CHAPTER II

UNITED STATES COLORADO RIVER WATER DELIVERY AND RELATED CONTRACTS

A. Background

The United States, acting through the Secretary of the Interior, has entered into Colorado River water delivery contracts under authority of the Boulder Canyon Project Act of December 21, 1928, 45 Stat. 1057. Section 5 authorizes such contracts and prohibits the use of stored water by anyone except by such contract. Prior to that, contracts were made under the Reclamation Act of 1902; water deliveries were made to lands in reclamation projects, such as the Yuma Project in Arizona and California, pursuant to water right applications filed by individual landowners; and diversions were permitted from such facilities (Laguna Dam); e.g., to lands in the North Gila Valley (Section 13(a) of the Project Act also approved the 1922 Colorado River Compact).

Contracts have been entered into with the State of Nevada, through its Colorado River Commission, dated March 30, 1942, Ilr-1399, for the delivery of not to exceed 100,000 acre-feet of water per year for consumptive use (Article 5(a)). A charge of 50 cents per acre-foot is made during the Boulder Dam cost repayment period and, thereafter, the charge is to be on such basis as may be prescribed by Congress (Article 9). On January 3, 1944, a supplemental contract was executed in which the 100,000 acre-feet was raised to 300,000 acre-feet.

A contract has also been entered into with the State of Arizona dated February 9, 1944, for the delivery of a maximum of 2.8 maf/yr plus one-half of the excess or surplus water unapportioned by the Compact, to the extent it is available for use in Arizona under the Compact, and also subject to the right of Nevada to contract for 1/25th of any excess or surplus waters. Article 7(1) recognizes the Secretary's authority to contract with users in Arizona and provides that consumptive uses in Arizona are a discharge pro tanto of the obligation of the Arizona contract. A charge of 50 cents per acre-foot is made for diversions directly from Lake Mead during the Boulder Dam cost repayment period and a charge of not more than 25 cents per acre-foot is specified for diversions below Boulder Dam.

Unlike the situation in Arizona and Nevada where the Secretary entered into water delivery contracts with the States, there is no similar contract with the State of California. Rather, there are individual contracts with the five major Colorado River water using agencies in that State. Similarly, except for approximately 100,000 acre-feet of water which Arizona wants reserved for additional municipal and industrial uses along the river, the Secretary has entered into water delivery contracts with individual water using agencies in Arizona and Nevada for quantities which have fully utilized those apportioned to each of those States by the Supreme Court in *Arizona* v. *California*.

B. California Water Delivery Contracts

The background of the water delivery contracts executed by the Secretary following passage of the Boulder Canyon Project Act of December 21, 1928, 45 Stat. 1057, has been described in "The Hoover Dam Documents, Wilbur and Ely, 1948," at pages 101-114.

B.1. Seven-Party Priority Agreement

In California, their execution followed the California Seven-Party Agreement of August 18, 1931, and the Department of Interior's general regulations of September 28, 1931. Each of the current California contracts recites the complete list of the quantities and priorities set forth in the California Seven-Party Agreement of August 18, 1931, rather than a specific quantity of water allocated only to the individual contractor. In brief, these quantities and priorities are as follows:

Priority	Description	Acre-Feet Annually
1	Palo Verde Irrigation District gross area of 104,500 acres	Priorities 1, 2, and 3 shall not exceed 3,850,000
2	Yuma Project Reservation Division - not exceeding a gross area of 25,000 acres	
3(a)	Imperial Irrigation District and lands in Imperial and Coachella Valleys to be served by AAC	
3(b)	Palo Verde Irrigation District - on 16,000 acres of mesa lands	
4	Metropolitan Water District, and/or City of Los Angeles, and/or others on the coastal plain	550,000
5(a)	Metropolitan Water District, and/or City of Los Angeles, and/or others on the coastal plain	550,000
5(b)	City and/or county of San Diego	112,000
	(5(a) and 5(b) are equal in priority)	
6(a)	Imperial Irrigation District and other lands in Imperial and Coachella Valleys served from AAC	300,000
6(b)	Palo Verde Irrigation District - on 16,000 acres of mesa lands	
	(6(a) and 6(b) are equal in priority)	
	Total	5,362,000

The California contracts are between the United States and:

B.2 The Metropolitan Water District of Southern California

April 24, 1930, No. Ilr-645, providing for delivery of 1,050,000 acre-feet per year of water immediately below Boulder Canyon Dam. This contract was executed before the Seven-Party Agreement. Article 10 provides for a charge of 25 cents per acre-foot for water delivered to the District during the Boulder Dam cost repayment period. A similar charge appears in the San Diego contract of February 15, 1933, but does not appear in the California agricultural use contracts.

September 28, 1931, Ilr-645, supplemented and amended the above agreement by incorporating Article I of the Seven-Party Agreement which, among other things, increased the quantity of Colorado River water to be delivered to MWD by the United States from 1,050,000 acre-feet per year to 1,100,000 acre-feet per year.

February 10, 1933, providing for construction of Parker Dam with MWD funds in the amount of 13,170,437 to provide a forebay for the MWD Colorado River Aqueduct and division of power produced therefrom with one-half to the United States and one-half reserved to MWD. The dam was completed September 1, 1938; the first power was generated December 13, 1942.

October 4, 1946, No. I1r-1483 (and with the City of San Diego and the San Diego County Water Authority) merging the city of San Diego's rights to 112,000 acre-feet of Colorado River water with MWD rights.

March 14, 1947, (between MWD and City of San Diego) transferring the city of San Diego's water rights to MWD.

B.3. City of San Diego

February 15, 1933, No. I1r-713, providing for delivery of Colorado River water to the city immediately above Imperial Dam in accordance with the priority provisions for the Seven-Party Agreement.

October 2, 1934, No. I1r-1151, providing 155 cubic feet per second (ft^3/s) of capacity for the city in Imperial Dam and in the All-American Canal. The construction obligation of $465,642.68 was repayable in 38 years. The initial payment date was March 1, 1955. As of September 30, 1977, $228,165 were repaid.

October 17, 1945, NOY 13300 (with the Navy Department), providing for an aqueduct to San Diego County from MWD aqueduct. Of the original repayment obligation of $13,972,099, $13,750,000 was repaid as of September 30, 1977.

September 23, 1946, NOY 13300, Supplement No. 1, making San Diego County Water Authority the assignee in part of the city's rights.

October 29, 1946, NOY 13300, Supplement No. 2, reserving title to part of the works in MWD.

December 11, 1947, NOY 13300, Supplement No. 3, providing interim use by Authority of the aqueduct.

April 1, 1952, NOY 13300, Supplement No. 4, providing for the addition of the second barrel to the aqueduct to San Diego County. Of the original repayment obligation of $30,090,216, $23,235,094 was repaid as of September 30, 1977.

B.4. Imperial Irrigation District

October 23, 1918, providing for the survey and construction of Laguna Dam (see Yuma Project, herein) and diversion of all water needed by the District and a main canal within the United States to transport such water. The District assumed and paid the $1.6 million costs of Laguna Dam for the right to use the Dam. On October 15 and October 2, 1934, the Coachella Valley County Water District and the City of San Diego, respectively, assumed a portion of the costs.

December 1, 1932, No. I1r-747, for construction of Imperial Dam, the All-American Canal (AAC), and for the delivery of water. It terminated the contract of October 23, 1918, except for the repayment provisions. The construction charge obligation was $25,020,000.90 repayable in 40 annual payments of a graduated basis, commencing March 1, 1955. As of September 30, 1977, $12,259,000 was repaid.

February 14, 1934 (Agreement of Compromise between Imperial Irrigation District and Coachella Valley County Water District), which subordinated Coachella's rights to Colorado River water to Imperial Irrigation District, providing for Coachella's leasing its AAC power privileges to Imperial, and dismissal of challenge to Imperial's action to validate its water delivery contract.

March 4, 1952, advising District of completion of construction of works provided for by the December 1, 1932, contract, transfer of O&M of completed works to District except Laguna Dam, the California Sluiceway and the overflow section of Imperial Dam, the headworks at the east end of the Dam, the turnout structures in the Imperial Dam—Pilot Knob section of the All-American Canal for water service to Siphon Drop Powerplant and to the Yuma Project Main Canal and the lands in the Yuma Project in California; providing for scheduling of water deliveries; the organization of the Imperial Dam Advisory Board; and giving permission to the District to develop the power possibilities on the AAC near Pilot Knob. (The District has constructed Drops 2, 3, and 4 on the AAC, with capacities of 10,000 kW, 4,800 kW, and 19,600 kW, respectively.)

March 27, 1978, for relinquishment of capacity in the Coachella Canal and adjustment of the District's repayment obligation pursuant to Sections 102(c) and (d) of the Colorado River Basin Salinity Control Act, dated June 24, 1974, 88 Stat. 266.

On March 27, 1978, the United States and the District entered into an amendatory repayment contract under which, as authorized in Section 102(d) of the Colorado River Basin Salinity Control Act, dated June 24, 1974, 88 Stat. 266, the District would be given a credit against its final payments for outstanding construction charges payable to the United States on account of capacity it would relinquish in the Coachella Canal as a part of the construction of a new 49-mile long, concrete-lined section of the Coachella Canal.

B.5. Palo Verde Irrigation District

February 7, 1933, providing for delivery of water in accordance with the Seven-Party Agreement.

On October 15, 1955, pursuant to the Act of August 31, 1954, 68 Stat. 1045, the United States and PVID executed a contract for the construction of a new diversion dam for the District at a cost of not to exceed $4,538,000, a loan of $500,000 to PVID for modification of the District's existing works to accommodate them to the dam, repayment of $1,175,000 within 50 years, with the balance of the costs of the works declared nonreimbursable, and no admission of liability on the part of the United States. An additional $2 million were apportioned under said Act for protection of Indian lands. The need for the dam arose following construction of Headgate Rock Dam in 1942, the degradation of the riverbed and a drop in the level of the river so that the District had to install pumps to irrigate its higher lands. A rock weir provided only temporary relief. As of September 30, 1977, $480,000 had been repaid.

A Memorandum of Agreement between the Bureau of Reclamation and the Bureau of Indian Affairs, dated February 16, 1956, provided for the construction of levees and a drain to protect the Colorado River Indian Reservation lands after removal of the rock weir referred to above and constructed to aid in irrigation of PVID lands. The Memorandum of Agreement was anticipated in the Act of August 31, 1954, which required the aforesaid contract of October 15, 1955, between the United States and PVID.

B.6. Coachella Valley County Water District

October 15, 1934, Contract No. Ilr-781, providing for construction of 1,500 ft^3/s of capacity in Imperial Dam and the All-American Canal for the District and the delivery of water to the District in accordance with the priorities in the Seven-Party Agreement. The construction obligation of $13,458,562.03 was repayable in 40 annual, graduated installments. The first payment date was March 1, 1955. As of September 30, 1977, $6,594,695 were repaid.

December 22, 1947, supplemental contract providing for construction of a distribution system for the District and for protective works costing $18 million of which $4.5 million was allocated to flood control and declared nonrepayable; with repayable costs allocated for repayment by irrigation blocks over a 40-year period following an 8-year development period for each block; making excess land laws applicable to the District; and providing for approval of the contract by the electorate and validation of the contract by the State courts.

December 27, 1955, contract supplemental to contract of October 15, 1934, which provides that the District may hold to maturity certain United States savings bonds purchased by power rentals received for power rights and privileges of All-American Canal, at which time the proceeds therefrom are to be paid to the United States for deposit in the Colorado River Dam Fund, and applied against the installment payments to become due under the 1934 contract.

July 30, 1963, No. 14-06-300-1384, providing for rehabilitation and betterment of irrigation works by the District at a cost of not to exceed $7,150,000 with funds advanced by the United States and repayable in 30 annual installments starting 1966. As of September 30, 1977, $2,410,706 were repaid.

December 28, 1966, amendatory rehabilitation and betterment contract, providing for repayment in 28 years, starting 1966, or, if the work is not completed by June 30, 1967, providing for repayment in 25 equal annual payments starting December 1969.

March 14, 1978, providing for construction of and repayment for a new concrete-lined 49-mile section of the Coachella Canal and the use by the United States of the water salvaged thereby during an interim period, pursuant to Sections 102(a) and (b) of the Colorado River Basin Salinity Control Act, dated June 24, 1974, 88 Stat. 266.

B.7 Reservation Division, Yuma Project, California

The approximately 15,000 acres therein, one-half of which are Yuma Indian Reservation lands, are served water pursuant to individual water right applications (and not a District contract) and have essentially repaid the construction costs of $1 million assigned to them. Delivery of water to these lands is made pursuant to individual water right applications for the Bard or non-Indian Unit, and with the Bureau of Indian Affairs for the Indian Unit of the Yuma Project. Article II(d)(3) of the Decree in *Arizona* v. *California* dated March 9, 1964, also provides a reserved right for the Yuma Indian Reservation as of January 9, 1894.

The Bard Water District, comprising approximately 7,000 acres of non-Indian lands, has been formed. On December 1, 1978, the District entered into a contract with the United States whereby the District would collect O&M charges from the holders of water right contracts and make a single payment to the United States annually for the non-Indian portion. The District has indicated it would like (1) a rehabilitation and betterment contract to line the major canals, and (2) to take over O&M of the works. The latter has been difficult because the Indians have indicated a preference for the United States to do that work.

B.8 Special Water Delivery Contracts Involving The Metropolitan Water District

A special temporary emergency 5-year contract dated June 14, 1972, No. 14-06,300-2346, pursuant to Minute No. 240, dated June 13, 1972, of the International Boundary and Water Commission, between the United States, MWD, Otay Municipal Water District, City of San Diego, and San Diego County Water Authority, provides for the delivery of not more than 20,600 acre-feet per year through MWD aqueducts to the San Diego County Water Authority and ultimately to the City of Tijuana. The water delivery is charged to the deliveries under the Mexican Water Treaty of 1944.

On June 28, 1974, an amendatory contract was executed pursuant to Minute No. 245, dated May 15, 1974, whereby Yuma County Water Users' Association was provided with energy from Mexico to pump the water for the emergency deliveries and Reclamation provided a like amount of energy to the California entities for use in delivering the water.

On October 1, 1976, Amendment No. 1 to the Supplemental Agreement was executed, which provided for the delivery of treated water to Mexico and for increased payments therefor.

Because of delays in Mexico's construction of a permanent conveyance channel to replace the temporary emergency deliveries to Tijuana, a 1-year extension of the existing contract No. 14-06-300-2346 until August 13, 1978, was executed in the form of Amendment and Supplement No. 2, dated June 29, 1977.

B.8.1 Water Exchange Agreements With Coachella Valley County Water District and Desert Water Agency

On January 17, 1967, and October 13, 1967, MWD executed water exchange agreements with Desert Water Agency (DWA) and Coachella Valley County Water District (CVCWD), respectively. Each agreement was amended March 4, 1972. DWA and CVCWD had contracted for water deliveries from the California State Water Project of 38,100 acre-feet and 23,100 acre-feet, respectively. However, in order to postpone construction of costly facilities to transport the State Project water to them, these agencies wished to make their State Water Project water available to MWD, which, in turn, would make equivalent quantities of Colorado River water available to these two agencies from its Colorado River Aqueduct.

MWD's water delivery contract with the Secretary, as noted above, incorporated the provisions of the California Seven-Party Agreement, as did all the other current California water delivery contracts. This limited MWD's use of water to the coastal plain of southern California, whereas the point at which the two agencies would receive and use the Colorado River water was outside the coastal plain. Hence, the consent of the Secretary and the other California Colorado River water contractors was needed to this change of place of use by MWD. The two agreements evidencing this consent were executed by appropriate parties to the California Seven-Party Agreement and the Secretary of the Interior on December 1, 1972, on the basis that there would be no additional demand on the Colorado River.

B.8.2 Southern California Edison Company - San Diego Gas and Electric Company

The DWA and CVCWD consent agreements were the first time the use of MWD's Colorado River water entitlement outside the coastal plain of southern California was approved and became the basis for a later proposal involving MWD water deliveries for a nuclear powerplant planned by Southern California Edison Company (SCE) on the Mohave Desert near Vidal, California. These, together with the exchange principle established thereby, were the bases for a similar proposal by San Diego Gas and Electric Company (SDG&E) for a nuclear powerplant near Blythe California.

MWD has conditionally agreed to make not more than 100,000 acre-feet of water available annually for nuclear plants on the Mohave Desert out of its Colorado River entitlement (see General Manager's memorandum of March 9, 1973, to the MWD Board of Directors). MWD's reasons were that MWD would provide the needed water for the nuclear plants if they were located on the coastal plain and that the power produced therefrom would be used within MWD's service area.

A draft consent agreement designated "Revised March 1, 1974 (Field Solicitor, Riverside)" was patterned after the MWD exchanges with DWA and CVCWD. Under it SCE would utilize up to 40,000 acre-feet per year of MWD entitlement of Colorado River water out of the MWD aqueduct for use outside the coastal plain, but this agreement has been held in abeyance, apparently waiting the outcome of the SDG&E proposal next discussed.

The SDG&E proposal to construct a nuclear generating station near Blythe, California, in which the City of Los Angeles, Department of Water and Power, and the California Department of Water Resources would join, involves the use of 17,000 acre-feet of drainage water per year diverted by SDG&E from the Palo Verde Lagoon or Outfall Drain. In exchange, MWD would reduce the quantity of water it would otherwise divert from Lake Havasu by an equivalent amount and thereby replace the drain water with Colorado River water diverted by SDG&E. The process would reduce the salinity of the water in the river (which is ultimately delivered to users in the United States and Mexico) by 3 to 4 parts per million.

In addition to the foregoing diversion of 17,000 acre-feet of drain water, SDG&E has purchased approximately 7,300 acres of irrigated lands within the Palo Verde Irrigation District (PVID) and plans to utilize at its proposed nuclear plant approximately 33,300 acre-feet of the water which otherwise would have been applied to irrigate those lands; i.e., the number of acres of SDG&E land within the District irrigated by Colorado River water would be reduced proportionately. This would reduce PVID's diversions by 33,300 acre-feet annually and its consumptive use by 17,000 acre-feet annually in order to allow the quantity of water otherwise consumptively used to be diverted for use at the nuclear plant.

However, that additional 33,300 acre-feet of water would also be diverted from the Palo Verde Outfall Drain except that, upon a finding by the Secretary as to its unavailability from the Drain, direct diversions from the Colorado River would be permitted during the period of unavailability. This additional use of the Outfall Drain water would further reduce the salinity of the Colorado River flows for downstream users and at Imperial Dam.

Two agreements designated "Revised Field Solicitor 11/1/74" and reflecting the aforesaid arrangements between SDG&E, the United States and the parties to the California Seven-Party Agreement (except the County of San Diego and the City of Los Angeles) were executed December 10, 1976. Under each agreement the Secretary reserved the right to confirm or withdraw therefrom on the basis of his evaluation of the Environmental Impact Statements to be prepared later in accordance with the National Environmental Policy Act.

The two latter agreements would represent the first use in the Lower Basin of the so-called "brackish water"; i.e., having approximately 1,800 p/m, for use in a generating station. The SDG&E agreement would also be the first time irrigation water, forming a portion of an irrigation district's entitlement, would be used for nonirrigation purposes and the quantity of irrigated land thereby reduced.

The necessary State and Federal approvals of construction of the nuclear plant had not been obtained at the end of 1978.

B.9 Article V Reports under Decree in Arizona v. California and Return Flow Credits

As "watermaster" of the Colorado River pursuant to the Supreme Court Decree in *Arizona* v. *California*, it is the responsibility of the Secretary of the Interior, through the Bureau of Reclamation, to keep records of all users of Colorado River water in Arizona, Nevada, and California.

In compliance with Article V of the Decree an annual report is prepared by the Bureau showing total Colorado River water released through regulatory structures controlled by the United States, diversions, return flow of such water, and consumptive use of such water stated for each diverter, and each of the States of Arizona, California and Nevada. This is done for each user agency having contracts with the United States as well as those who do not. This includes both surface diversions and returns as well as ground-water pumping. Pumping from the underground is included only for those wells located in the flood plain of the Colorado River between the toes of the slopes on either side of the Valley. It may become necessary in the future to include also those wells outside of the flood plain which, as a result of pumping, reverse the slope of the water table so that water flows from the river to the wells. The Annual Report for calendar year 1977 appears as Appendix 201.

There are also undetermined amounts of unmeasured return flow reaching the Colorado River by means of underground flow from aquifers underlying water use areas. A task force on ground-water return flows to the lower Colorado River, consisting of State and Federal members, was organized in 1970 to provide advice and guidance to the Bureau of Reclamation and to the Geological Survey which are jointly conducting a program to determine the location and amounts of these unmeasured return flows. When such quantities are determined, it is anticipated that these amounts will be credited to the affected users and States in making the consumptive use computations.

B.10 California Water Use

In 1975, 1976, and 1977, the major California water contractors consumptively used the following quantities of Colorado River water:

	1975	1976	1977
Metropolitan Water District	778,495	790,857	1,276,891 acre-feet
Palo Verde Irrigation District	449,486	392,220	435,062 acre-feet
Reservation Division - Indian Unit	42,449	43,941	34,151 acre-feet
Reservation Division - Non-Indian Unit	46,903	49,958	43,854 acre-feet
Imperial Irrigation District	3,070,974	2,876,984	2,772,062 acre-feet
Coachella Valley County Water District	570,987	524,801	508,635 acre-feet

The total water use for the above and all other users during 1975, 1976, and 1977 was:

1975	*1976*	*1977*	
5,496,007	5,242,324	5,626,818	acre-feet of diversions
512,302	535,730	514,140	acre-feet of measured return flows
4,983,705	4,706,594	5,112,678	acre-feet of consumptive use

Thus, except for "surplus water, all of California's apportionment of Colorado River water is presently utilized.

B.11 California Miscellaneous Contracts

The United States has entered into various loan contracts under authority of the Small Reclamation Projects Act of 1956, dated August 6, 1956, 70 Stat. 1044, as amended September 2, 1966, 80 Stat. 376. These are not water delivery contracts, but are loans to provide improvements to water distribution systems. Included are contracts with:

Eastern Municipal Water District, No. 14-06-300-1169, dated May 2, 1961, amended July 31, 1961, and May 24, 1965. As of September 30, 1977, $809,574 was repaid of $4,971,983 loan;

West San Bernardino Water District, No. 14-06-300-1977, dated September 12, 1967, amended September 21, 1971. Of the $3,519,292 loan $90,255 was repaid as of September 30, 1977;

Valley Center Municipal Water District, No. 14-06-300-2152, dated January 30, 1970. The amount advanced was $7,240,000; and

De Luz Heights Municipal Water District, No. 7-07-30-W0005, dated September 29, 1977. The maximum amount of the loan is $5,402,783.

C. Arizona Water Delivery Contracts

Prior to the passage of the Boulder Canyon Project Act in 1928 water deliveries were made under the Reclamation Act of 1902. It was not until February 9, 1944, that the Secretary contracted with Arizona for the delivery of 2.8 maf annually to users in Arizona who contract with the Secretary. The deliveries were all subject to the availability of water under the Project Act and the Compact.

C.1 Yuma Project - Valley Division

The Yuma Project, one of the earliest Reclamation projects, comprising approximately 68,000 acres, was initially authorized by the Secretary of the Interior on May 10, 1904, in accordance with Section 4 of the Reclamation Act of 1902, 32 Stat. 388. It consists of the Reservation Division in California, which, in turn, is divided into the Yuma Indian Reservation portion of 7,743 acres and a non-Indian or Bard Unit of approximately 6,700 acres; the Valley Division in Arizona of 50,000 acres; and the Yuma Auxiliary Division of 3,300 acres on the mesa between the Valley Division and the Yuma Mesa Irrigation and Drainage District in the Gila Project.

Colorado River water for the Yuma Project was initially diverted at Laguna Dam which was constructed in 1909 under authority of the Act of April 21, 1904, 33 Stat. 189. The water was carried on the California side from Laguna Dam to Siphon Drop, a small powerplant built in 1926 at the head of the Yuma Main Canal but now inoperative, and delivered to Reservation Division lands in California. Other waters were carried through the Yuma Main Canal and under the Colorado River by means of an inverted siphon for use on Yuma Project lands in Arizona. Initial water deliveries were made pursuant to individual water right applications, a procedure which preceded the Bureau of Reclamation's contracting process with a District or similar water agency.

With the construction of Imperial Dam (immediately north of Laguna Dam) and the All-American Canal pursuant to the Boulder Canyon Project Act of December 21, 1928, diversions at Laguna Dam for the Yuma Project ceased and diversions were begun at Imperial Dam in 1941. The All-American Canal contract with Imperial Irrigation District requires the District to provide and for the AAC contractors to pay for an additional 2,000 acre-feet of capacity in the Canal without cost to the Yuma Project for the purpose of making water deliveries to the Yuma Project.

The United States Department of the Interior has a series of contracts with the Valley Division of the Yuma Project represented by the Yuma County Water Users' Association:

Contract dated May 31, 1906, No. Ilr-635, whereby Association guaranteed payment for construction of works of the Valley Division, and was supplemented by contract dated February 5, 1931, whereby

Association assumed the obligation under individual water right applications. Repayment period extended to 30 years.

Contract No. 176r-671, dated June 15, 1951, dealt with transfer of operation and maintenance to Association, and repayment of $80,306 of costs of drainage.

Repayment contract, No. 14-06-300-621, dated April 1, 1957, whereby Association was released from its obligation under individual water right applications and assumed a fixed repayment obligation.

Contract No. 14-06-300-1317, dated November 15, 1962, providing for transfer of O&M of additional project works, including Yuma Main Canal and Siphon Drop Powerplant.

Contract No. 14-06-300-1513, dated December 17, 1967, for conditional transfer to the Association of the reserve funds for Siphon Drop Powerplant.

Contract No. 14-06-300-1850, dated June 22, 1966, for the construction, operation and maintenance of a series of drainage wells in the Valley Division.

Contract No. 14-06-300-2702, dated November 12, 1969, relative to the delivery of water.

Contract No. 14-06-300-2204, dated October 21, 1970, for the modification of structures.

Additional contracts were entered into by the United States and the Yuma County Water Users' Association with Imperial Irrigation District: Contract No. 14-06-300-1381, dated June 1, 1963, Amendment No. 1 dated June 1, 1965, and Amendment No. 2 dated June 1, 1967, providing for the transfer of water from Siphon Drop Powerplant to the District's Pilot Knob Powerplant for the purpose of producing energy at the more efficient powerplant and for a division among the parties of the power and energy thereby produced. (Siphon Drop Powerplant, at the head of the Yuma Main Canal, about 5 miles north of Yuma, not inoperative, had a nameplate capacity of 1,600 kW, and a maximum head of 15.3 feet. Pilot Knob has a capacity of 33,000 kW.) The contract of June 1, 1967, extended the period for transfer of water for 61 months, or until June 30, 1972. On that date Amendment No. 3 extended the period for 5 years, or until June 30, 1977. Amendment No. 4 of that date provided for subsequent renewals by letter agreements.

C.1.1 Valley Division's Water Use

The obligation of the United States to deliver water to Valley Division lands is not couched in terms of a specific quantity of water but is stated as the quantity reasonably required for the irrigation of the lands in the Division.

In 1975, 1976, and 1977, the Association consumptively used 232,601, 212,741, and 188,854 acre-feet of water, respectively; i.e., diversions less measured returns.

C.2 Gila Project - Reauthorization Act

In 1934 the Bureau of Reclamation reported on the Gila Project potentials following investigations it had been authorized to undertake by the Boulder Canyon Project Act of December 21, 1928. The Yuma Mesa Division of the Gila Project, comprising 150,000 acres, was authorized under a finding of feasibility approved by the President on June 21, 1937, in accordance with Section 4 of the Act of June 25, 1910, 36 Stat. 835, and Section 4(b) of the Act of December 5, 1924, 43 Stat. 701.

Original plans contemplated Colorado River water diversions to irrigate a total of 585,000 acres. In order to make a proposal of that size possible the Gila headworks at Imperial Dam were constructed with three sets of outlet units, each with three radial gates capable of diverting 6,000 ft^3/s. Only one outlet unit is now used.

Gila Project construction began in 1936 on the Yuma Mesa but was retarded during World War II. However, the establishment of the Yuma Army Air Field on the Yuma Mesa called for dust control measures, and public land predevelopment on approximately 20,000 acres on the Yuma Mesa Division was continued to provide the necessary relief. Water was first available in 1943. Canal and lateral construction was speeded up as hostilities ended.

In 1947 Congress enacted the above entitled legislation reauthorizing the Gila Project and redefining its boundaries (the text appears in Appendix 202). The Yuma Mesa Division was reduced (from its initial proposed size of 150,000 acres) to 40,000 acres (15,000 acres in the North and South Gila Valleys and 25,000 acres in the Yuma Mesa Unit) and the Wellton-Mohawk Division of 75,000 acres was substituted for the Yuma Mesa Division lands excluded from the original authorization.

The Act referred to the reduced project of 40,000 acres and to authorization of the Wellton-Mohawk Division of 75,000 acres in identical terms:

"... or such number of acres as can be adequately irrigated by the beneficial consumptive use of not more than 300,000 acre-feet of water per annum diverted from the Colorado River..."

The Arizona Water Commission interprets the above phrase "consumptive use" in accordance with the definition in Article I(A) of the Decree in *Arizona* v. *California* as diversions less return flows. However, the Wellton-Mohawk Irrigation and Drainage District interprets the phrase as meaning the quantity of water used for the growing of crops; e.g., under the Blaney-Criddle formula, and that return flow is not relevant to its entitlement.

It should be noted that the Colorado River Basin Salinity Control Act, discussed separately herein, reduced the Wellton-Mohawk's irrigable acreage from 75,000 acres to 65,000 acres and to even a lesser number, with the District's approval, if necessary to reduce the return flows from the District to approximately 175,000 acre-feet per year.

C.2.1 Gila Gravity Main Canal Capacity

Water for the Gila Project is diverted from the Colorado River at the Arizona or east end of Imperial Dam, 18 miles northeast of Yuma. Imperial Dam was authorized by the Boulder Canyon Project Act of 1928. Its construction began in 1936 and was completed in July 1938. Water is delivered for project lands via the 20.7-mile long Gila Gravity Main Canal which has a capacity of 2,200 (ft^3/s). That capacity has been contracted for as follows:

Wellton-Mohawk Irrigation District	-	1,300 ft^3/s
North Gila Valley Irrigation District	-	150 ft^3/s
Yuma Irrigation District	-	130 ft^3/s
Yuma Mesa Irrigation and Drainage District	-	520 ft^3/s
Unit B (Yuma Auxiliary Project-Yuma Project)	-	100 ft^3/s
		2,200 ft^3/s

C.3 Wellton-Mohawk Division, Gila Project, Arizona

Construction of features of the 75,000 acre-Wellton-Mohawk Division began in August 1949 and was essentially completed June 30, 1957. However, water was first delivered to project lands on May 1, 1952.

Negotiations on a construction, water delivery and repayment contract between the United States and the Wellton-Mohawk Irrigation and Drainage District concluded with execution of a contract, No. Ilr-1591, on March 4, 1952. It provided for the delivery to or for the District at Imperial Dam of Colorado River water from storage in Lake Mead, at a maximum rate of delivery of 1,300 ft^3/s, as may be reasonably required and beneficially used for the irrigation of not to exceed 75,000 irrigable acres situate within the District. The oibligation to deliver water was subject to its availability for use in Arizona under the provisions of the Colorado River Compact and the Boulder Canyon Project Act and was also subject to the Mexican Water Treaty of 1944. Each of Interior's water delivery contracts is required by Reclamation law to include this type of qualification. The entitlement of the District, in effect, is related to and limited by the 1,300 ft^3/s of capacity available to the District out of the 2,200 ft^3/s capacity of the Gila Gravity Main Canal.

The contract provided for the expenditure of $38.6 million for the construction of three main canals within the District, pumping plants, a distribution system, protective works, and minimum drainage works. Irrigation blocks were provided for (i.e., a block of lands capable of receiving water service at substantially the same time), as was transfer to the District of operation and maintenance of completed works, repayment in 60 years of not in excess of $42 million following a 10-year development period for each irrigation block (which included a proportionate share of O&M costs, and costs of Imperial Dam abutment and headworks, the desilting works, and the Gila Gravity Main Canal). A reserve fund was established, records provided for, acreage limitation provisions (excess land laws) were included as were incremental value provisions. The contract required validation in the Arizona courts.

The basic 1952 contract was supplemented and amended as conditions and later events required. These later contracts were entered into on the following dates and for the following principal purposes:

June 19, 1954	-	covered supply and cost to District of power and energy needs in the event of disposition by the United States of Parker-Davis or Gila Substation
October 13, 1954	-	termination of incremental value provisions in March 4, 1952, contract.
December 16, 1954	-	revision of repayment and irrigation block provisions.
April 25, 1955	-	transmission service to be provided by District to serve relift pumps.
December 9, 1955	-	assumption by District of operation of Wellton-Mohawk Canal; revision of repayment provisions dealing with transfer of O&M, and irrigation blocks and advance of O&M funds.
September 1, 1959	-	construction of added drainage works at a cost of $14 million to be allocated among irrigation blocks, and initial payment due 12-31-73, and increased repayment obligation of District from $42 million to $56 million.
March 4, 1962	-	provided for deferment, consolidation and rescheduling of construction and drainage charge repayment obligation of $56 million as an obligation of District as a whole rather than allocated among blocks, and adoption of a variable repayment plan. Repayment over a 55-year period began December 31, 1968.
July 1, 1962	-	supply of power to ditchriders' houses and relift pumps and installation of additional relift pump.
July 12, 1963	-	provided for District construction of additional power facilities and transmission of energy to pumps of United States.
September 25, 1964 No. 14-06-300-1491)	-	provided for installation and maintenance of meters on drainage wells of District and of United States.
August 2, 1965	-	provided for delivery by District of domestic water not in excess of 5,000 acre-feet annually.
August 15, 1968	-	provided for modification of existing four irrigation blocks, provision for an additional block 5, adjustment and rescheduling of repayment obligation of existing four blocks and deferring payments for 10 years for new block 5, use of national parity factor, and to allocate $5,915,268 to non-reimbursable flood control. (This reduced the contracted repayment obligation over a 55-year period to begin December 31, 1968, with block 5 lands to begin payment December 31, 1978.) Of the original payment obligation of $50,084,732, $2,122,098 were repaid as of September 30, 1977.

The number and complexity of the foregoing contracts led to the assignment to Mr. Milton N. Nathanson, Special Consultant to the Bureau of Reclamation, of the task of their consolidation. A consolidated draft relating to water deliveries and repayment has been prepared and is awaiting further action due to adjustment of District's repayment obligation stemming from its reduced acreage pursuant to the Colorado River Basin Salinity Control Act. A separate draft relating to power matters has also been prepared.

C.3.1 Wellton-Mohawk's Water Use

The Wellton-Mohawk water delivery contract of March 4, 1952, Ilr-1591, contains no specific reference to a quantity of water to be delivered. Instead, the United States agreed to deliver such quantities "as may be reasonably required and beneficially used for the irrigation of not to exceed 75,000 irrigable acres..." subject, among other things, to its availability under the Gila Reauthorization Act; e.g., the beneficial consumptive use of not more than 300,000 acre-feet of water per annum diverted from the river..." and at a maximum rate of diversion of 1,300 ft^3/s at Imperial Dam.

In 1975, 1976, and 1977, the District consumptively used 333,108, 286,175, and 240,208 acre-feet of water, respectively; i.e., diversions less return flows.

C.3.2 Drainage Contracts

In addition to the foregoing, other contracts were entered into between the District and the United States. These were:

February 2, 1959 (No. 14-06-300-902)	-	Construction by District of drainage facilities and minor construction works not to exceed $200,000 in costs. Ten supplemental contracts were entered into thereunder.
August 8, 1960 No. 14-06-300-1044)	-	Construction by District of drainage facilities not to exceed $750,000 in costs. Supplemental contracts were entered into thereunder.
August 14, 1963 (No. 14-06-300-1389)	-	Construction by District of drainage facilities not to exceed $1,125,000 and minor construction work not to exceed $500,000.
		Fifteen numbered, supplemental contracts and two unnumbered supplemental contracts were executed pursuant to the aforesaid drainage and minor construction contract dated August 14, 1963.
March 2, 1970 (No. 14-06-300-1389)	-	Construction by District with its own forces or by contract, or by United States, of drainage facilities not to exceed $1,250,000 and minor construction work not to exceed $500,000.

C.3.3 Miscellaneous Wellton-Mohawk Contracts

Boundary changes, such as the District's resolutions approving inclusion of lands within the District, which require Secretarial approval became effective dated: July 12, 1963; September 25, 1964; March 1, 1965; and July 15, 1967.

Cooperative Agreement with Soil Conservation District dated December 11, 1953.

Contract between the District and the Wellton Community Water Company dated January 18, 1966, whereby the District furnished water to the Company for resale by Company, was approved by the United States on February 25, 1966.

Contract No. 14-06-300-1572, for performance of services in connection with productivity reexamination of lands within the District, was executed March 1, 1965.

C.4 Yuma Mesa Division-Gila Project-Yuma Mesa Irrigation and Drainage District

The Gila Gravity Main Canal, 20.7 miles in length, originates at Imperial Dam and ends at the Yuma Mesa Pumping Plant. Water is then pumped 52 feet to the head of the mesa distribution system.

Delivery of water to lands on the Yuma Mesa was initiated prior to execution of a repayment contract with the Yuma Mesa Irrigation and Drainage District under authority of Section 7 of the Act of August 4, 1939, 53 Stat. 1187, since the majority of the lands involved were in public ownership. Of the 19,970 acres under the distribution system, 14,411 acres were in cultivation at the end of 1954; a majority of these lands were opened to homestead entry under Public Notice No. 4 on December 10, 1947, and Public Notice No. 9 on January 21, 1952.

A construction, water delivery and repayment contract (No. 14-06-W-102) was executed by the United States and the District on May 26, 1956, under authority of the Act of January 28, 1956, 70 Stat. 5. The contract provided for the delivery to or for the District of water diverted at Imperial Dam at a maximum rate of diversion at Imperial Dam of 520 ft^3/s, and delivered at Station 1099 + 56.99 on the Gila Gravity Main Canal; i.e., the Yuma Mesa Pumping Plant, in such quantities as may be reasonably required and beneficially used for the irrigation of not to exceed 25,000 irrigable acres. As was done in the foregoing Wellton-Mohawk contract, the obligation to deliver water was subject to its availability for the division under the provisions of the Colorado River Compact, the Boulder Canyon Project Act, the Gila Reauthorization Act, and the Mexican Water Treaty of 1944.

The contract provided for limited drainage works, transfer of operation and maintenance, repayment by the District of its share of the capital costs of constructed works and other costs totalling $5,641,167 over a 60-year period following a development period, the establishment of two irrigation blocks, and the allocation of costs thereto on the basis of land classifications, release of contracts and mortgages covering predevelopment charges, use of variable repayment formula, power and energy for Gila Project purposes, establishment of a reserve fund, maintenance of books and records, excess land provisions, and validation of the contract in the Arizona courts.

On January 1, 1959, the District assumed O&M of the irrigation works below the afterbay of the Yuma Mesa Pumping Plant. On January 1, 1961, the District took over O&M of the Pumping Plant.

A supplemental and amendatory contract with the District, dated February 26, 1969, provided for the irrigation of approximately 400 acres of lands in substitution for an equivalent number of acres of District lands which had been converted from agricultural to urban use, and for the District's assumption of its share of annual O&M costs of the drain from the Gila Gravity Main Canal to the Colorado River.

A second supplementary agreement, dated March 23, 1972, provided for studies for a regulating reservoir which the District did not pursue.

As of September 30, 1977, $759,085 had been repaid.

C.4.1 Yuma Mesa Irrigation and Drainage District Water Use

The Yuma Mesa water delivery contract of May 26, 1956, No. 14-06-W-102, contains no specific reference to the quantity of water to be delivered. Instead, the United States agreed to deliver such quantities as may be reasonably required and beneficially used for the irrigation of not to exceed 25,000 irrigable acres, subject, among other things, to its availability under the Gila Reauthorization Act; e.g., the beneficial consumptive use of not more than 300,000 acre-feet of water per annum diverted from the river for the Yuma Mesa Division (which includes the 15,000 acres in the North and South Gila Valleys in addition to the 25,000 acres of Yuma Mesa lands), and at a maximum rate of diversion of 520 ft^3/s at Imperial Dam.

In 1975, 1976, and 1977, the District consumptively used 226,665, 219,057, and 211,508 acre-feet of water, respectively; i.e., diversions less measured return flows. This included deliveries in 1975 of 2,323 acre-feet to 7 small contractors, of which the Marine Corps Air Station used 1,994 acre-feet. Similarly, in 1976 there were included deliveries of 2,088 acre-feet to the same small contractors, of which the Marine Corps Air Station used 1,871 acre-feet. In 1977 there were included deliveries of 2,267 acre-feet to these small contractors of which the Marine Corps Air Station used 2,041 acre-feet. The Marine Corps Air Station was formerly the Yuma Army Air Field.

C.4.2 North Gila Valley

Upon completion of Laguna Dam, 10 miles northeast of Yuma, in 1909, the North Gila Valley Irrigation District diverted water therefrom. Under a contract with the United States dated September 24, 1918, the District assumed possession of the headgate, canal, levees and spur dike constructed to serve and protect its lands.

On May 12, 1953, the District entered into a contract with the United States, No. 14-06-W-54, under which the United States agreed to deliver water stored in Lake Mead to the District through diversions from Imperial Dam, thence through the Gila Gravity Main Canal, at or near Station 409 + 25, at a maximum rate of delivery of 100 ft^3/s, as may be reasonably required and beneficially used for the irrigation of the irrigable lands in the District. The obligation to deliver water was subject to the availability of such water for use in Arizona under the Colorado River Compact, the Boulder Canyon Project Act of December 21, 1928, 45 Stat. 1057, the Gila Reauthorization Act of July 30, 1947, 61 Stat. 628, and was also subject to the Mexican Water Treaty of 1944. The aforesaid contract of September 24, 1918, was terminated and the District assumed O&M of the works transferred to it under that contract and the obligation to pay the costs thereof within 60 years as well as the District's share of the O&M costs of the works utilized in making water available to the District; e.g., Imperial and Laguna Dams, the Gila Desilting Works, the Gila Gravity Main Canal and the North Gila Drains. The contract also provided for the maintenance of books and records, acreage limitation provisions, and for its validation in the Arizona State courts.

Since the Yuma Irrigation District, representing the South Gila Valley, was unwilling at that time to contract for delivery of water through the Gila Gravity Main Canal and preferred to continue its groundwater pumping, the United States was receptive to increasing the 100 ft^3/s capacity in the Gila Gravity Main Canal available to the North Gila Valley Irrigation District.

On June 24, 1954, the contract was amended (No. 14-06-W-66) to increase the maximum rate of delivery of water from 100 ft^3/s to 150 ft^3/s, to increase the repayment obligation from \$325,000 to \$475,000 and the annual O&M costs proportionately. This was further amended by Contract No. 14-06-300-1862 on August 9, 1966.

On October 26, 1964, the parties contracted (No. 14-06-300-1497) for the construction by the United States of a second turnout for the District at Station 595 + 48 on the Gila Gravity Main Canal with a design capacity of 45 ft^3/s.

A second amendatory contract, executed August 9, 1966, No. 14-06-300-1862, provided for delivery of water to the District at or near both of the aforesaid Stations with the understanding that such deliveries would not increase the quantity of water which the District is entitled to receive nor increase the maximum rate of delivery through the Gila Gravity Main Canal in excess of 150 ft^3/s.

The final repayment obligation of the District was established at \$430,277, of which \$169,491 was paid as of September 30, 1977, leaving \$260,786 as the remaining obligation.

C.4.2.1 North Gila Valley Water Use

The North Gila Valley water delivery contract, dated May 12, 1953, No. 14-06-W-54, contains no specific reference to the quantity of water to be delivered. Instead, it has provisions relative to the quantity reasonably required and beneficially used, subject to the conditions similar to those for the Yuma Mesa District.

In 1975, 1976, and 1977, the District consumptively used 48,909, 44,599, and 42,153 acre-feet of water, respectively; i.e., diversions less measured return flows.

C.4.3 Yuma Irrigation District - South Gila Valley

The aforesaid contracts provided for utilization of the following portions of the 2,200 ft³/s capacity of the Gila Project works, including the Gila Gravity Main Canal:

1. Wellton-Mohawk IDD	1,300 ft³/s
2. North Gila Valley ID	150 ft³/s
3. Yuma Mesa IDD	520 ft³/s
4. Unit B *(see C.5 infra)*	100 ft³/s
	2,070

Thus, only 130 ft³/s capacity remained for the Gila Project's final water contracts.

The Yuma Irrigation District represented the landowners in the South Gila Valley which had been designated as a part of the 15,000 acres in the North and South Gila Valleys and part of the Yuma Mesa Division of the Gila Project by the Gila Reauthorization Act of July 30, 1947, 61 Stat. 528. Its water supply for the approximately 10,570 acres in the District was obtained by ground-water pumping but the water quality had been deteriorating while the District's drainage problems increased. The District then sought a Colorado River water delivery contract with the United States.

On July 23, 1962, the District executed a water delivery and repayment contract with the United States, No. 14-06-300-1270. Under this contract the United States agreed to construct a distribution system within the District to utilize Colorado River water and a system of District drainage tile collection lines, at a cost of approximately $6,377,000. Onfarm tile drains would be the responsibility of the farmers. Because of the 15,000 acre limitation on acreage in the combined North and South Gila Valleys as part of the Yuma Mesa Division and on the quantity of water available to the whole of the Yuma Mesa Division imposed by the Gila Reauthorization Act, only approximately 8,770 acres of District land could be irrigated with Colorado River water (15,000 acres minus 6,230 acres in North Gila Valley already under contract). Hence, the project plan called for the continued use of sufficient ground water (to be commingled with Colorado River water) to permit irrigation of all irrigable land in the District. As of September 30, 1977, $25,411 were repaid.

The contract provided that repayment of total costs of approximately $7.5 million would be made over a 60-year period. Irrigation blocks were to be created, O&M to be transferred, a reserve fund established, excess land laws enforced, and the contract to be authorized by the District's electorate and validated in the State courts.

On October 25, 1965, an amendatory repayment contract was executed under which drainage of the District's lands was to be accomplished by drainage wells rather than limited to the tile collection drains. Authorization by the electorate and Court validation was provided.

On March 17, 1964, Contract No. 14-06-300-1441 was executed providing for the District to transmit power and energy over its system to the eight pumping facilities constructed by the United States and to construct additions to its electric system as may be agreed upon.

On December 29, 1964, Contract No. 14-06-300-1506 was executed which provided for the District's construction of additional electrical facilities in order to provide transmission service to the relift pumping facilities of the United States.

On May 10, 1971, a second amendatory contract was executed under which the District could assume responsibility for payment of the charges established by the Secretary for the delivery of water rather than having such costs collected from individual farmers by the United States by means of water rental or toll charges during the development period or until transfer of O&M to the District. The amendatory contract was requested by the District in order to enable it to levy tolls against all irrigable lands, whether or not Colorado River water was used, so as to avoid an increasingly large deficit occasioned by the continued use of ground water by about 4,000 acres out of the District's 10,740 acres which did not pay water rental or toll charges.

On May 17, 1973, a third amendatory contract was executed which increased the Capital Payment Reserve Fund from $50,000 to $100,000.

C.4.3.1 Yuma Irrigation District Water Use

The South Gila Valley water delivery contract has provisions similar to the North Gila Valley contract with regard to the quantity of water to be delivered to it.

In 1975, 1976, and 1977, the District consumptively used 59,278, 59,660, and 60,460 acre-feet of Colorado River water respectively; i.e., diversions less measured return flows. It also used 13,369 and 13,029 acre-feet of pumped water in 1975 and 1976, respectively.

The foregoing completes the Gila Project water delivery and related contracts *(see C.5 infra)*.

C.5 Yuma Auxiliary Project (Unit B)

This project was initially authorized under the provisions of the Act of January 25, 1917, 39 Stat. 868, as a part of the Yuma Reclamation Project, and originally called for irrigation of 45,000 acres on the adjacent Yuma Mesa.

The Act of June 13, 1949, 63 Stat. 172, reduced the area of the Yuma Auxiliary Project to 3,305 acres by excluding certain described lands therefrom, allowed an exchange of water rights for the severed land to the lands in the reduced area, and authorized execution of a contract with an organization representing the water users in the Limited Project to permit delivery of water through works of the adjacent Gila Project rather than the Yuma Project; i.e., the B-Lift Pumping Plant which pumped water 72 feet to the Yuma Auxiliary Project lands from the East Main Canal of the Yuma Project's Valley Division in Arizona. The B-Lift Pumping Plant was then dismantled.

A further reduction in acreage was made by the Act of February 15, 1956, 70 Stat. 15.

On December 22, 1952, Contract No. 14-06-300-44 was executed by the Unit B Irrigation and Drainage District and the United States. It provided for the delivery of Colorado River water through the A8.9 lateral of the Gila Project (which served lands on the Yuma Mesa) for the irrigation of 3,305 acres of irrigable lands situate within the Unit B or Yuma Auxiliary Project covered by land and/or water right applications, subject to agreement that the capacity provided for the District in Imperial and Laguna Dams and in all Gila Project works utilized for the benefit of the District lands was 100 ft^3/s.

The contract further provided for construction of certain works and District assumption of their O&M, and for repayment of the costs of these works established at $965,873, including $456,090 for a share of Gila Project costs and $509,783 for extension and betterment of Yuma Auxiliary Project works, and a share of the O&M costs of Gila Project works utilized in delivering water to the District; i.e., the Gila Headworks of Imperial Dam, the Gila Gravity Main Canal, and the Yuma Mesa Pumping Plant. It also provided for establishment of a reserve fund, maintenance of books and records, applicability of excess land laws, and for validation of the contract in the State courts.

Water deliveries through Gila Project works began on July 6, 1953.

This contract was amended by the parties on July 18, 1956, to reflect the aforesaid reduction in acreage provided for by the Act of February 15, 1956.

Another supplemental and amendatory contract was executed by the parties on October 20, 1959. It provided for the District's assumption of O&M of the District's distribution system as of January 1, 1960, the District's payment of O&M costs of works common to the District and the Yuma Mesa Irrigation and Drainage District, and a review of those costs by the United States. As of September 30, 1977, $351,101 had been repaid.

On August 22, 1962, Contract No. 14-06-300-1274 was executed by the parties. It provided for the rehabilitation and betterment of certain project works by the District with funds advanced by the United States, and repayment of the costs thereof, not to exceed $450,000. The costs were later fixed at $335,764. This included installation of three irrigation wells which the District later decided not to construct for various reasons including the impact of the availability of the ground-water pumping on the District's Colorado River water delivery contract and other rights to Colorado River water; i.e., "present perfected rights." As of September 30, 1977, $135,000 had been repaid.

C.5.1 Yuma Auxiliary Project (Unit B) Water Use

The Unit B water delivery contract contains no specific reference to the quantity of water to be delivered to it. Instead, it has provisions similar to the Gila Project contracts with Yuma Mesa and the North and South Gila Valleys regarding the quantity of water and a limitation of not more than 100 ft^3/s in the capacity of the works used in delivering water.

In 1975, 1976, and 1977, the District consumptively used 37,436, 37,225, and 36,726 acre-feet of water, respectively; i.e., diversions less measured return flows. This included 893 acre-feet delivered to two small contractors in 1975, 949 acre-feet delivered in 1976, and 650 acre-feet in 1977.

C.6 Other Arizona Water Delivery Contracts

On November 14, 1968, Secretary of the Interior Udall signed the following water delivery contracts with:

Contractor	Contract Quantity of Water	Quantity of water used 1975	1976	1977
City of Kingman	not to exceed 18,500 a.f.	- 0 -	- 0 -	- 0 -
Mohave Valley IDD	not to exceed 51,000 a.f.	18,806 a.f.	14,598 a.f.	24,936 a.f.
Lake Havasu IDD	not to exceed 14,500 a.f.	7,267 a.f.	7,327 a.f.	7,524 a.f.
	not to exceed 84,000 a.f.			

The total of 84,000 acre-feet contracted for represents 3 percent of Arizona's 2.8 maf allotted to it in *Arizona* v. *California*. The Kingman and Lake Havasu contracts are for M&I use while the Mohave Valley contract is for both irrigation and domestic uses. The contracts impose a charge of 25 cents per acre-foot for domestic water. The city of Kingman has not yet begun diversions, primarily because of the costs of pumping; i.e., the city is about 2,650 feet above the maximum water surface elevation of Lake Mohave. Nor do the other two contractors; i.e., the Districts, which are adjacent to the Colorado River, directly divert surface water from the river, but their use of ground water is established by their contracts as use of Colorado River water.

Three other water delivery contracts have been executed. These are:

Contractor	No.	Date	Contract Quantity of Water
Lakeside Utilities	7-07-30-W0001	April 1, 1977	120 acre-feet
Holiday Harbor Utilities	7-07-30-W0003	June 16, 1977	200 acre-feet
Ehrenberg Improv. Assoc.	7-07-30-W0006	October 14, 1977	500 acre-feet

The City of Yuma has a water delivery contract, No. 14-06-W-106, dated November 12, 1959, which provides for the delivery of not more than 50,000 acre-feet per year of Colorado River water which is to be delivered immediately below Imperial Dam. Because of water delivery and salinity problems, the city executed an amendatory contract with the United States and the Yuma Valley County Water Users' Association on December 14, 1977, No. 14-06-W-106, to change the Imperial Dam point of delivery and to take delivery of water through the All-American-Canal, the Yuma Main Canal and the Valley Division's East Main Canal. The contract has the approval of the Imperial Irrigation District, which will carry the city's water through the All-American Canal. In 1975, 1976, and 1977, the city consumptively used 7,144, 6,782, and 8,212 acre-feet of water, respectively; i.e., diversions less measured return flows.

C.7 Miscellaneous Water and Related Contracts

There are 14 contracts entered into by the United States in the early 1950's under authority of the Warren Act (the Act of February 21, 1911, 35 Stat. 925), which are inactive but not yet terminated. They involve minor quantities of water and have a rate of $1.30 per acre-foot.

There are also nine miscellaneous purpose contracts in the Yuma area entered into in the 1950's and 1960's under authority of the Act of February 25, 1920, 41 Stat. 451. These, too, are for insubstantial quantities of water but as of January 1, 1977, had a rate of $15 per acre-foot.

The United States has also entered into various loan contracts under authority of the Small Reclamation Projects Act of 1956, dated August 6, 1956, 70 Stat. 1044, as amended September 2, 1966, 80 Stat. 376. Included are contracts with:

Roosevelt Irrigation District, No. 14-06-300-1323, dated December 26, 1962, amended June 19, 1972; loan of $3,954,396, of which $503,851 was repaid as of September 30, 1977.

Roosevelt Water Conservation District, No. 14-06-300-1724, dated November 26, 1972; loan of $4,833,481, of which $415,099 was repaid as of September 30, 1977.

Brown Canal Company, No. 14-06-300-1748, dated December 30, 1965; loan of $164,145, of which $29,136 was repaid as of September 30, 1977.

Graham Canal Company, No. 14-06-300-2314, dated April 3, 1972, for a loan of $1,417,400 and a joint grant with the Curtis Canal Company and the Carter Canal Company of $1,762,000 for construction of flood control facilities. The grant was increased to $4,453,666 by letter amendment dated October 20, 1977.

Curtis Canal Company, No. 14-06-300-2315, dated April 12, 1972, for a loan of $787,600 and a joint grant with the Graham Canal Company, of $1,762,000. The grant was increased to $4,453,666 by letter amendment dated October 20, 1977.

Gila River Farms, No. 7-07-30-W0002, dated June 3, 1977, for a loan of $9,950,000.

None of these loan contracts involves the use of Colorado River water.

C.7.1 Arizona's Colorado River Water Use

In calendar years 1975, 1976, and 1977, the major Arizona contractors and water users consumptively used the following quantities of Colorado River water:

	Acre-Feet		
	1975	1976	1977
Valley Division of Yuma Project	232,601	212,741	188,854
Wellton-Mohawk Division of Gila[1]	333,108	286,175	240,208
Yuma Mesa[2]	226,665	219,057	211,508
North Gila Valley	48,909	44,599	42,153
Yuma Irrigation District, South Gila			
River[2]	59,278	59,660	60,460
Wells[2]	13,368	13,029	15,707
Yuma Auxiliary Unit B[2]	37,436	37,225	36,726
Mohave Valley IDD	18,806	14,598	24,936
Lake Havasu IDD	7,267	7,327	7,524
City of Yuma	7,144	6,782	8,212
Colorado River Indian Reservation	339,023	330,870	595,165

[1]Consumptive use figures give credit for drainage returns.

[2]Figures represent diversion. Return flows from South Gila Valley and Yuma Mesa outlet drain not quantitatively assigned to these and to other districts. These returns totaled 111,436 acre-feet in 1975, and 102,821 acre-feet in 1976.

In calendar years 1975, 1976, and 1977 the total of all Colorado River water use in Arizona was:

1975	1976	1977	
2,128,213	1,968,848	1,917,981	af of diversions
770,210	720,828	686,707	af of measured return flows
1,358,003	1,248,020	1,231,274	af of consumptive use

out of the 2.8 million acre-feet apportioned to Arizona by the Supreme Court Decree in *Arizona* v. *California*. Arizona claims credit for unmeasured return flows to the river, as does California, but as noted in the comments under return flows in Chapter II, B.9, these quantities are not yet determined.

C.8 Central Arizona Project

The contract between the Secretary and the Central Arizona Water Conservation District, No. 14-06-W-245, dated December 15, 1972, provides for the construction of the Central Arizona Project (CAP) by the United States, the delivery of an average of 1.2 million acre-feet annually of Colorado River water to the Phoenix and Tucson areas, and the repayment of up to $1.2 billion of reimbursable costs. If the reimbursable costs exceed $1.2 billion, the contract must be renegotiated. The CAP background is covered elsewhere under the Colorado River Basin Project Act of September 30, 1968, which authorized construction of CAP. This contract, except for approximately 100,000 acre-feet of water which Arizona wants reserved for municipal and industrial uses along the river, in effect, commits all of Arizona's remaining entitlement of Colorado River water to CAP, which use, in turn, is subordinated to prior existing present perfected rights and contract users as provided in Section 301(b) of the Act.

The following table shows the quantities of water recommended by Arizona to be contracted for in three-party agreements for M&I use. In addition, similar agreements will be recommended for agricultural water.

ARIZONA WATER COMMISSION
RECOMMENDED ALLOCATION OF MUNICIPAL AND INDUSTRIAL WATER
FROM THE CENTRAL ARIZONA PROJECT

Applicant	1985	2034
Municipal and Domestic		
Arizona Water Company		
Apache Junction	1,700	4,300
Casa Grande	5,500	10,500
Coolidge	1,600	2,600
Miami-Claypool	1,900	2,400
White Tank	450	670
Avondale	690	2,000
Berneil Water Company	220	250
Buckeye	890	1,200
Camp Verde Water Company	100	550
Carefree Water Company	710	1,200
Chandler	0	2,600
Chandler Heights Citrus Irrigation District	110	250
Chapparal City Water Company		
Fountain Hills	1,000	3,900
Citizens Utility Company		
Rio Rico	0	160
Sun City	4,800	23,900
Clearwater Company	90	690

ARIZONA WATER COMMISSION
RECOMMENDED ALLOCATION OF MUNICIPAL AND INDUSTRIAL WATER
FROM THE CENTRAL ARIZONA PROJECT

Applicant	1985	2034
Consolidated Water Utility	2,000	12,600
Cottonwood Water Company	1,400	2,500
Cresent Valley Water Company	430	1,200
Desert Ranch Water Company	20	70
Desert Sage Water Company	450	6,000
Eloy	1,300	2,700
Florence	680	1,000
Florence Gardens	60	100
Gila Bend	480	550
Glendale[1]	4,800	12,700
Globe	2,000	2,900
Goodyear	540	740
Green Valley Community Water Company	580	2,600
Litchfield Park Service Company	1,600	5,900
Maricopa Mtn. Water Company	100	100
Mayer-Humboldt Water Company	110	280
McMicken Irrigation District	1,000	2,500
MCMWCD #1	160	710
Mesa	6,700	15,600
New Pueblo Construction Company		
Picacho Peak	60	80
Green Valley	80	160
Nogales	0	3,800
Paradise Valley Water Company	2,000	3,400
Tyson	720	2,700
Peoria[1]	-	-
Phoenix	56,000	102,000
Pine	220	590
Pinnacle Paradise Water Company	0	90
Prescott	3,200	3,500
Queen Creek Irrigation District	500	1,000
San Tan Irrigation District	70	70
Rio Verde Utilities Incorporated	260	980
Scottsdale	5,000	17,600
Sunrise Water Company	0	300
Tempe	0	3,400
Trails End Water Service	80	190
Tucson[2]	54,300	97,800
Turner Ranches	490	1,900
Westward Hills Water Company	180	470
Williams Air Force Base	1,200	920
Youngtown	560	420
Subtotal	169,090	369,290
Mines	110,000	0
Power	0	100,000

ARIZONA WATER COMMISSION
RECOMMENDED ALLOCATION OF MUNICIPAL AND INDUSTRIAL WATER
FROM THE CENTRAL ARIZONA PROJECT

Applicant	1985	2034
Recreation		
Arizona Game and Fish Department	755	415
Maricopa County Board of Supervisors	3,041	2,041
Contingencies		
Arizona State Land Department	200	37,500
Other		
Phoenix Memorial Park	90	250
Total	282,176	509,496

[1]2,500 acre-feet allocated to Glendale is tentative pending outcome of litigation between Glendale and Peoria of annexation of portion of McMicken Irrigation District service area.
[2]This recommendation assumes a major portion of sewage effluent from the city of Tucson will be made available to mines in area. If the transfer of effluent to the mines is not consummated and is retained instead within the city's water supply system, the city's allocation will be reduced and the mines' allocation increased by the amount of effluent retained.

The Secretary is expected to act on such recommendations after the M&I environmental assessment is completed, probably in mid to late 1979. The Arizona Water Commission is studying the agricultural water allocations which it will submit to the Secretary when completed.

Two subsidiary contracts were executed by the Department of Interior for special studies. These were Contract No. 14-06-300-2192, dated July 7, 1970, with the Arizona Interstate Stream Commission, and Contract No. 14-06-300-2408, dated November 10, 1972, with the Arizona Water Commission, successor to the Interstate Stream Commission.

D. Nevada Water Delivery Contracts

Following execution of the contracts with the State of Nevada, dated March 30, 1942, and January 3, 1944, providing for the consumptive use of 300,000 acre-feet of Colorado River water, the Secretary entered into the following water delivery contracts with water using entities in Nevada:

D.1 Boulder City

No. 14-06-300-978, dated January 4, 1960, pursuant to the Boulder City Act of 1958, approved September 2, 1958, 72 Stat. 1726, providing for a maximum delivery of 3,650 gallons per minute. Actual deliveries averaged 2,300 acre-feet during 1971-75. In 1976 Boulder City consumptively used 1,900 acre-feet diverted through its facilities and 2,053 acre-feet diverted through the Southern Nevada Water Project. In 1977, these diversions were 1,356 acre-feet and 2,545 acre-feet respectively.

The Boulder City Act of 1958 authorized transfer of the city from Federal control to the municipality incorporated under Nevada laws.

Contract No. 14-06-300-1459, dated April 2, 1964, with Boulder City provides for studies relating to the delivery of water to the city. The costs of the study amounted to $8,374 which was paid in full on May 5, 1967.

Contract No. 14-06-300-2084, dated March 3, 1969, provides for the construction of a new 10 million gallon storage tank, pump facilities and appurtenant pipelines to connect with the city's existing facilities at a cost of $629,000 repayable in 40 equal annual installments. As of September 30, 1977, $56,084 had been repaid.

D.2 Basic Management, Inc.

No. 14-06-300-2083, dated September 18, 1969, for a maximum diversion from Lake Mead of

41,277 acre-feet per year. During 1971-1975 diversions approached 20,000 acre-feet per year. In 1976 and 1977 it diverted 8,798 acre-feet and 7,353 acre-feet, respectively.

D.3. Las Vegas Valley Water District

No. 14-06-300-2130, dated September 22, 1969, for a maximum diversion of 15,407 acre-feet per year. Actual diversions were 6,120 acre-feet in 1971-72. Diversions were suspended thereafter because of deliveries through the Southern Nevada Water Project. In 1976 and 1977 those deliveries were 59,912 acre-feet and 61,573 acre-feet respectively.

D.4. Colorado River Commission of Nevada-Southern California Edison Company

No. 14-06-300-1877, dated October 26, 1966, for a maximum diversion of 30,000 acre-feet per year, of which less than one-half is actually diverted, for the Mohave Steamplant across from Bullhead City, Arizona. In 1976 and 1977, the diversions were 14,709 acre-feet and 14,327 acre-feet, respectively. This contract permits Southern California Edison Company to use part of Nevada's entitlement for 35 years, the expected life of the steamplant.

D.5. Southern Nevada Water Project

No. 14-06-300-1974, dated August 25, 1967. This contract provides for the First Stage of the project with a diversion capability of 138,000 acre-feet.

D.5.1 First Stage

Construction of the Southern Nevada Water Project was authorized by the Act of October 22, 1965, 79 Stat. 1068, to deliver water from Lake Mead for municipal and industrial uses in Clark County, Nevada. The Project was to be built in three stages. This was later changed to two stages because of burgeoning population growth and need for water. The principal First Stage features consist of intake facilities in Lake Mead, eight pumping plants, 4 miles of concrete-lined tunnels, 7 miles of main aqueduct, 37 miles of laterals, and regulating facilities. Water treatment is provided separately by Nevada's Alfred Merritt Smith Treatment Facility adjacent to Saddle Island.

The cost of construction of the First Stage, completed in July 1971, was $52,901,300, of which $1,737,000 is allocated to Nellis Air Force Base and is nonreimbursable. The balance, all allocated to municipal and industrial water supply, is repayable in 50 years with interest at the rate of 3¼ percent.

The following First Stage subcontracts were executed with Nevada's Colorado River Commission (later succeeded by the Division of Colorado River Resources) for deliveries of water with options for additional water under the Second Stage, as follows:

Subcontractor	Contract Executed	Acre-Feet of Diversions Stage 1	Acre-Feet of Diversions Stage 2*
Boulder City	8/25/67	7,000	15,000
Henderson	8/25/67	7,000	40,000
No. Las Vegas	8/25/67	20,000	40,000
Las Vegas Valley Water Dist.	8/25/67	99,200	200,000
Nellis Air Force Base (No. GS-00T-1710)	1/8/69 Rev. 2/19/75	4,000	7,000

*The Second Stage options were premised on assumptions that the return flow credits would be of a magnitude which would permit a "consumptive use" of not more than 300,000 acre-feet of water.

Pursuant to a contract dated August 1, 1971, with Nevada's Colorado River Commission, the Las Vegas Valley Water District assumed responsibility for the operation and maintenance of the project. This contract was approved by Nevada's Governor on September 21, 1971.

D.5.2. Second Stage

A contract for the construction of the second and final stage of the project, No. 7-07-30-W0004, was executed August 4, 1977, and superseded the First Stage contract of August 25, 1967. Deliveries of water under it at a maximum rate of diversion of 638 ft^3/s for both stages of the project with the exception of present perfected rights and miscellaneous contracts for delivery of water from Lake Mead and along the river will utilize all of Nevada's entitlement of 300,000 acre-feet per year of consumptive use; i.e., diversions less measured return flows.

The Second Stage will modify and expand the present system. It will add five new pumping plants, a second barrel to the main aqueduct and approximately 30 miles of additional pipeline and laterals. The costs are estimated at $109,864,000, and the State of Nevada has agreed to pay the construction costs in excess of available Federal funding of $88,377,000 in order to expedite construction and to avoid delay in obtaining authorization to increase the appropriation ceiling.

Revenue for repayment of the project's costs will be derived from the sale of project water under the subsidiary contracts. The First Stage reimbursable costs were allocated based on the water entitlement of each entity in proportion to the total First Stage water entitlement under contract. Under the Second Stage only Nellis Air Force Base uses that allocation procedure, while the remaining water users will each pay a share of the total annual reimbursable capital costs (with the capital costs allocated to Nellis excluded) based on its proportion of annual water use to the total annual water use (again excluding Nellis).

All users will pay OM&R costs in proportion to water user. If water use follows projections, the water rate for amortization of capital costs will approximate $45 per acre-foot over the 50-year repayment period. Amortization of facilities financed by State funding are projected at $40 per acre-foot. OM&R costs presently amount to $36 per acre-foot.

Each stage is allowed a 50-year repayment period with the First Stage repayment beginning in 1973 and the Second Stage expected to begin in 1983. In addition to amortization of the Federal obligation, the State will pay 50 cents per acre-foot of water diverted as provided in its contract of March 30, 1942. Following the Hoover Dam cost repayment period, the 50 cent charge will be adjusted as prescribed by Congress.

Upon completion of construction, it is anticipated that OM&R will be transferred to the Las Vegas Valley Water District as the agent of the State.

D.5.3 Second Stage Subcontracts

The aforesaid First Stage subcontracts were amended and superseded by the following Second Stage subcontracts:

Subcontractor	Contract Executed	Actual Acre-Feet of Diversions 1975	1976	1977
Boulder City	8/4/77	1,847	2,053	2,545
Henderson	8/4/77	1,558	1,901	2,195
No. Las Vegas	8/4/77	6,370	6,546	6,498
Las Vegas Valley Water District	8/4/77	55,135	59,912	61,573
Nellis Air Force Base	Execution pending as of 2/15/78	1,907	2,190	2,714

D.6. Miscellaneous Nevada Water Delivery Contracts

The United States, with the Colorado River Commission's concurrence, has entered into two miscellaneous contracts permitting diversions from Lake Mead. These are with:

Lakeview Company, No. 14-06-300-1523, dated February 12, 1965, providing for a maximum annual diversion of 120 acre-feet per year. No diversions have been made thereunder.

Johns-Manville Production Corporation, No. 14-06-300-1518, dated April 9, 1965, providing for a maximum annual diversion of 928 acre-feet per year. In 1975, 385 acre-feet were diverted and in 1976, 422 acre-feet.

In addition, six other contracts permit a total diversion of 458 acre-feet from the Colorado River below Davis Dam in Nevada, of which one contract is for 380 acre-feet.

The Interior Department's Bureau of Reclamation has entered into the following Memoranda of Understanding:

U.S. Bureau of Mines, No. 14-06-300-1215, dated June 1, 1961, providing for a maximum diversion of 175 gallons per minute, under which 21 acre-feet were delivered in 1975.

Nevada Park Service, No. 14-06-300-1212, dated June 1, 1961, providing for a maximum delivery of 80 gallons per minute, under which 8 acre-feet were delivered in 1975.

Nevada Fish and Game Department, No. 14-06-300-2405, dated October 18, 1972, under which 6 acre-feet were delivered in 1975.

D.7 Nevada Water Use

In 1975, 1976, and 1977, in addition to the aforementioned diversions by the Southern Nevada Water Project contractors, the major Nevada water contractors diverted the following quantities of Colorado River water:

	1975	1976	1977
Boulder City	1,983 acre-feet	1,900 acre-feet	1,356 acre-feet
Basic Management Inc.	11,923 acre-feet	8,798 acre-feet	7,353 acre-feet
Southern California Edison Company	14,422 acre-feet	14,709 acre-feet	14,327 acre-feet

Boulder City receives Colorado River water from the Southern Nevada Water Project facilities and from an older separate Federally constructed system. The figures in the above tabulation are from the latter.

The total water use for the above and all other contractors in 1975, 1976, and 1977, respectively, was:

1975	1976	1977	
105,054	108,362	109,434	acre-feet of diversions
32,914	35,170	36,260	acre-feet of measured return flows
72,140	73,192	73,174	acre-feet of consumptive use

out of the 300,000 acre-feet apportioned to Nevada by the Supreme Court Decree in *Arizona* v. *California*. (The measured return flow for 1975 includes 29,150 acre-feet of estimatred return flow in Las Vegas Wash and 31,357 acre-feet in 1976.)

D.8. Nevada's Use of Excess or Surplus Water

A contract has been drafted for Nevada's use of 1/25th of any excess or surplus water as provided in Article 7(f) of the Arizona water delivery contract of February 9, 1944, and Article II(B)(2) of the Decree of March

9, 1964, 376 U.S. 340, in *Arizona* v. *California*, but was not executed as of February 1978. (Article II(B)(2) of the Decree expresses the quantity as 4 percent of the surplus waters; i.e., mainstream water available to satisfy annual consumptive use in the Lower Basin States in excess of 7.5 maf.)