The specific direction in the act that the Secretary of the Interior should enter into contracts providing for adequate revenues to reimburse the United States for advances made or to be made for the maintenance, operation, cost of construction, etc., of the dam and power plants, etc., was a condition precedent to his asking Congress for an appropriation for the commencement of the construction work. When the appropriation here in question was under consideration by the Committees of the two Houses of the Congress, objections were made substantially on the same basis as are now made to this office, that the contracts were not such as would properly and adequately protect the Government. Notwithstanding these objections on the part and on behalf of the State of Arizona, the appropriation was made in the following terms:

Boulder Canyon project.—For the commencement of construction of a dam and incidental works in the main stream of the Colorado River at Black Canyon, to create a storage reservoir, and of a complete plant and incidental structures suitable for the fullest economic development of electrical energy from the water discharged from such reservoir; to acquire by proceedings in eminent domain, or otherwise, all lands, rights of way, and other property necessary for such purposes; and for incidental operations, as authorized by the Boulder Canyon project act, approved December 21, 1928 (U. S. C., Supp. III, title 33, ch. 15A); \$10,660,000 to remain available until advanced to the Colorado River Dam Fund, which amount shall be available for personal services in the District of Columbia and for all other objects of expenditure that are specified for projects included under the caption "Bureau of Reclamation" in the Interior Department Appropriation Acts for the fiscal years 1930 and 1931, without regard to the limitations of amounts therein set forth; provided, that of the amount hereby appropriated, not to exceed \$100,000 shall be available for investigation and reports as authorized by section 15 of the Boulder Canyon project act.

It should be noted that the appropriation as made does not contain any limitations as to its use. If the Congress had in mind the fettering of the appropriation with the further requirement that other contracts should be entered into before the amount appropriated could be expended, it is reasonable to assume that adequate provisions would have been made in specific terms for the purpose. Taking into consideration the fact that no such restriction or limitation is contained in the appropriation, and, further, that compliance with the condition precedent in the Boulder Canyon project act was reserved by section 4 (b) of said act for the consideration of the Congress, it must be presumed, in view of the appropriation which has now been made, that the Congress has in fact determined, and has been satisfied, that the law with respect to entering into those contracts has been complied with, not only in so far as concerns the making of the appropriation, but also with respect to the other two steps, that is to say, the beginning of the construction work and the contracting for such work.

The contentions and arguments made on behalf of the State of Arizona appear to be based primarily upon the future possibility of the municipality of the City of Los Angeles or one of its departments repudiating the obligations imposed by the contract. The good faith of the city is not specifically questioned, but to support these contentions it must be at least implied. Such matters are not for the consideration of this office in a question such as presented in the instant case. The City of Los Angeles and/or its department of water and power appear to have done in connection with this matter all that legally could be done under the limited power of the city charter to make a binding and valid contract, and to require more would be unreasonable and unconscionable. Furthermore, the question as to matters relating to the municipality making funds available for the carrying out of the contracts, etc., is one largely administrative for consideration at the proper time, and with which this office at this time, in view of the record as presented, would not feel justified in interfering.

Accordingly, in specific answer to the question submitted I have to advise that there appears to be nothing presented by the State of Arizona requiring or justifying a holding by this office that the appropriation made for the specific purpose of commencing construction of the dam and incidental work in connection with the Boulder Canyon project act is not available for that purpose. Therefore, no action will be taken to withhold approval of withdrawals of funds for such purpose.

Respectfully,

(Signed) J. R. McCARL,
Comptroller General of the United States.

[APPENDIX 51]

OPINION OF THE UNITED STATES
SUPREME COURT IN THE CASE OF
ARIZONA *v.* CALIFORNIA ET AL.

MAY 18, 1931

[283 U. S. 423, 51 S. Ct. 522, 75 L. Ed. 1154]

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SUPREME COURT OF THE UNITED STATES

NO. 19, ORIGINAL—OCTOBER TERM, 1930

STATE OF ARIZONA *v.* STATE OF CALIFORNIA ET AL.

[May 18, 1931]

Mr. Justice BRANDEIS delivered the opinion of the court.

The Boulder Canyon project act, December 21, 1928 (ch. 42, 45 Stat. 1057), authorizes the Secretary of the Interior, at the expense of the United States, to construct at Black Canyon on the Colorado River, a dam, a storage reservoir, and a hydroelectric plant; provides for their control, management, and operation by the United States; and declares that the authority is conferred "subject to the terms of the Colorado River compact," "for the purpose of controlling the floods, improving navigation and regulating the flow of the Colorado River, providing for storage and for the delivery of the stored waters thereof for reclamation of public lands and other beneficial uses exclusively within the United States, and for the generation of electrical energy as a means of making the project herein authorized a self-supporting and financially solvent undertaking."

The Colorado River compact is an agreement for the apportionment of the water of the river and its tributaries. After several years of preliminary informal discussion, Colorado, Wyoming, Utah, New Mexico, Arizona, Nevada, and California—the seven States through which the river system extends—appointed commissioners in 1921 to formulate an agreement; and Congress, upon request, gave its assent, and authorized the appointment of a representative to act for the United States. Act of August 19, 1921 (ch. 72, 42 Stat. 171). On November 24, 1922, these commissioners and the Federal representative signed an agreement to become effective when ratified by Congress and the legislatures of all of these States. The Boulder Canyon project act approved this agreement subject to certain limitations and conditions, the approval to become effective upon the ratification of the compact, as so modified, by the legislatures of California and at least five of the six other States. The legislatures of all these States except Arizona ratified the modified compact and the act was accordingly declared to be in effect. Proclamation of June 25, 1929, 46 Stat. 20.

On October 13, 1930, Arizona filed this original bill of complaint against Ray Lyman Wilbur, Secretary of the Interior, and the States of California, Nevada, Utah, New Mexico, Colorado, and Wyoming. It charges that Wilbur is proceeding in violation of the laws of Arizona to invade its quasi-sovereign rights by building at Black Canyon on the Colorado River a dam, half of which is to be in Arizona, and a reservoir to store all the water of the river flowing above it in Arizona, for the purpose of diverting part of these waters from Arizona for consumptive use elsewhere, and of

preventing the beneficial consumptive use in Arizona of the unappropriated water of the river now flowing in that State; that these things are being done under color of authority of the Boulder Canyon project act; that this act purports to authorize the construction of the dam and reservoir, the diversion of the water from Arizona, and its perpetual use elsewhere; that the act directs and requires Wilbur to permit no use or future appropriation of the unappropriated water of the main stream of the Colorado River, now flowing in Arizona and to be stored by the said dam and reservoir, except subject to the conditions and reservations contained in the Colorado River compact; and that the act thus attempts to enforce as against Arizona, and to its irreparable injury, the compact which it has refused to ratify. The bill prays that the compact and the act "and each and every part thereof, be decreed to be unconstitutional, void, and of no effect; that the defendants and each of them be permanently enjoined and restrained from enforcing or carrying out said compact or said act, or any of the provisions thereof, and from carrying out the three pretended contracts hereinabove referred to, or any of them, or any of their provisions, [meaning certain contracts executed by Wilbur on behalf of the United States for the use of the stored water and developed power after the project shall have been completed] and from doing any other act or thing pursuant to or under color of said Boulder Canyon project act."

Process was made returnable on January 12, 1931; and on that day all of the defendants moved that the bill be dismissed. The grounds assigned in the motions are (1) that the bill does not join the United States, an indispensable party; (2) that the bill does not present any case or controversy of which the court can take judicial cognizance; (3) that the proposed action of the defendants will not invade any vested right of the plaintiff or of any of its citizens; (4) that the bill does not state facts sufficient to constitute a cause of action against any of the defendants. The case was heard on these motions.

The wrongs against which redress is sought are, first, the threatened invasion of the quasi-sovereignty of Arizona by Wilbur in building the dam and reservoir without first securing the approval of the State engineer as prescribed by its laws; and, second, the threatened invasion of Arizona's quasi-sovereign right to prohibit or to permit appropriation, under its own laws, of the unappropriated water of the Colorado River flowing within the State. The latter invasion, it is alleged, will consist in the exercise, under the act and the compact, of a claimed superior right to store, divert, and use such water.

First. The claim that quasi-sovereign rights of Arizona will be invaded by the mere construction of the dam and reservoir rests upon the fact that both structures will be located partly within the State. At Black Canyon, the site of the dam, the middle channel of the river is the boundary between Nevada and Arizona. The latter's statutes prohibit the construction of any dam whatsoever until written approval of plans and specifications shall have been obtained from the State engineer; and the statutes declare in terms that this provision applies to dams to be erected by the United States. Arizona Laws 1929, ch. 102, secs. 1-4. See also Revised Code of 1928, secs. 3280-3286. The United States has not secured such approval; nor has any appli-

cation been made by Wilbur, who is proceeding to construct said dam in complete disregard of this law of Arizona.

The United States may perform its functions without conforming to the police regulations of a State. *Johnson v. Maryland*, 254 U. S. 51; *Hunt v. United States*, 278 U. S. 96. If Congress has power to authorize the construction of the dam and reservoir, Wilbur is under no obligation to submit the plans and specifications to the State engineer for approval.¹ And the Federal Government has the power to create this obstruction in the river for the purpose of improving navigation if the Colorado River is navigable. *Pennsylvania v. Wheeling and Belmont Bridge Co.*, 18 How. 421, 430; *South Carolina v. Georgia*, 93 U. S. 4, 11; *Gibson v. United States*, 166 U. S. 269; *United States v. Chandler-Dunbar Water Power Co.*, 229 U. S. 53, 64; *Greenleaf Johnson Lumber Co. v. Garrison*, 237 U. S. 251, 258-68. Arizona contends both that the river is not navigable, and that it was not the purpose of Congress to improve navigation.

The bill alleges that "the river has never been, and is not now, a navigable river." The argument is that the question whether a stream is navigable is one of fact; and that hence the motion to dismiss admits the allegation that the river is not navigable. It is true that whether a stream is navigable in law depends upon whether it is navigable in fact; *United States v. Utah*, 283 U. S. 64;² and that a motion to dismiss, like a demurrer, admits every well-pleaded allegation of fact, *Payne v. Central Pacific Ry. Co.*, 255 U. S. 228, 232. But a court may take judicial notice that a river within its jurisdiction is navigable. *United States v. Rio Grande Dam and Irrigation Co.*, 174 U. S. 690, 697; *Wear v. Kansas*, 245 U. S. 154, 158. We know judicially, from the evidence of history, that a large part of the Colorado River south of Black Canyon was formerly navigable,³ and that the main obstacles to navigation have been the accumulations of silt

¹ The further allegation that the proposed dam, reservoir, and power plants, when completed, may not be subject to the taxing power of Arizona, may be disregarded. The act provides that the title to such works shall remain forever in the United States, and such exemption is but an ordinary incident of any public undertaking by the Federal Government.

² Compare *The Daniel Ball*, 10 Wall. 557, 563; *The Montello*, 20 Wall. 430; *St. Anthony Falls Water Power Co. v. St. Paul Water Commissioners*, 168 U. S. 349; *Leovy v. United States*, 177 U. S. 621; *Economy Light & Power Co. v. United States*, 256 U. S. 113; *Oklahoma v. Texas*, 258 U. S. 574, 590, 591; *Brewer-Elliott Oil & Gas Co. v. United States*, 260 U. S. 77, 86; *United States v. Holt State Bank*, 270 U. S. 49, 56, 57.

³ Navigability extended as far north as the mouth of the Virgin River at Black Canyon. See Report Upon the Colorado River of the West, H. R. Ex. Doc. No. 90, 36th Cong., 1st sess., June 5, 1860, pts. I-II, and maps; H. R. Mis. Doc. No. 37, 42d Cong., 1st sess., April 15, 1871; H. R. Ex. Doc. No. 18, 51st Cong., 2d sess., December 2, 1890; H. R. Doc. No. 101, 54th Cong., 1st sess., December 27, 1895; H. R. Doc. No. 67, 56th Cong., 2d sess., December 5, 1900; Ann. Rep., Chief of Engineers, War Department, 1879, pp. 1773-85; Hodge, *Arizona As It Is* (1877), pp. 208-10; Hinton, *Handbook to Arizona* (1878), pp. 66-67, 371-72, and maps; Freeman, *The Colorado River* (1923), chs. I, V, VII, particularly pp. 146-67; Sloan, *History of Arizona* (1930), vol. i, pp. 216-36.

By the act of July 5, 1884, ch. 229, 23 Stat. 133, 144, Congress appropriated \$25,000 for the improvement of navigation on the Colorado River between Fort Yuma and a point 30 miles above Rioville, which was located at the mouth of the Virgin River. An additional \$10,000 for a levee at Yuma was appropriated by the act of July 22, 1892, ch. 158, 27 Stat. 88, 108-09. See H. R. Doc. Nos. 204 and 237, 58th Cong., 2d sess., December 18, 1903. As to navigability north and east of Boulder Canyon, see *United States v. Utah*, 283 U. S. 64.

coming from the upper reaches of the river system, and the irregularity in the flow due to periods of low water.⁴ Commercial disuse resulting from changed geographical conditions and a congressional failure to deal with them, does not amount to an abandonment of a navigable river or prohibit future exertion of Federal control. *Economy Light & Power Co. v. United States*, 256 U. S. 113, 118, 124. We know from the reports of the committees of the Congress which recommended the Boulder Canyon project that, in the opinion of the government engineers, the silt will be arrested by the dam; that, through use of the stored water, irregularity in its flow below Black Canyon can be largely overcome; and that navigation for considerable distances both above and below the dam will become feasible.⁵ Compare *St. Anthony Falls Water Power Co. v. St. Paul Water Commissioners*, 168 U. S. 349, 359; *United States v. Cress*, 243 U. S. 316, 326.

The bill further alleges that the "recital in said act that the purpose thereof is the improvement of navigation" "is a mere subterfuge and false pretense." It quotes a passage in Article IV of the compact, to which the act is subject, which declares that "inasmuch as the Colorado River has ceased to be navigable for commerce and the reservation of its waters for navigation would seriously limit the development of its basin, the use of its waters for purposes of navigation shall be subservient to the uses of such waters for domestic, agricultural, and power purposes;" and alleges that "even if said river were navigable, the diversion, sale and delivery of water therefrom, as authorized in said act, would not improve, but would destroy, its navigable capacity."⁶

⁴ See Report by Director of Reclamation Service on Problems of Imperial Valley and Vicinity, Sen. Doc. No. 142, 67th Cong., 2d sess., February 23, 1922, pp. 3-10, 240; Report of the Colorado River Board on the Boulder Dam project, H. R. Doc. No. 446, 70th Cong., 2d sess., December 3, 1928, pp. 12-14; Report of the All-American Canal Board, July 22, 1919, pp. 24-33. For the geological history of the lower Colorado area, see Information Presented to the House Committee on Irrigation and Reclamation in connection with H. R. 2903, 68th Cong., 1st sess., 1924, pp. 135-43. All the former documents on the Colorado River development were adopted as part of the hearings on Boulder Canyon project act. See Hearings Before the House Committee on Irrigation and Reclamation on H. R. 5773, 70th Cong., 1st sess., January 6, 1928, pp. 8-10.

⁵ The House Committee on Irrigation and Reclamation stated that one of the purposes of the act was to have the flow of the river below the dam "regulated and even" and thus "susceptible to use by power boats and other small craft. The great reservoir will, of course, be susceptible of navigation." See Boulder Canyon project, H. R. Rep. 918, 70th Cong., 1st sess., March 15, 1928, p. 6. As to control of silt deposits. See *id.*, pp. 16-17. A similar report was made to the Senate. See Boulder Canyon Project, Sen. Rep. 592, 70th Cong., 1st sess., March 20, 1928, pp. 5-7, 16-20. The House Committee said in summary: "The proposed dam would improve navigation probably more than any other works which could be constructed. The dam will so regulate the flow as to make the river very practicable of navigation for 200 miles below and impound water above which could easily be navigated for more than 75 miles." H. R. Rep. 918, *supra*, p. 22. Compare Hearings before the House Committee on Irrigation and Reclamation on H. R. 5773, 70th Cong., 1st sess., pt. 3, January 13-14, 1928, pp. 340-41; Hearings Before the Senate Committee on Irrigation and Reclamation on S. 728 and S. 1274, *id.*, January 17-21, 1928, pp. 368-77, 384, 420-21. Since below Black Canyon the Colorado River is a boundary stream, such navigation will be at least partially interstate.

⁶ Reliance is also had upon the fact that the bill as originally introduced contained no reference to navigation, but that the statements of this purpose, found in the act, were inserted during the course of the hearings. See Minority Views, H. R. Rep. No. 918, 70th Cong., 1st sess., pt. 3, pp. 14-18.

Into the motives which induced members of Congress to enact the Boulder Canyon project act, this court may not enquire. *McCray v. United States*, 195 U. S. 27, 53-59; *Weber v. Freed*, 239 U. S. 325, 329-30; *Wilson v. New*, 243 U. S. 332, 358-59; *United States v. Doremus*, 249 U. S. 86, 93-94; *Dakota Central Telephone v. South Dakota*, 250 U. S. 163, 187; *Hamilton v. Kentucky Distilleries Co.*, 251 U. S. 146, 161; *Smith v. Kansas City Title & Trust Co.*, 255 U. S. 180, 210.⁷ The act declares that the authority to construct the dam and reservoir is conferred, among other things, for the purpose of "improving navigation and regulating the flow of the river." As the river is navigable and the means which the act provides are not unrelated to the control of navigation, *United States v. River Rouge Improvement Co.*, 269 U. S. 411, 419, the erection and maintenance of such dam and reservoir are clearly within the powers conferred upon Congress. Whether the particular structures proposed are reasonably necessary, is not for this court to determine. Compare *Fong Yue Ting v. United States*, 149 U. S. 698, 712-14; *Oceanic Steam Navigation Co. v. Stranahan*, 214 U. S. 320, 340; *United States v. Chandler-Dunbar Water Power Co.*, 229 U. S. 53, 65, 72-73; *Everard's Breweries v. Day*, 265 U. S. 545, 559. And the fact that purposes other than navigation will also be served could not invalidate the exercise of the authority conferred, even if those other purposes would not alone have justified an exercise of Congressional power. Compare *Veazie Bank v. Fenno*, 8 Wall. 533, 548; *Kaukauna Water Power Co. v. Green Bay & Mississippi Canal Co.*, 142 U. S. 254, 275; *In re Kollock*, 165 U. S. 526, 536; *Weber v. Freed*, *supra*; *United States v. Doremus*, *supra*.

It is urged that the court is not bound by the recital of purposes in the act; that we should determine the purpose from its probable effect; and that the effect of the project will be to take out of the river, now nonnavigable through lack of water, the last half of its remaining average flow. But the act specifies that the dam shall be used: "First, for river regulation, improvement of navigation and flood control; second, for irrigation and domestic uses and satisfaction of present perfected rights . . . ; and third, for power." It is true that the authority conferred is stated to be "subject to the Colorado River compact," and that instrument makes the improvement of navigation subservient to all other purposes. But the specific statement of primary purpose in the act governs the general references to the compact. This court may not assume that Congress had no purpose to aid navigation, and that its real intention was that the stored water shall be so used as to defeat the declared primary purpose. Moreover, unless and until the stored water, which will consist largely of flood waters now wasted, is consumed in new irrigation projects or in domestic use, substantially all of it will be available for the improvement of navigation. The possible abuse of the power to regulate navigation is not an

⁷ Similarly, no inquiry may be made concerning the motives or wisdom of a State legislature acting within its proper powers. *United States v. Des Moines Navigation & Railway Co.* 142 U. S. 510, 544; *Atchison, Topeka & Santa Fe R. R. Co. v. Matthews*, 174 U. S. 96, 102; *Calder v. Michigan*, 218 U. S. 591, 598; *Rast v. Van Deman & Lewis*, 240 U. S. 342, 357, 366. Compare *O'Gorman & Young, Inc., v. Hartford Fire Insurance Co.*, 282 U. S. 251, 258.

argument against its existence. *Lottery Case*, 188 U. S. 321, 363; *Flint v. Stone Tracy Co.*, 220 U. S. 107, 168-69; *Wilson v. New*, 243 U. S. 332, 354; *Hamilton v. Kentucky Distilleries*, *supra*; *Alaska Fish Salting & By-Products Co. v. Smith*, 255 U. S. 44, 48.

Since the grant of authority to build the dam and reservoir is valid as an exercise of the Constitutional power to improve navigation, we have no occasion to decide whether the authority to construct the dam and reservoir might not also have been constitutionally conferred for the specified purpose of irrigating public lands of the United States.⁸ Compare *United States v. Rio Grande Dam and Navigation Co.*, 174 U. S. 690, 703; *United States v. Alford*, 274 U. S. 264. Or for the specified purpose of regulating the flow and preventing floods in this interstate river.⁹ Or as a means of conserving and apportioning its waters among the States equitably entitled thereto. Or for purpose of performing international obligations.¹⁰ Compare *Missouri v. Holland*, 252 U. S. 416.

Second. The further claim is that the mere existence of the act will invade quasi-sovereign rights of Arizona by preventing the State from exercising its right to prohibit or permit under its own laws the appropriation of unappropriated waters flowing within or on its borders. The opportunity and need for further appropriations are fully set forth in the bill. Arizona is arid and irrigation is necessary for cultivation of additional land. The future growth and welfare of the State are largely dependent upon such reclamation. It is alleged that there are within Arizona 2,000,000 acres not now irrigated which are susceptible of irrigation by further appropriations from the

⁸ "A large part of the land through which the Colorado River flows, or which is adjacent or tributary to it, is public domain of which the United States is the proprietor." Colorado River compact, H. R. Doc. No. 605, 67th Cong., 4th sess., March 2, 1923, p. 6. As to extent of this land and irrigation projects on it in connection with the Boulder Canyon Dam, see Report of the Director of the Reclamation Service on Problems of Imperial Valley and Vicinity, Sen. Doc. No. 142, 67th Cong., 2d sess., February 23, 1922, appendices C-D. See also Department of Interior, Twenty-fifth Ann. Rep. Bureau of Reclamation (1926), pp. 2-29; Vacant Public Lands on July 1, 1929, Department of Interior, General Land Office, Circular No. 1197, pp. 3-10; Report of the International Water Commission, H. R. Doc. No. 359, 71st Cong., 2d sess., April 21, 1930, pp. 98-177, and Bibliography, p. 97.

⁹ Compare the legislation for Mississippi River flood control, independent of navigation improvements. Joint Resolution of May 2, 1922, ch. 175, 42 Stat. 504; act of September 22, 1922, ch. 427, § 13, 42 Stat. 1038, 1047; act of December 22, 1927, ch. 5, 45 Stat. 2, 38; and particularly act of May 15, 1928, ch. 569, 45 Stat. 534.

¹⁰ The Colorado River and its tributaries have frequently been the subject of treaties between the United States and Mexico. See Treaty of Guadalupe Hidalgo, February 2, 1848, Art. VII, in Malloy, *United States Treaties*, vol. 1, pp. 1107, 1111; Gadsden Treaty, December 30, 1853, Art. IV, *id.*, pp. 1121, 1123; Boundary Convention of March 1, 1889, Arts. I, V, *id.*, pp. 1167-92. Compare the 1912 proposals reported in Hearings Before the House Committee on the Irrigation of Arid Lands, 66th Cong., 1st sess., July 9-14, 1919, *Append.*, pp. 323-26. As to Rio Grande River, see Convention of May 21, 1906, Treaty Series No. 455; 21 *Opp. Atty. Gen.* 274, 282, 518; Sen. Doc. No. 154, 57th Cong., 2d sess., February 14, 1903. For the international aspects of the proposed Colorado River development, see Hearings Before the House Committee on Irrigation of Arid Lands, 66th Cong., 1st sess., July 9-14, 1919, *Append.*, pp. 323-48; Colorado River Compact, H. R. Doc. No. 605, 67th Cong., 4th sess., March 2, 1923, pp. 5-6. Report of the All-American Canal Board, July 22, 1919, pp. 14-15; Report of International Water Commission, *supra*, note 8, pp. 17-23, 85-238.

Colorado River.¹¹ To appropriate water means to take and divert a specified quantity thereof and put it to beneficial use in accordance with the laws of the State where such water is found, and, by so doing, to acquire under such laws, a vested right to take and divert from the same source, and to use and consume the same quantity of water annually forever, subject only to the right of prior appropriations. Under the law of Arizona, the perfected vested right to appropriate water flowing within the State can not be acquired without the performance of physical acts through which the water is and will in fact be diverted to beneficial use. Topographical conditions make it necessary that land in the State be irrigated in large projects. The Colorado River flows, both on the boundary between Arizona and Nevada, and in Arizona alone, through an almost continuous series of deep canyons, the walls of which rise in Arizona to a height varying from a few hundred to more than 5,000 feet. The cost of installing the dams, reservoirs, canals, and distribution works required to effect any diversion, will be very heavy; and financing on a large scale is indispensable. Such financing will be impossible unless it clearly appears that, at or prior to the time of constructing such works, vested rights to the permanent use of the water will be acquired.

The alleged interference with the right of the State to control additional appropriations is based upon the following facts. The average annual flow of the Colorado River system, including the tributaries, is 18,000,000 acre-feet.¹² Only 9,000,000 acre-feet have been appropriated by Arizona and the defendant States. Of this 3,500,000 acre-feet have been appropriated in Arizona under its laws, and the remaining 5,500,000 acre-feet by the other States. The 9,000,000 acre-feet unappropriated are now subject to appropriation in Arizona under its laws. It is alleged that there are numerous sites suitable for the construction, maintenance, and operation of dams and reservoirs required for the irrigation of land in Arizona; and that actual projects have been planned for the irrigation of 1,000,000 acres, including 100,000 acres owned by the State. For this purpose 4,500,000 acre-feet annually will be additionally required. Permits to appropriate this water have been granted by the State; and definite plans to carry out projects for the building of dams on that part of the river flowing in or on the borders of Arizona have been approved by the State engineer. It is stated that but for the passage of the Boulder Canyon project act, construction work would long since have commenced.

It is conceded that the continued use of the 3,500,000 acre-feet of water already appropriated in Arizona is not now threatened. And there is no allegation that at the present time the enjoyment of these rights is being interfered with in any way. The claim strenuously urged is that the existence of the act, and the threatened

¹¹ Of the total length of 1,293 miles of the Colorado River, 688 miles are within or on the boundaries of Arizona. After leaving Utah, the main river flows for 292 miles wholly in Arizona. Then, the middle of the channel forms the boundary between Arizona and Nevada for 145 miles; and for 235 miles the boundary between Arizona and California. Tributaries of the river flow within Arizona for a combined length of 836 miles, and most of these enter the main stream below Black Canyon.

¹² An acre-foot is the quantity of water required to cover an acre to a depth of 1 foot—43,560 cubic feet. See *Wyoming v. Colorado*, 259 U. S. 419, 458.