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# THE COLORADO RIVER: INTERNATIONAL ASPECTS

J. F. FRIEDKIN\*

This paper is intended to report on the delivery of Colorado River waters to Mexico under the 1944 Treaty<sup>1</sup> through the calendar year 1971.

## THE 1944 WATER TREATY DELIVERY OF COLORADO RIVER WATERS TO MEXICO

During calendar year 1971, the total quantity of flows of the Colorado River to reach Mexico amounted to 1,562,000 acre-feet. This total quantity included the total flows crossing the land boundary near San Luis, Arizona. This total quantity, of course, fulfills the 1944 Treaty guaranteed allotment to Mexico of 1,500,000 acre-feet. The portion of the total quantity over the allotment, amounting to 62,000 acre-feet, consists of 55,200 acre-feet of waters discharged to Mexico to complete the winter minimum deliveries to that country when Wellton-Mohawk District drainage waters are discharged below Morelos Dam pursuant to the Five-Year Agreement with Mexico for solution of the salinity problem, and the remaining 6,800 acre-feet of waters, or less than one percent of the allotment, due to over deliveries incident to rains and cutbacks in the irrigation demands from the river in the United States.

Under the Option in the Treaty, Mexico requested again in 1971 that all deliveries be made in the boundary section of the river, *i.e.*, that there be no deliveries by means of the All American Canal.

The attached chart shows both the total annual quantity of waters delivered to Mexico in 1971 as well as the deliveries in prior years. It shows that deliveries during the past five years were much closer to the annual guaranteed allotment than in prior years. This is attributed to the increased uses and regulation in the United States and the efficient control effected by the Bureau of Reclamation in its operation of Imperial Dam and the adjoining Senator Wash Reservoir.

The total quantity of waters reaching Mexico during 1971 is made up of 1,021,000 acre-feet, or sixty-five percent, from waters

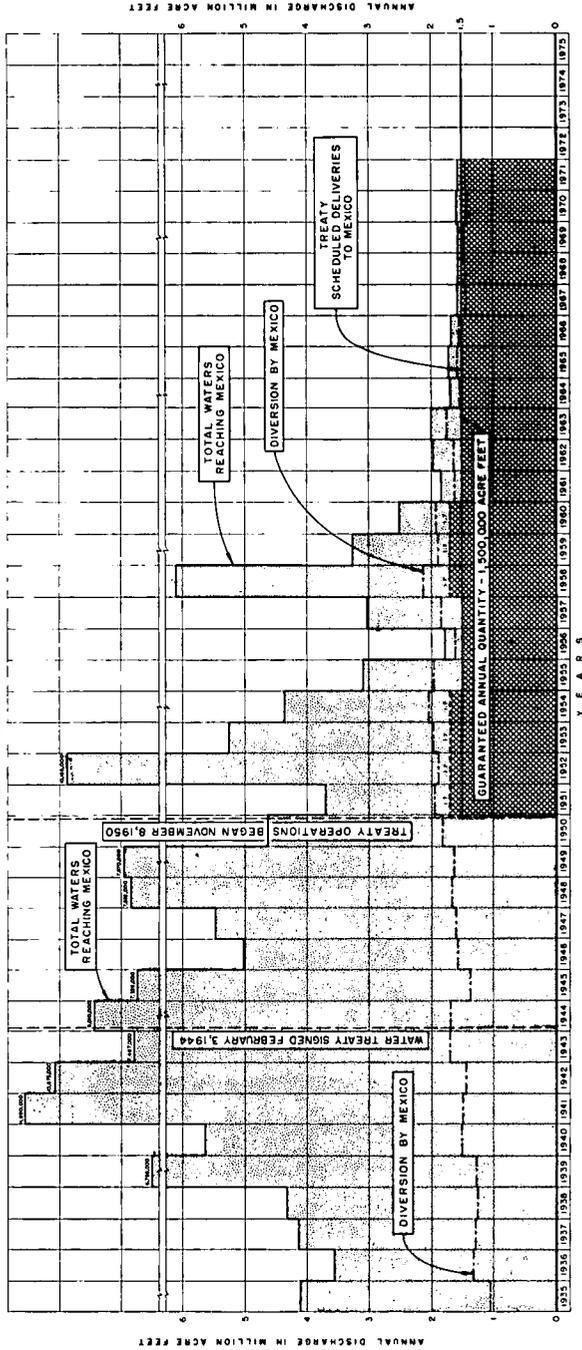
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\* United States Commissioner, International Boundary and Water Commission.

1. Treaty with Mexico on Water, Feb. 3, 1944 and Nov. 14, 1944, 59 Stat. 1219 (1945).

EXHIBIT 1

COLORADO RIVER WATERS REACHING MEXICO  
1944 TREATY SCHEDULED DELIVERIES AND DIVERSIONS BY MEXICO



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of the Colorado River above Imperial Dam, and 541,000 acre-feet, or thirty-five percent, from return flows to the river below the Dam. The return flows do not include the returns from the Imperial Dam desilting basins or from the gate leakage at the Dam.

#### THE INTERNATIONAL SALINITY PROBLEM

On November 15, 1970, the Five-Year Agreement with Mexico for solution of the salinity problem, referred to as Minute Number 218, expired. On November 16, 1970, agreement was reached between the two Governments to extend Minute Number 218 for one year, until November 15, 1971. On the following day, agreement was similarly reached to extend Minute Number 218<sup>2</sup> for another year with the understanding, as in the prior extension, that the extension may be superseded by a new agreement reached prior to its termination.

The Agreement on salinity, which has been in force for the past 6½ years, was intended as a practical basis for solution of the problem and consists principally of two operations by the United States in an effort to protect United States interests and reduce the salinity of waters delivered to Mexico. The first operation is the by-passing of a part—about twenty-five percent—of the Wellton-Mohawk drainage return waters to the river below Mexico's point of diversion at Morelos Dam, at times of minimum deliveries to Mexico, while maintaining at such times the total scheduled deliveries to Mexico using for this purpose waters as needed from above Imperial Dam. The second operation is referred to as the selective pumping of drainage wells in the Wellton-Mohawk Irrigation and Drainage District, to minimize the concentrations of salts in the deliveries to Mexico, by pumping the most saline wells when Wellton-Mohawk District drainage waters were by-passed below Mexico's point of diversion and pumping the least saline wells when deliveries to Mexico are low, and the more saline wells when deliveries to Mexico are high.

During the sixth year of the Agreement, the average salinity of Colorado River waters delivered to Mexico at the northerly boundary as a result of United States operations under the Agreement, averaged 1245 parts per million (ppm) according to

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2. Recommendation on the Colorado River Salinity Problem, Minute No. 218 of the Int'l Boundary and Water Comm'n (effective Nov. 16, 1965).

the analyses of the United States Geological Survey. This represents a reduction of thirty-three ppm under the average for the previous year, 1970. There was a reduction in 1971, the sixth year, in the average annual salinity of Wellton-Mohawk drainage return flows from 3790 ppm to 3680 ppm—a reduction of 110 ppm. The average annual salinity of waters from above Imperial Dam delivered to Mexico in 1971, was 848 ppm as compared with 851 ppm in 1970.

Also, during the sixth year, Mexico voluntarily by-passed additional drainage return waters of the Wellton-Mohawk Irrigation and Drainage District to the river below the Mexican diversion point at Morelos Dam, so that the salinity of waters diverted by Mexico at Morelos Dam averaged 1161 ppm, an increase of 22 ppm over the average for 1970 for such waters.

A summary of the results of operations under Minute No. 218 during the six-year period is graphically illustrated on the attached Chart (Exhibit 2). The average annual salinity of waters delivered to Mexico at the northerly boundary as a result of United States operations under the Agreement, reduced from 1375 ppm in 1965 to 1245 ppm in 1971 (about 130 ppm). There was a further reduction in the salinity of waters diverted by Mexico as a result of its voluntary by-passing of additional drainage return waters. During this six-year period, the average annual salinity of Colorado River waters at Imperial Dam decreased by about 65 ppm (from 917 to 852 ppm). There was a reduction of 112 ppm in the first two years, an increase of 49 ppm during the next three years, and practically no change in the last year. During the six-year period, the average annual salinity of the Wellton-Mohawk drainage return flows decreased from 4680 ppm to 3680 ppm, an average of 167 ppm per year.

The records support that progress was made during the Six-Year Agreement with Mexico towards a solution of the salinity problem. The cooperation of the Bureau of Reclamation and the Irrigation Districts in the Yuma area is gratefully acknowledged.

The problem is not yet solved. It continues as a most serious problem between the United States and Mexico, as is reflected by the recent meeting between the leaders of the two countries on June 15-16, 1972 in Washington, D.C. where they discussed the Colorado River salinity problem among other important subjects.

