

UNITED STATES-MEXICO WATER AGREEMENTS  
AND RELATED WATER USE IN MEXICALI  
VALLEY: A SUMMARY

by

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INTRODUCTION

The Mexicali Valley of Baja California is one of several major areas of northwestern Mexico that are suited to irrigated agriculture. Water for irrigation has been obtained in part by development of ground water, but principally by diversions from the Colorado River. The availability, quantity, and quality of these waters have depended heavily upon (1) historical development in the region and (2) the interrelation of events involved in international water agreements between the United States and Mexico. Development of irrigated agriculture in Mexicali Valley proceeded concurrently with that in Imperial Valley; provisions affecting both areas in the 1944 water treaty were influenced by conditions in the Rio Grande region; the manner of water allocation in the lower Colorado River region evolved through actions of the United States Government and interactions among all seven states in the Colorado River Basin; and finally, the manner of water utilization and disposal in certain areas on the Colorado River took on vital importance to the operation of water agreements with Mexico and led to the necessity of further agreements.

The chronology of these events and analyses of their significance have been well documented and portrayed by historians, geographers, and political scientists, e.g., the comprehensive works of Henderson (1964) and Hundley (1966) to which liberal reference is made in the early part of this report. With that background, the remarks that follow are presented as a summary of interrelated, more recent technical and institutional events, with emphasis on the 1961-1974 period.

EARLY DEVELOPMENT OF IRRIGATION  
IN IMPERIAL-MEXICALI VALLEY

In 1849, the year after the signing of the Treaty of Guadalupe-Hidalgo (9 Stat. 922), the potential agricultural value of the Imperial-Mexicali Valley was recognized, and during the ensuing fifty years a succession of ventures toward irrigation development were initiated (Hundley, 1966).

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Actual conveyance of water from the Colorado River to the irrigable lands eventually necessitated the acquisition of right-of-way for a canal through Mexican territory. For this purpose a Mexican company was formed in 1898, a waterway was established, a diversion structure was built, and the first delivery of irrigation water was made on June 21, 1901 (Hundley, 1966, p. 33). Because of excessive silt deposition, an agreement was made in 1904 for the construction of a new intake, to be located in Mexico; the agreement provided that Mexico would receive for her use one-half of all water diverted. Thus began the actual and substantial use of water of the Colorado River in Mexico. During the ensuing forty years, a number of events in other regions affected the eventual shape of that water use and the international agreements relative thereto.

#### WATER CONFLICTS AND AGREEMENTS ON THE COLORADO RIVER IN THE UNITED STATES

Technical difficulties arose in the form of large, uncontrollable flows in the Colorado River during the 1905-1906 runoff seasons and in several subsequent years. The water diversion works were repeatedly washed out, great volumes of river water flowed overland to the Salton Sea, and maintenance of irrigation schedules in the cultivated areas was rendered impractical and at times virtually impossible (Hundley, 1966, p. 34-37). Strenuous engineering efforts, especially on the part of the Southern Pacific Company, were required to regain control of the river (Sykes, 1937, p. 114-117). Perhaps more significant, however, was the realization that the burden of physical and financial maintenance of these works might be too large for local interests, and that the federal government therefore might take a proper interest in management of the river. The question also arose, and was given notice by the federal government, whether there was enough water in the river to satisfy requirements of both the Imperial-Mexicali irrigation and possible upstream development, and at the same time "maintain the fiction of navigation" of the Colorado River (Hundley, 1966, p. 34).

Beginning in the 1920's there was a rapid sequence of events in the Colorado River Basin which would have far-reaching implications as to the eventual disposition of the water supplies of the basin, including that part destined for use in Mexico. The chronology of these events has been traced in a presentation by Senator Carl Hayden (U.S. Senate, 1963, p. 4-12). First was the 1919 Report of the All-American Canal Board, a group of engineers commissioned to advise the Department of Interior regarding the Colorado River. The Board declared the inadequacy of local management of water control and use, and advocated federal construction of a dam and storage reservoir on the Colorado and an "All-American" Canal to the Imperial Valley. The Kincaid Act (41 Stat. 600) passed by Congress in 1920 directed the Secretary of the Interior to study and report on potential diversions from the Colorado to the Imperial Valley. The "Fall-Davis Report", prepared pursuant to the Act, declared that Colorado River development and flood control were "national problems" and recommended that the dam be built at Boulder Canyon and the All-American Canal be included in the construction project.

These proposals aroused apprehension among water interests in the upper portion of the Colorado River Basin. Under the western doctrine of "prior appropriation", rights to water accrue in accordance with the earliest application of water to beneficial use; this doctrine was prevalent within most of the basin states, and was given "interstate effect" in 1922 by the decision in Wyoming v. Colorado (259 U.S. 419). If federal construction were to enable California to apply river water to use before the upper states could complete irrigation development, California might establish prior rights to a large portion of the flow. To forestall this condition, the several states potentially affected (Wyoming, Colorado, Utah, New Mexico, Arizona, and Nevada, in addition to California) began to advocate an interstate agreement for the apportionment of river water. Congress gave consent for such a compact in the Act of August 19, 1921 (42 Stat. 171).

### COLORADO RIVER COMPACT

Representatives of the several states and the federal government held numerous conferences during the ensuing year and eventually, in November 1922, they reached a compromise agreement in the form of the Colorado River Compact (70 Cong. Rec. 324), commonly known also as the Santa Fe Compact after the place of its successful negotiation.

The apportionment of Colorado River water to the individual states was not accomplished in the compact. The rights of the states in the upper part of the basin remained to be established by an interstate compact finally completed in 1948, and the rights of the states in the lower part were set out by Congressional legislation in 1928 and affirmed by U.S. Supreme Court decision in 1963, as seen below. But the Santa Fe Compact temporarily mitigated the threat posed by California under "prior appropriation" and introduced an alternative principle of "equitable apportionment" at least as to basins, if not to states. The compact provided for the division of the Colorado River Basin into an Upper Basin and a Lower Basin with apportionment of water to each. The quantities of water specified were unfortunately more optimistic than would be warranted by actual availability in later years. Article III (a) of the compact apportioned to each basin "in perpetuity" 7.5 million acre-feet of water per year from the Colorado River system; under Article III (b) the Lower Basin could additionally "----increase its beneficial consumptive use of such waters by one million acre-feet per annum."

The use by Mexico of waters of the river also was to be affected by the compact. It was provided in Article III (c) that "----future Mexican water rights recognized by the United States shall be supplied first out of surplus over and above the aggregate of the quantities specified in (a) and (b), and if this surplus is not enough the deficiency shall be borne equally by the two basins" (U. S. Senate, 1963, p. 8). It later became evident that a surplus as stated could seldom if ever be anticipated once the water uses from the river became fully developed; moreover, difficulties were to develop over the equal sharing of a "deficiency", by the two basins.

The compact was not ratified by Arizona, her objection being based on the inclusion of the Gila River as part of the Colorado River system. The contention was that only the mainstream should be apportioned among states. The failure of Arizona to ratify and the lack of agreement on quantitative apportionment among the states perpetuated a desire on the part of the states for further settlement, particularly as to California's share of the water supply. The governors of the seven states met for further negotiations in Denver in 1925 and 1927. One proposal by the Upper Basin states would have apportioned the 7.5 million acre-feet of the Lower Basin as follows: Nevada, 0.3 million; Arizona, 3.0 million; and California, 4.2 million acre-feet (U.S. Senate, 1963, p. 9). The proposal failed because California held out for 4.6 million acre-feet and for other reasons, but the rough framework for apportionment had been designed.

### BOULDER CANYON PROJECT ACT

Between 1922 and 1927 several bills had been introduced in the United States Congress, to seek authorization for construction of a dam at Boulder Canyon and an All-American canal. These met opposition from several sources, principally the Arizona delegation, because of continued encumbrance of the Gila River system in the state water accounts (U.S. Senate, 1963, p. 10). Eventually, however, a bill was passed by both houses of Congress and became known as the Boulder Canyon Project Act of 1928 (45 Stat. 1057).

The purposes of the Act were described upon presentation as follows (Wilbur and Ely, 1948, p. 41): (1) Relieve flood danger in the Colorado River-Imperial Valley Region; (2) avoid Mexican-American complications by providing a main canal to the Imperial Valley which would nowhere enter Mexico; (3) conserve floodwaters in storage for use not only by irrigation interests but by southern California cities; and (4) generate large quantities of hydro-power.

Toward implementing these objectives, the Act authorized construction of the dam and the canal, but it also contained other very significant provisions. It provided that an interstate compact could become effective, with a water apportionment to Nevada, Arizona, and California in the ratio 0.3: 2.8: 4.4, free from tributary obligations and specified that the Act itself would not take effect unless (1) six states including California would ratify the compact, and (2) California would agree to a self-limitation of 4.4 million acre-feet per year plus one-half of any surplus waters unapportioned. These conditions were subsequently fulfilled and the Act became effective by Presidential proclamation in June 1929.

The Secretary of the Interior was authorized by the Act to contract for storage and for distribution of the stored waters, and indeed was forbidden by Section 5 to deliver water without a contract. The Secretary proceeded thereafter to make contracts with various water users in California for 5,362,000 acre-feet per year, with Nevada for 300,000 and eventually with Arizona for 2,800,000 acre-feet per year. It is a question of legal

interpretation whether the Act thus reinforced or in fact superseded the law of apportionment among the Lower Basin states.

## THE TREATY OF 1944

### TREATY PROVISIONS ON THE RIO GRANDE

On another sector of the Mexico-United States boundary, controversy over water supplies also had begun to develop soon after the Treaty of Guadalupe-Hidalgo; events along the Rio Grande were to have profound effects in the terms of the Treaty of 1944, almost a century later. These events have been related in detail by Hundley (1966); a few points from that work are cited here only to broaden the perspective of treaty negotiation and to introduce the substantive provisions of the latter treaty.

By the 1880's, waters of the Rio Grande had been diverted to irrigation use both in the headwater regions and in the El Paso-Juarez section, and the occurrence of scanty rainfall and runoff in some years drew attention to the inadequacy of the river to supply all users perennially in the absence of institutional arrangements. These problems, as well as others related to navigability and channel changes in the boundary streams, led to the assignment of specific administrative and operational rules for the International Boundary Commission (Timm, 1941), as authorized by the Treaty of March 1, 1889 (26 Stat. 1512). It was agreed in 1890 that a form of treaty also should be worked out between Mexico and the United States as to rights in the waters of the Upper Rio Grande Valley, and after extensive negotiations the Convention of 1906 (34 Stat. 2953) was consummated. Therein agreements were made for control and use of the river from the headwaters to Ft. Quitman, Texas. In this Upper Basin the flow of the river was derived almost entirely from watershed areas within the United States. The United States accordingly could advance the argument that the predominant "area of origin" of waters might logically be the area of greatest use, and that any concession of waters to Mexico was based on "equity and comity," in which the legal basis for the quantitative settlement might be called "maintenance of existing uses."

In the valley of the Lower Rio Grande, extending from Presidio, Texas to the Gulf of Mexico, the hydrologic setting was reversed; there the Mexican tributaries contribute the larger proportion of flow to the Rio Grande. In the Lower Valley, then, the protection of "existing uses" (and more especially, potential uses) had to be based on a concessionary attitude on the part of Mexico (Hundley, 1966). This point became crucial in the balancing of terms for settlement in the United States - Mexican Water Utilization Treaty of 1944 (59 Stat. 1219). Therein once again, the area of origin of waters of the Colorado River being almost entirely within the United States, negotiations rested rather heavily upon the extent of established water uses on the Mexican side of the border.

The 1944 Treaty has been described in several sources--e.g., Wilbur and Ely (1948, Chap. 14)-- in regard to general background, negotiations, principal treaty provisions, and protocol. Direct reference to the text of the Treaty (59 Stat. 1219) is made below, as to specific provisions on the Rio Grande and subsequently the Colorado River. In this treaty, allocation of waters of the Rio Grande to use in the United States went beyond the quantities indicated by tributary inflow. Therefore, on the basis of "area of origin" of streamflow, the United States was granted more than a proportionate share of flows in the Rio Grande system.

#### TREATY PROVISIONS ON THE COLORADO RIVER

On the Colorado River the allocation of water also was disproportionate--here in favor of Mexico-- to the tributary inflow, as nearly all flow originated within the United States. Strong consideration was given, however, to the established uses and potential needs for water in Mexico. In determining an equitable allocation to Mexico, a wide range of figures were suggested by the two sides. Agreement on 1,500,000 acre-feet per year as a basic quantity for Mexican diversion reflected the desires of both nations -- of Mexico to obtain assurance of specific quantities under controlled conditions, and of the United States not only to settle the water rights but also to improve relations with Mexico (Hundley, 1966, p. 68, 77).

The following are salient points of the final settlement as delved from further direct reference to the 1944 Treaty (59 Stat. 1219). The Treaty in Article 10 guaranteed the delivery of 1,500,000 acre-feet per year, and provided that additional deliveries could be made in amounts up to 1,700,000 acre-feet in years of surplus, as determined by the United States. Further, in years of drought the deliveries could be reduced in the same proportion as consumptive use within the United States was reduced. Unfortunately, no method was specified for defining such reduction.

By Article 12 it was agreed that within five years the United States would construct a regulating reservoir and dam (Davis Dam) by which deliveries could be regulated according to definite time schedules, and Mexico would construct a diversion structure (Morelos Dam) on the Colorado within Mexico.

Treaty Articles 11 and 15, respectively, dealt with the places and the times of water deliveries. It was stated that said waters were to be those of the Colorado River "whatever their origin." Time schedules and limiting rates of delivery by seasons were also specified.

The Tijuana River was the subject of Article 16 of the Treaty. Therein certain provisions were made for a study and investigation for water storage and flood control works, preparation of cost estimates, and recommendations for operation and maintenance of the works.

## COMMENT ON THE TREATY

Following successful negotiation of the Treaty, both sides emerged with a conviction that gains had been won. The detailed statement of Ingo. Adolfo Orive Alba, a Mexican engineer prominent in the proceedings, exudes satisfaction that the terms of the Treaty were manifestly favorable to Mexico (U.S. Senate, 1945). A report prepared by Mr. Ely, a California attorney (U.S. Senate, 1946), documents the attitudes expressed in ratification proceedings by both Mexican and American negotiators to their respective Senates, and reveals conflicting assumptions between the two sides regarding potential irrigable area in Mexicali Valley and quantities of land and water already in use in Mexico.

Divergent but optimistic views on these and other points, though not compatible in logic, did serve to convince the respective officials of the two countries that the 1944 Treaty bore good tidings to all concerned. There were, however, specific points on which the Treaty was silent and from which future controversy was to arise. Two of these became especially troublesome: (1) There was no provision as to the quality of water to be delivered to Mexico; and (2) no method was set forth by which the "extraordinary drought" provision could be invoked.

The political implications of these and other points are examined in an extensive review of the 1944 Treaty recently prepared by Tilden (1974).

## CONTROVERSY OF 1961-65

The Treaty, having been ratified, was duly carried forward from the year 1945, and authorizations were subsequently made by the Congress for carrying out the Treaty provisions (U.S. House of Representatives, 1950). Construction of Davis Dam was completed in 1949, and Morelos Dam was completed in 1950.

## EMERGENCE OF THE PROBLEM

From the first delivery of water to irrigated lands in 1901 until the Treaty ratification in 1945, Mexico had had no guarantee of a specific annual quantity of water from the Colorado River, but in the years after 1945, when a guarantee of 1.5 million acre-feet was established, more than that amount was available for use (Henderson, 1964, p. 435-7).

The expansion of irrigated area in the Mexicali Valley soon exceeded the amount that might be considered feasible under the minimum guarantee. At a diversion rate of 4.5 acre-feet per acre per year, 1.5 MAF (million acre-feet) would cover approximately 333,000 acres or 134,000 hectares. But by the 1955-56 season, irrigation had been extended to about 195,200 hectares of cotton plus about 22,000 hectares in winter crops, or a total exceeding 217,000 hectares (Henderson, 1964, p. 439).

The reason for and the result of such overextension were described by Henderson (1964, p. 439 *et seq.*). The causal factor was the policy of the Mexican government of promoting maximum land distribution despite obvious limitations. The result was the spreading of water too thinly over an area too large to be sustained. A heavier duty of water was necessary to serve the requirements of both plant nutrition and transpiration and leaching of salts from the soil. Certain remedial measures thus became imperative by 1956: (1) Summer water diversions were rationed; (2) some land was withdrawn from cultivation; and (3) supplemental ground-water supplies were developed by deep wells, particularly on the east side of the valley, where permeable aquifers existed (Figure 1).

By 1960 the summer season cropped area had been reduced to about 145,000 hectares, supplied by the summer diversions of water under the Treaty schedule and supplemental pumpage from about 600 federal and private wells. In addition, winter crops on about 47,000 hectares were supplied by the winter Treaty deliveries augmented by some surplus flows. Thus the total area annually irrigated, from Treaty diversions plus ground water, stabilized in 1960 and afterward at about 192,000 hectares, under a reasonably adequate duty of water (Henderson, 1964, p. 444-5).

But the incipient conditions of salinity and waterlogging were established, and were not to be easily ameliorated. Inadequate water application for leaching of salts had permitted accumulation of saline deposits in soils at some places, and inadequate subsurface drainage had caused waterlogging in some localities, especially toward the western side of the valley where heavy (clayey) soils predominated. As early as 1953, the Colorado River Irrigation District had begun to install some drainage canals, but the effectiveness of open drains was severely limited owing to the low permeability of the heavy soils. It appears likely that nothing short of a close-grid tile drain system will be adequate for proper soil drainage (Henderson, 1964, p. 470-5). It is noteworthy, nonetheless, that the Mexican authorities have continued efforts to reduce waterlogging by a program of improvement of distribution canals and drainage canals in the District (Secretaría de Recursos Hidráulicos, 1968).

By 1960 another complicating factor had entered the system -- variable but generally increasing salinity of Colorado River water, due to return flows from irrigated areas upstream. This problem was sharply accentuated when in 1961 the newly completed drainage canal from the Wellton-Mohawk Irrigation District in Arizona was placed into service. That District had been receiving Colorado River water since 1952; the continued importation



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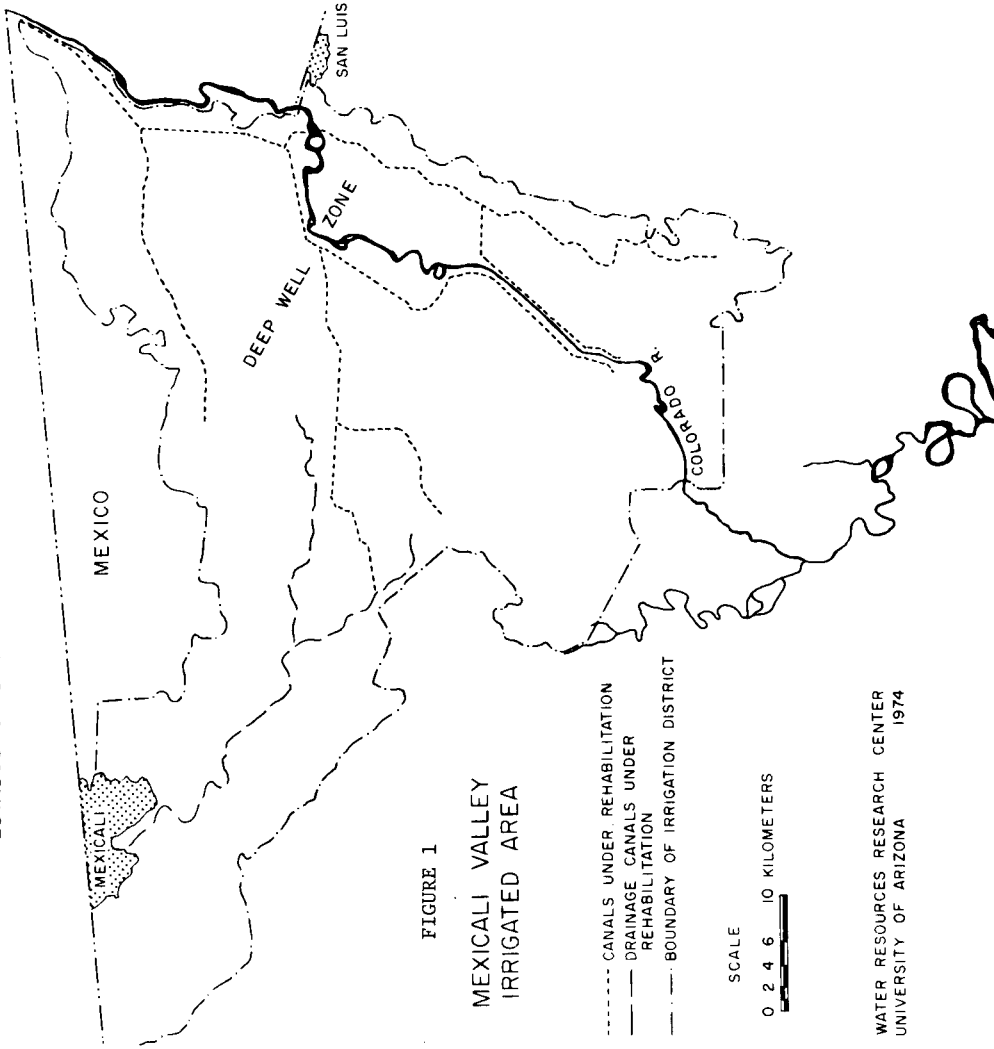


FIGURE 1

MEXICALI VALLEY  
IRRIGATED AREA

WATER RESOURCES RESEARCH CENTER  
UNIVERSITY OF ARIZONA 1974

of water to the geologically closed basin had brought about waterlogging and salt accumulation in soils and necessitated the pumpage and exportation of somewhat brackish water. Discharge of this water at the confluence of the Gila and Colorado Rivers precipitated a new crisis between Mexico and the United States.

### INTERNATIONAL NEGOTIATIONS

When the Wellton-Mohawk drainage water hit the mainstream, a vociferous protest arose from the agricultural interests as well as some other sectors of the Mexican populace, and from the Mexican government. The delivery of saline water was called "--- an aggression that belies the most well meaning of policies" (Piper, 1962, p. 1021). It was noted that in November 1961 the water at one point contained 2,700 parts per million of total soluble salts. The Secretary of the Interior stated quite correctly that some farmers in Arizona were irrigating with water of higher salt content than that; but this did not quiet the dispute. The basic problem lay in the differing interpretations taken years earlier regarding the 1944 Treaty. American negotiators had taken the position that silence in the Treaty regarding quality of water signified that quality was of no consequence, but Señor Alba quite to the contrary had stated that "--- in this treaty, as in any other of its kind, it is understood that the water must be of good quality" (U.S. Senate, 1946). Now in 1961 the United States was disclaiming any obligation as to quality, but Señor Alba was maintaining that quality should be that of "virgin waters" of the river, or not in excess of about 750 parts per million of salt content.

The United States Department of State, the Mexican Department of Foreign Affairs, and both sections of the International Boundary and Water Commission set to work to find an acceptable solution to this very knotty problem. Panels of technical experts and political advisors were enjoined to render aid of the highest order available. Finally an agreement was reached and was called by its date of completion, the Agreement of March 22, 1965.

### 1965 AGREEMENT

The 1965 Agreement was in essence an interim five-year plan for alleviating the technical and political difficulties surrounding the salinity question. The principal technical provisions of the Agreement are described as follows (U.S. Dept. of State, 1965, p. 555-7): (1) The United States would build, operate, and maintain at her own expense an extension of the Wellton-Mohawk drain channel which would convey the drainage waters beyond the Gila-Colorado confluence, down the left bank of the Colorado to a point downstream from Mexico's principal diversion point at Morelos Dam, but with a control structure on the extension such that water could be discharged above Morelos on request; and (2) the drainage waters would be accounted for and controlled in certain specified ways, under the schedules of the 1944 Treaty, with the resultant effect that the most saline waters would be discharged below Morelos

Dam in the winter season and other less saline waters would be diluted for use with heavier summer flows. These technical provisions were so designed that the anticipated salt concentration would be not in excess of 1,500 parts per million.

The political implications of this Agreement, however, went beyond the five-year operational plans. The Agreement provided that during the five-year period a permanent solution be sought, and specified that the Agreement would not provide precedent in policy relating to the 1944 Treaty. These points were so stated in the Spanish version of the Agreement (Secretaría de Relaciones Exteriores, 1965, Secs. 8 and 11):

8. Que la presente Acta esté en vigor durante un período de cinco años contados desde la fecha en que se ponga en operación la prolongación del canal de conducción de aguas de drenaje del Distrito de Wellton-Mohawk; y que durante este período la Comisión revise las condiciones que dieron origen al problema y oportunamente recomiende si, con el propósito expresado por ambos Gobiernos de llegar a una solución permanente y eficaz, debería adoptarse una nueva Acta que entre en vigor al terminar dicho período.

11. Que las estipulaciones de la presente Acta no constituyan precedente, reconocimiento ni aceptación que afecte los derechos de uno u otro país por cuanto respecta al Tratado de Aguas del 3 de febrero de 1944 y a los principios generales de derecho.

#### SOLUTION REACHED IN 1973

The 1965 Agreement was duly carried forward and expired in 1970. The achievement of a permanent solution by this time, however, was not realized. A one-year extension was agreed upon, but this again proved insufficient and a further extension of time became necessary.

During this period of study and deliberation, the United States Congress achieved final passage of the very significant Colorado River Basin Project Act (82 Stat. 885), which contained language (Sec. 202) to the effect that satisfying the requirements of the 1944 Treaty from the Colorado River constitutes a "national obligation", so that the individual states in the Colorado River Basin "---shall be relieved from all obligations which may have been imposed upon them by Article III(c) of the Colorado River Compact---".

Meanwhile, additional problems had arisen in the international negotiations. Pumpage of ground water and mutual interference among wells adjacent to the international boundary near San Luis (Figure 1) had increased to a point where the ground-water gradient was steepened toward the boundary and ground-water flow across the boundary became appreciable. Moreover, the

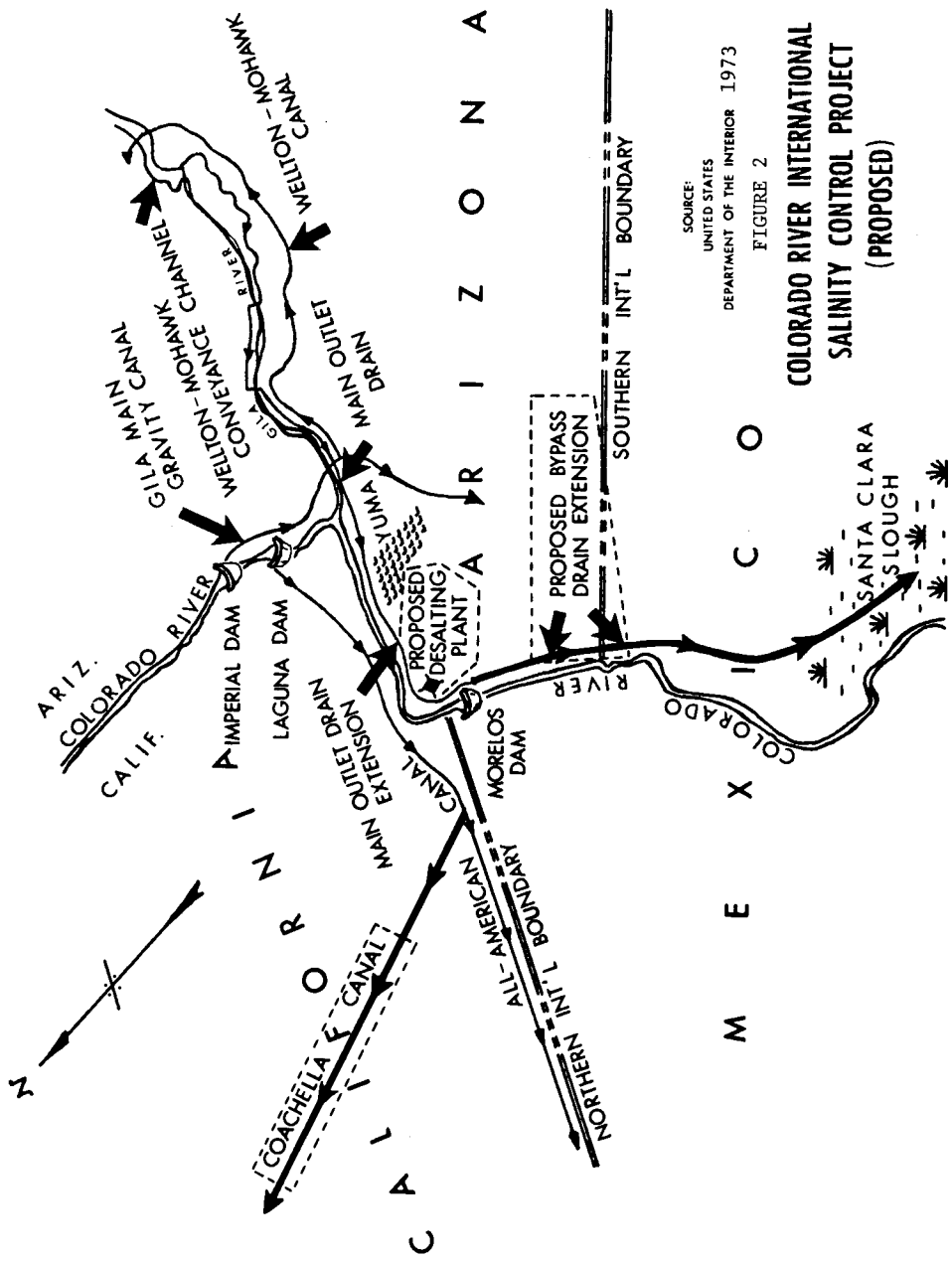
passage of time without a "permanent" solution to the question of salinity in surface waters was increasingly trying the patience of water interests on both sides.

During a visit to the United States in June 1972, President Luís Echeverría of Mexico talked with President Richard Nixon on this question, and the two Presidents issued a Joint Communiqué on June 17 expressing their deep concern about the unsettled state of affairs concerning the Colorado River, and their mutual desire to find a satisfactory solution at the earliest possible time. It was agreed that certain steps would be taken immediately to improve the quality of water to Mexico. These actions were detailed in IBWC Minute No. 241, adopted on July 14, 1972, which superseded Minute No. 218 and provided some operational adjustments designed to bypass drainage waters from the Wellton-Mohawk District and substitute increments of better quality waters without charge to Mexico. In addition, President Nixon thereafter appointed former Attorney General Herbert Brownell, Jr., as his Special Representative, to be assisted by an Interagency Task Force whose objective would be to reach a permanent solution (U.S. Department of the Interior, 1973).

On August 30, 1973 it was announced that such a solution had been accomplished. The document which spelled it out was identified as Minute No. 242 of the International Boundary and Water Commission, United States and Mexico, and was titled, "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River." The Minute provides a legal-political solution in terms of largely technical provisions, contained in a ten-point Resolution.

One of the major points in the Resolution is the assurance that waters delivered to Mexico upstream of Morelos Dam, beginning in 1974, will be substantially similar in salinity (within specified limits) to the annual average salinity of waters at Imperial Dam in the United States. The effect of this provision is to minimize, if not entirely eliminate, a major source of contention--i.e., the differential salinity between these two major delivery points caused by the discharge of highly saline drainage water between the two dams. This is to be accomplished in the near future by extending the Wellton-Mohawk bypass drain into Mexico as far as the Santa Clara Slough, for the discharge of drainage water, and substituting salvaged and stored water of better quality for delivery and use. As a more permanent means of maintaining this quality balance, the United States will build, within approximately five years, a facility for desalting the saline drainage water (Figure 2).

It has been well recognized by representatives of both Mexico and the United States, even as early as the 1944 Treaty negotiations, that water in the Colorado River anywhere in this area would not be "free" of salinity, and indeed that future development in upstream regions might tend toward ever-increasing salinity. The act of fixing the salinity at Morelos according to that at Imperial, however, assures that the two countries will suffer these effects simultaneously and equally. By the same token, any benefits



SOURCE:  
 UNITED STATES  
 DEPARTMENT OF THE INTERIOR 1973  
 FIGURE 2

**COLORADO RIVER INTERNATIONAL  
 SALINITY CONTROL PROJECT  
 (PROPOSED)**

of salinity reduction measures in the basin will be enjoyed alike by the water users of both countries. Thus the element of inequality between the two diversion points, persisting since 1961, has been eliminated.

Other points in the Resolution are directed toward ameliorating conditions related to water deliveries and use. The quantities of ground water pumped along both sides of the Arizona-Sonora boundary near San Luis will be limited to a fixed maximum; the United States will support efforts by Mexico to finance the installation of a tile drain system and other measures to relieve the existing salinity and drainage problems in Mexicali Valley; and, as a further effort to avoid future problems, both nations agree to consult with each other before undertaking any new water resources development in the border area which might adversely affect the other country.

#### COMMENT ON THE 1973 AGREEMENT

It would appear at this time that a state of comity and equity has been achieved as between Mexico and the United States, regarding salinity in the Colorado River. It remains to be seen, as time goes by, whether the provisions of Minute No. 242 can be exercised in such a way that local and state interests on both sides of the border will be satisfied that water operations are being conducted on an equitable basis not only between the two nations but also between each national government and its own constituent interests.

It has been suggested that, as an economic alternative to the relatively expensive desalting operation, reduction of the salinity load emanating from the Weilton-Mohawk area could be accomplished by on-farm adjustments in irrigation practices (Martin, 1974). In May 1973 a program was undertaken to reduce the size of desalting plant required, through acreage and drainage flow reduction and improvement of irrigation efficiencies in that district (U.S. Department of the Interior, 1973).

Fulfillment of the technical provisions of the Agreement, by whatever means, requires in any event the timely appropriation of federal funds by the Congress and their release by the Administration in order to construct and operate the physical works. It has been pointed out also that the several states in the Colorado River basin need assurance (1) that the federal government will carry out appropriate measures in implementing the Agreement, such as providing adequate energy sources for desalting and for the groundwater management program, and (2) that the rights of the states will not be impaired within the legal operation of the legislative acts, court decisions, and interstate compacts, as cited above, which govern water use in the region (Arizona Water Commission, 1973).

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