LEGAL AND INSTITUTIONAL ASPECTS OF INTERNATIONAL WATER ALLOCATION ON THE RIO GRANDE

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I. INTRODUCTION AND BACKGROUND

The Rio Grande is a unique River. It not only flows through three states, Colorado, New Mexico, and Texas with contrasting cultures and economies, but after it reaches Texas, it flows for over 1,200 miles as the international boundary between the U.S. and Mexico until it flows into the Gulf of Mexico.

It is a River that has been divided by politics and the needs of the time into two segments, which I will refer to as the *Upper Reach* which is the segment from the headwaters of Rio Grande in the San Juan Range of the Rocky Mountains in southern Colorado through Central New Mexico to Fort Quitman, Texas, and the *Lower Reach* which continues downstream from Fort Quitman through miles of desert, mountains and semi-tropical areas to the Gulf of Mexico.

The water in the Upper Reach is all from tributary sources in the U.S., however, a great majority of the flows in the Lower Reach derive from Mexico. Flows in the Lower Reach historically were mixed waters composed of U.S. flows from the Upper Reach mixed with water from several Mexican tributaries and the Texas tributaries consisting of mainly the Pecos and Devil's River.

Reaching an agreement on the allocation of Rio Grande water in the Upper and Lower Reaches on an international basis between the U.S. and Mexico took many years. Water in the Rio Grande in the Upper Reach was allocated between the U.S. and Mexico by the *Convention Between the United States and Mexico on the Equitable Distribution of the Waters of the Rio Grande*, signed in Washington on May 21, 1906, ratified and finally proclaimed by President Theodore Roosevelt on January 16, 1907 - herein referred to as the "1906 Convention."

International allocation of the water in the Lower Reach was not agreed upon until 40 years later in the *Treaty Between the United States of America and Mexico on the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande*, signed at Washington on February 3, 1944, and later ratified by each country and proclaimed by the President of the U.S. on November 27, 1945 with an effective date of November 8, 1945, herein referred to as the "1944 Treaty."[1]

A review of the historical background leading into the 1906 Convention and 1944 Treaty assists in a better understanding of their significance, and the legal and institutional aspects of water allocation in the entire Rio Grande Basin.

[1] Treaty on Water Utilization, February 3, 1944, United States and Mexico, 59 Stat. 1219.

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II. EARLY BACKGROUND[2]

A. Treaties of 1848 and 1853

The first major agreement between the U.S. and Mexico was the Treaty of Guadalupe-Hidalgo, dated 1848, which established the boundary between the U.S. and Mexico. It made no reference to the regulation and allocation of the water resources of the Rio Grande.

The 1848 Treaty established the first joint Commission of the two countries consisting of a Commissioner and a Surveyor appointed by each Government, but only to proceed to run and mark the boundary in its whole course from San Diego, California, to the mouth of the Rio Grande in Texas. The Commission completed this work in the early 1850s.

The 1848 Treaty not only made no reference to regulation of waters, it specifically states that ". . . neither country shall, without the consent of the other, construct any work that may impede or interrupt in whole or in part the exercise of the navigation rights of each country." The principal concern of the two countries at that time was the use of the rivers for navigation of waters. This is understandable when it is remembered that in 1848 there was little development along the rivers. Allocation and regulation of waters was then not important.

The same prohibition against construction of any works which may impede or interrupt navigation on the Rio Grande was confirmed in the Treaty of 1853.

It is significant to note that this prohibition precluded storage dams or diversion dams for regulation and utilization of water, and in turn precluded the secure development of major irrigation and domestic developments for use of water. This condition existed until the 1906 Convention on the Upper reach, and the 1944 Water Treaty on the Lower reach.

B. 1889 Convention

The next important treaty between the U.S. and Mexico on the Rio Grande was the Convention of 1889. By this Convention, the U.S. and Mexico established the International Boundary Commission (IBC) to consist of the U.S. Section and the Mexico Section, each headed by a Commissioner appointed by each Government.

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[2] *See*, International Water Law Along the Mexican-American Border, Committee on Desert and Arid Zones Research, Southwestern and Rocky Mountain Division, A.A.C.S., the University of Texas at El Paso, April 29-30, 1968; article of J.F. Friedkin, U.S. Commissioner, International Boundary and Water Commission. "History and Functions of Joint Mexican-American Public Bodies Regulating and Allocating Water Resources Along the Rio Grande (Bravo)."

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Its sole purpose as enunciated in that Convention was to resolve differences or questions that may arise on the frontier between the U.S. and Mexico where the Rio Grande and the Colorado River form the boundary, whether such differences arise from questions or alterations or changes in the bed of the river or from construction work along the bed of the river. This Convention made no mention or reference to regulation or allocations of water resource.

C. Background of the First Water Supply Treaty - 1906 Treaty

The Rio Grande Basin encountered rapid development under the Spanish Colonial period. However, by far, the most rapid development and use of Rio Grande water for agricultural purposes occurred after the construction of railroads in the United States and the enactment of the homestead laws. These events had a large impact in the San Luis Valley of Southern Colorado from 1860 to 1890. During this period approximately 400,000 acres of land was made into irrigated farm land by individual efforts by settlers in the San Luis Valley of Southern Colorado. This irrigated agricultural development required the diversion and use of Rio Grande water and naturally had adverse impact on the flow of the Rio Grande at the El Paso/Juarez Valleys.

The first indication of water supply problems is recorded in an IBC official report in 1878 which contains the evidence of the difficulties over availability of waters in the El Paso Valley. The problem became increasingly serious for farmers on the U.S. and Mexican side of the El Paso-Juarez Valley in the 1880s.

The United States Congress passed a resolution on April 29, 1890, calling on the President of the United States to negotiate with Mexico to settle the international aspects of the Rio Grande. On September 10, 1894, the Mexican Consulate in El Paso complained to the Mexican Minister in Washington, D.C., that the Juarez region was becoming depopulated due to increases in uses of water upstream in the U.S. and the shortages in the Juarez Valley area.

On September 10, 1894, the Mexican Consulate in El Paso complained to the Mexican Minister in Washington, D.C., that the Juarez region was becoming depopulated due to increases in uses of water upstream in the U.S. and the shortages in the Juarez Valley area. In 1896, the Secretary of State instructed the U.S. Commissioner and IBC, to examine and report on equitable distribution of waters in cooperation with the Mexican Commissioner.

On May 6, 1896, Mexico and the United States agreed to a Joint Commission to investigate the water resources of the Upper Rio Grande and report on the feasible methods by which the use of water could be regulated so as to assure each country their legal and equitable rights and interests in the water. The Commissioners met on August 17, 1896, and agreed to study and consider three phases of the problem: (1) the amount of diversion by the U.S., (2) whether the flows of the river were appreciably decreased by the upstream diversion, and (3) determination of the best and most feasible means of regulating the rivers to the advantage of the citizens of both countries.

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In their Joint Commission Report, November 25, 1896, they found that upstream diversion had reduced the flow of the river in the El Paso-Juarez areas, and that a dam was needed for regulation. It was then proposed that a dam be constructed at a site just above El Paso and Juarez. It was further recommended that the two governments enter into a Treaty to provide for a final settlement regarding the distribution of the waters of the Rio Grande, and the United States prevent the construction of any large reservoirs on the Rio Grande in New Mexico, so as to restrain use of waters to which the citizens of the El Paso and Juarez Valleys had a right.

On December 5, 1896, the U. S. Secretary of Interior placed a suspension on all applications for rights of way for irrigation in New Mexico and Colorado which is referred to as the "Embargo of 1896." This prevented further irrigation development of any magnitude in Colorado and New Mexico. This Embargo, with some modifications, remained in effect until May 1925. This spawned objections by Colorado and New Mexico interests which later led to the negotiation of the Rio Grande Compact later discussed.

D. Legal Theories of Water Rights in International Relationships

During this period there existed conflicting legal concepts of water rights between states and nations. There were four theories being put forward with regard to the water rights of different riparian states and nations. These theories were: (1) the Territorial Sovereignty Theory; (2) the Natural Water Flow Theory; (3) the Equitable Apportionment Theory; and (4) the Community of Interest Theory. At that time, the United States appeared to adopt the Territorial Sovereignty Theory set forth by Attorney General Harmon in 1896. This legal concept was stated in connection with the activities between the United States and Mexico occurring at that time over the use of the waters of the Rio Grande. This theory holds that riparian states have exclusive or sovereign rights over the waters flowing through their territory, and may use this water in any way they desire irrespective of the effect of such uses on other riparian states or nations. This has been commonly referred to as the "Harmon Doctrine."

With this legal theory in mind, in 1904 the United States Secretary of State urged the Secretary of Interior to find a solution suggesting that the Reclamation Act of 1902 creating the reclamation service might provide an interstate/international solution. In November of 1904, the reclamation service presented a compromise at the Twelfth International Irrigation Congress held in El Paso, Texas, in which it presented plans for the Rio Grande Project which would store waters at Elephant Butte Reservoir to supply Southern New Mexico, West Texas, and the Juarez Valley.

Out of these studies by the IBC and the ensuing negotiations, the two Governments, agreed to the 1906 Convention which divided the waters of the Rio Grande above Fort Quitman, Texas, located at the lower end of the El Paso-Juarez Valley. The details of the 1906 Convention will be more fully discussed below.

The 1906 Convention was contrary to the Harmon Doctrine which would have held that Mexico had no rights to any of the Rio Grande flows that the United States desired to use. The United States ignored this doctrine, and followed the equitable apportionment approach in its agreement to the 1906

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Convention. The United States was willing to provide Mexico with water equivalent to what had been historically used before the upstream diversions had occurred consistent equitable apportionment of water for use by the respective citizens of Mexico and the United States.

III. 1906 CONVENTION

The 1906 Convention is a relatively short agreement of about three pages containing five substantive Articles. In Article I, the two countries agreed that after the completion of what later became Elephant Butte Dam *". . . the United States shall deliver to Mexico a total of 60,000 acre-feet of water annually, in the bed of the Rio Grande . . . above the City of Juarez, Mexico."*

The key provisions of Article II are: (1) that the delivery of this water *" . . . shall be assured by the United States . . ."* and delivered through the year in a monthly schedule of deliveries specifically set out in the Convention *" . . . in the same proportions as water is delivered . . ."* to lands in the United States in the vicinity of El Paso, Texas; and (2) that in case *"of extraordinary drought or serious accident to the . . . (reservoir facilities) . . . the amount delivered . . . (to Mexico) . . . shall be diminished in the same proportions as the water delivered to lands under said irrigation system in the United States."*

In Article III, the U.S. agreed to assume all costs of storing and delivery of the water to Mexico and *". . . assumes no obligation beyond the delivering of the water in the bed of the river above the head of the Mexican Canal."*

Article IV contains provisions clarifying that the U.S. agreement to deliver water was not to be deemed to be any *". . . recognition by the United States of any claim on the part of Mexico to the said waters . . ."* and that Mexico waived *". . . any and all claims to the Rio Grande for any purpose whatever between the . . . (Mexican delivery point) . . .and Fort Quitman, Texas . . . ."*

Mexico further waived any and all existing and future claims for damages of owners of land in Mexico caused by the diversion and use of Rio Grande water by U.S. users. Mexico had made claims for $35,000,000 during the controversy leading up to this Agreement.[3]

In Article V it is made clear that the U.S. is not acknowledging any legal basis for any claim by Mexico to Rio Grande waters, or establishing any precedent supporting such a claim, and that *". . . this Treaty extends only to the portion of the Rio Grande which forms the international boundary . . . to Fort Quitman, Texas. . ."* In other words, that part downstream from El Paso to Fort Quitman, Texas, is covered by the 1906 Convention. Mexico waived claim to any water in this segment in Texas above Fort Quitman.

[3] The background of the detailed facts and development of international water law principles applicable to streams shared by the two countries is beyond the scope of this paper. See Hundley, *Dividing the Waters*: *A Century of Controversy Between the United States and Mexico*, Univ. of California Press (1966). Pages 17-40.

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In summary, the key agreements in the 1906 Convention with respect to Rio Grande water allocation:

- Mexico is assured the delivery of 60,000 acre feet of Rio Grande water per annum except in the event of extraordinary drought or facility accident in which case, the U.S. and Mexico will prorate available water.

- Mexico waived claims to water in the Rio Grande for any purpose from its delivery point downstream to Fort Quitman, Texas.

IV. BACKGROUND OF 1944 TREATY

A. International Water Commission, 1924-1930

By this time, in the early 1900s, both countries recognized that equitable division of waters of the Rio Grande below Fort Quitman, Texas, would be necessary. Some unilateral studies were made in each country, but without progress.

By the Act of the Congress in 1924, the President of the U.S. was authorized to designate three special Commissioners to cooperate with representatives of Mexico in a study regarding equitable use of the waters of the Rio Grande below Fort Quitman, Texas, with a view to their proper utilization for irrigation and other uses. The scope of their studies was extended to include the Colorado River and Tijuana River, with the concurrence of Mexico, by the Act of the Congress of March 3, 1927.

This was the first joint commission established by the two countries to study the question of allocation and regulation of the waters of the Rio Grande. The IBC so formed made various studies and held several sessions beginning in February, 1928. However, the negotiators were unable to reach agreement. The American Section of the IBC made its report to the Congress of the United States on March 22, 1930.

The U.S. Section of the IBC, with its powers, duties and functions, was transferred to the American Section of the IBC, U.S., and Mexico. Also in 1932, the Mexican Section of the IBC assumed the works of its Section of the IBC.

By the 1930s increased irrigation developments in both countries along the Colorado River and along the Rio Grande downstream from the El Paso-Juarez Valley (and Fort Quitman, Texas), pointed to a need for allocation and regulation of the Colorado River and Rio Grande waters.

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B. Study and Investigation Looking to Allocation and Regulation of Waters of the Rio Grande below Fort Quitman

During this period from 1930 to 1943, irrigation development continued on both sides of the Rio Grande with corresponding increased urgency of allocation and regulation of the waters of the Rio Grande below Fort Quitman, Texas. There were also serious floods on the Rio Grande in 1920's and the 1930's which emphasized the need for flood control. The natural unregulated flows in the Rio Grande below Fort Quitman occurred as either (1) low flows often too low to serve irrigation needs of developed land at that time, or (2) high flood flows which caused heavy damages to the urban areas and irrigated lands and which for the most part wasted to the Gulf of Mexico. The need for storage dams for regulation was abundantly apparent, however, the economic depression in the early 1930s disrupted and prevented more aggressive action.

With the increased problem of droughts and floods, surveys, collection of hydrographic data, investigations and studies were stepped up by the IBC in the late 1930s and early 1940s with a view that these data would serve as a basis for concluding a Treaty for allocation and regulation of the waters of the Rio Grande below Fort Quitman, Texas. This was achieved in the Treaty of 1944.

V. 1944 TREATY

The 1944 Treaty is a much longer and comprehensive agreement relating to the allocation of the waters of the Rio Grande from Fort Quitman, Texas to the Gulf of Mexico as well as the Colorado and Tijuana Rivers in the West. The Treaty also authorized the joint construction and operation of international storage dams on the Rio Grande, which resulted in the construction of Amistad and Falcon Dams. The 1944 Treaty also changed the name of the International Boundary Commission (created by the *Convention of 1889*) to the International Boundary and Water Commission (hereafter referred to as IBWC) and among other responsibilities, gave it the authority to apply and enforce the Treaty provisions.

In the provisions pertaining to the Rio Grande, Article 4 allocated the water in the Rio Grande between the two countries.

A. Mexico Allocation

Article 4A allocates to Mexico:

(a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the San Juan and Alamo Rivers, including the return flow from the land irrigated from the latter two rivers.

(b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major international storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries.

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(c) Two-thirds of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, subject to the provisions of subparagraph (c) of paragraph B of this Article.

(d) One-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article, between Fort Quitman, and the lowest major international storage dam.

B. United States Allocation

Article 4B allocates to the United States:

(a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the Pecos and Devils Rivers, Goodenough Spring, and Alamito, Terlingua, San Felipe and Pinto Creeks.

(b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major international storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries.

(c) One-third of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, provided that this third shall not be less, as an average amount in cycles of five consecutive years, than 350,000 acre-feet (431,721,000 cubic metes) annually. The United States shall not acquire any right by the use of the waters of the tributaries named in this subparagraph, in excess of the said 350,000 acre-feet (431,721,000 cubic meters) annually, except the right to use one-third of the flow reaching the Rio Grande (Rio Bravo) from said tributaries, although such one-third may be in excess of that amount.

(d) One-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article, between Fort Quitman and the lowest major international storage dam.

C. Mexico Guarantee

As the Untied States gave assurances to Mexico to receive 60,000 acre feet annually in the 1906 Convention in the Upper Reach, Mexico agreed in Article 4B(c) of the 1944 Treaty to provide an annual minimum of 350,000 acre feet, averaged over five year cycles, from the named Mexican tributaries in the Lower Reach. This was obviously in recognition of the fact that historically these Mexican tributaries contributed a substantial amount of the normal and flood flows to the Rio Grande

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for downstream users in both countries. A similar guarantee by the U.S. of 1,500,000 acre feet annually was provided for Mexico of U.S. derived waters in the Colorado River.[4]

In contrast to the drought provisions of the 1906 Convention and the Treaty provisions dealing with the Colorado River, where relative proration is provided, the 1944 Treaty adopted a different approach by providing that in the event of extraordinary drought or serious accident to the Mexican reservoir systems on the named Mexican tributaries, the two countries agreed to a unique and different remedy for the repayment of water. As noted above, the 1906 Convention provided that if the United States could not deliver the guaranteed 60,000 acre feet annually to Mexico at Juarez in the Upper Reach, the countries prorated available water supply. With respect to the Lower Reach, it was agreed as follows in the Treaty:

> *In the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries, making it difficult for Mexico to make available the run-off of 350,000 acre feet (431,721,000 cubic meters) annually, allotted in subparagraph (c) of paragraph B of this Article to the United States as the minimum contribution from the aforesaid Mexican tributaries,* ***any deficiencies existing at the end of the aforesaid five-year cycle shall be made up in the following five-year cycle with water from the said measured tributaries.*** (emphases added)

As noted above, the 1944 Treaty in Article 10 pertaining to the Colorado River provides for a remedy of proration in drought conditions with respect to the Colorado as did the 1906 Convention with respect to the Rio Grande.[5] However, with respect to the Lower Reach of the Rio Grande the specific repayment schedule was adopted. This important provision dealing with drought conditions in the Lower Reach was specifically noted by President Roosevelt in his message to the U.S. Senate on the 1944 Treaty which included a message from Secretary of State Cordell Hull, concluding:

> *. . . it should be noted that the Treaty provides that, in case of drought or serious accident to the hydraulic works in the United States, deliveries of Colorado River water to Mexico will be curtailed in the same proportion as uses in the United States are reduced, and that, if for similar reasons Mexico cannot provide the minimum 350,000 acre-feet from its measured tributaries of the Rio Grande, the deficiency is to be made up from these tributaries during the following 5-year cycle.*[6]

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[4] Article 10(a) of the Treaty provides that from the water, from any and all sources in the Colorado River, that Mexico be allotted "A guaranteed annual quantity of 1,500,00 acre-feet (1,850,234,00 cubic meters) to be delivered in accordance with the provisions of Article 15 of this Treaty."

[5] Article 10(b) provides that "In the event of extraordinary drought or serious accident to the irrigation system in the United States, thereby making it difficult for the United States to deliver the guaranteed quantity of 1,500,000 acre-feet (1,850,234,000 cubic meters) a year, the water allotted to Mexico under subparagraph (a) of this Article will be reduced in the same proportion as consumptive uses in the United States are reduced."

[6] "Message from the President of the United States" transmitting the Treaty, February 15, 1944, U.S. Senate, 78th Congress, 2d Session, Executive A.

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If a five-year cycle ends with a Mexican water deficit, these provisions provide the repayment schedule to be followed by Mexico. Repayment of this deficit is to occur during the following five-year cycle.

With respect to water accounting within a five-year cycle, Article 4 provides:

When the conservation capacities assigned to the United States in at least two of the major international reservoirs including the highest major reservoir, are filled with waters belonging to the United States, a cycle of five years shall be considered paid, whereupon a new five-year cycle shall commence.

Article 5 of the Treaty relating to the Rio Grande also provides for the construction of three possible dams and reservoirs, however, subsequently only two - Amistad Dam, upstream from Del Rio, Texas, and Falcon Dam, downstream of Laredo, Texas, and reservoirs were found feasible and exist today.

In summary, the key allocation provisions of the 1944 Treaty are:

- The allocation of Rio Grande waters in the Lower Reach to each of the countries is specifically defined by an accounting of water reaching the Rio Grande from each of the contributing tributaries in the Rio Grande Basin in both the U.S. and Mexico.

- Mexico, however, is required to provide an annual minimum amount of 350,000 acre feet averaged over a five-year period from the named Mexican tributaries.

- In the event of extraordinary drought or hydraulic accident making it difficult for Mexico to provide the 350,000 minimum annual average amount from run-off in the named Mexican tributaries, the deficit is to be made up during the following five-year cycle.

- For accounting purposes, with respect to the average minimum annual amount of 350,000 acre feet within a five-year cycle, annual deficits within that five-year cycle are considered paid should U.S. conservation storage fill at which time a new five-year cycle accounting begins.

D. 1944 Treaty Enforcement

The U.S. and Mexican Sections of the IBWC are given the responsibility of applying the water allocation provisions of the 1944 Treaty.

In Article 2 it is provided:

The application of the present Treaty, the regulation and exercise of the rights and obligations which the two Governments assume thereunder, and the settlement of all disputes to which its observance and execution may give rise are

hereby entrusted to the International Boundary and Water Commission, which shall function in conformity with the powers and limitations set forth in this Treaty.

It also provided that:

Wherever there are provisions in this Treaty for joint action or joint agreement by the Governments, or for the furnishing of reports, studies or plans to the two Governments, or similar provisions, it shall be understood that the particular matter in question shall be handled by or through the Department of State of the United States and the Ministry of Foreign Relations of Mexico.

The Treaty recognized the need for the later determination of matters dealing with the implementation of the various provisions of the Treaty. For example, in Article 5, which authorizes the construction of three international dams and reservoirs, the Treaty expressly provided that one or more of the stipulated dams may be omitted, and *" . . . others than those enumerated may be built, in either case as may be determined by the Commission, subject to the approval of the two Governments."* Many of the details involved in the implementation of the Treaty were left to the recommendation and approval by the two Governments through the IBWC for later determination and as noted above, that the approval *"by the two Governments"* shall be handled by or through the Department of State of the United States and the Ministry of Foreign Relations of Mexico.

Article 8 of the Treaty established general rules pertaining to the operation of the reservoirs, but provided that they could be modified or amended *". . . by agreement of the Commission, with the approval of the two Governments . . . ."*

Article 24 of the Treaty, assigning the Commission its powers and duties, provides in paragraph (c):

(c) In general to exercise and discharge the specific powers and duties entrusted to the Commission by this and other treaties and agreements in force between the two countries, and to carry into execution and prevent the violation of the provisions of those treaties and agreements. The authorities of each country shall aid and support the exercise and discharge of these powers and duties, and ***each Commissioner shall invoke when necessary the jurisdiction of the courts or other appropriate agencies of his country to aid in the execution and enforcement of these powers and duties.*** (Emphasis added)

It is clear from the above provisions that each IBWC Commissioner (U.S. and Mexico) is given the legal authority by their respective governments to enforce the Treaty provisions and other treaties and agreements in force between the two countries through the courts and agencies in their respective countries.

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The Commission is expressly given the power and duty in Article 24(d):

(d) to settle all differences that may arise between the two Governments with respect to the interpretation or application of this Treaty, subject to the approval of the two Governments.

In cases in which the Commissioners do not reach an agreement, Article 24(d) provides:

They shall so inform their respective governments reporting their respective opinions and the grounds therefor and the points upon which they differ, for discussion through diplomatic channels and for application where proper of the general or special agreements which the two Governments have concluded for the settlement of controversies.

Therefore, the IBWC Commissioners are given the authority to resolve all disputes under the Treaty and to enforce the Treaty provisions in their respective countries as well as to put in place the Treaty implementation steps subject to the approval of the two Governments acting through the U.S. State Department and the Ministry of Foreign Relations of Mexico.

E. Implementation Agreements - Minutes

The Treaty provides that the means by which the decision and approval of the two countries are evidenced shall be recorded in the form of "Minutes" signed by each Commissioner and attested by the Secretaries with copies forwarded to each Government within three days after being signed. If the nature of the Minute is one which does not require the specific approval of both Governments then if either of the Governments fails to communicate to the Commission its approval or disapproval of the decision within thirty (30) days from the date of the Minute, then the Minute in question and the decision which it contains shall be considered to be approved by that Government.

Article 25 further provides that if either Government disagrees with the decision embedded within a Minute, then "if" an agreement is reached regarding the matter between the two Governments, the agreement shall be communicated to the Commissioners, who shall take actions as necessary to carry out such agreement.

Minute No. 234

Of significant importance to the Mexican guarantee of water in the Lower Reach, is Minute No. 234. In 1969 following the closure of Amistad Reservoir, Minute No. 234 was approved pertaining to compliance with the provisions of Article 4 relating to the waters of the Rio Grande allocated to the United States from the Conchos, San Diego, San Rodrigo, Escondido, and Salado Rivers, and the Las Vacas Arroyo.

In this Minute, the Commission agreed to commence the first 5-year cycle when Falcon Dam was placed into operation in October 1953. The Rio Grande annual water volumes during each 5-year

cycle after 1953 through 1968 were agreed upon. In this Minute, it was agreed that there was a 476,461 acre feet deficiency during the 5-year cycle of October 1, 1953 to September 30, 1958, when the drought of the 1950's was experienced. However, this deficiency was made up during the October 1, 1958 through September 30, 1963 five-year cycle. The 1963-1968 cycle resulted in 32,270 acre feet more than the average of 350,000 acre feet per year requirement. Accordingly, the Commission agreed that the provisions of Article 4 in this respect was considered satisfied to September 30, 1968.

The Minute further addressed how repayment of a deficiency in 5-year cycle water would occur in the future. In paragraph 2, it is provided:

> *That in the event of a deficiency in a cycle of five consecutive years in the minimum amount of water allotted to the United States from the said tributaries, the deficiency shall be made up in the following five-year cycle, together with any quantity of water which is needed to avoid a deficiency in the aforesaid following cycle, by one or a combination of the following means:*
>
> *a. With water of that portion of the said tributary contributions to the Rio Grande allotted to the United States in excess of the minimum quantity guaranteed by the Water Treaty.*
>
> b. With water of that portion of the said tributary contributions to the Rio Grande allotted to Mexico, when Mexico gives advance notice to the United States and the United States is able to conserve such water; and
>
> c. By transfer of Mexican waters in storage in the major international reservoirs, as determined by the Commission, provided that at the time of the transfer, United States storage capacity is available to conserve them.

The Minute tracts the language in the Treaty in requiring that any deficiency “shall” be made up in the following 5-year cycle. The Minute further assures compliance with the minimum 350,000 acre foot requirement in the following 5-year cycle by requiring that the deficiency shall be made up in the manner agreed upon “. . . together with any quantity of water which is needed to avoid a deficiency in the aforesaid following cycle . . .” In other words, repayment waters cannot create a deficit within any year of the cycle. Deficits can only occur during a year within a 5-year cycle in the event of extraordinary drought or hydraulic accident when it is difficult for Mexico to make the annual 350,000 acre-feet guarantee available from run-off in the watersheds of the named Mexican tributaries or because of serious accident to the Mexican reservoir facilities.

Minute No. 234 enforces the provision in the Treaty requiring that a minimum of 350,000 acre feet average annually shall be delivered to the Rio Grande by Mexico. It requires that any repayment of a prior 5-year cycle deficiency shall not adversely impact the minimum requirement in the following 5-year cycle.

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The three different methods of repayment are: (a) excess waters over the minimum 350,000 acre feet average annual amount; (b) water from the named tributaries out of Mexico's two-thirds share; and/or (c) by transfer of Mexican waters stored in the Rio Grande reservoirs.

Since the Treaty did not require that the Minute be approved by both Governments, pursuant to Article 24 of the Treaty, each of the two Governments was given notice and both Governments agreed to the Minute.

Minute No. 293

The provisions of the 1944 Treaty regime worked well for over 50 years, including the drought years in 1950s, but became stressed in the 1990s due to water storages in the Lower Rio Grande Basin.

Due to low flows in the Rio Grande upstream of Amistad Reservoir beginning in 1992 coupled with customary use in Mexico an emergency situation occurred in 1995 when the Mexican storage levels in the reservoirs reached a very low level.

This necessitated an emergency agreement between the two countries to assure that there would be no shortages in domestic uses in Mexico. This resulted in Minute 293, entitled "Emergency Cooperative Measures to Supply Municipal Needs of Mexican Communities Located Along the Rio Grande Downstream of Amistad Dam," signed October 4, 1995, in Mexico City and entered into force November 8, 1995, in which the United States agreed to loan waters to Mexico under certain circumstances. The pertinent provisions of this Minute are as follows:

Period Covered	-	18 months from 11/18/95
Water Loaned	-	The water loaned in based upon water from the Rio Conchos in Mexico entering Rio Grande near Presidio
Amount	-	Up to balance of 81,071 acre feet (af)
Conditions	-	U. S. must have at least 600,000 af in combined storage in Falcon and Amistad Reservoirs at time loan is made
	-	Loan is triggered when Mexico's combined storage is less than 121,606 af and Mexican inflows into Amistad are less than 353 cfs due to continuous Mexican releases of 353 cfs from Amistad and 247 cfs from Falcon for use by Mexican downstream cities
Repayment	-	When Mexico's storage is greater than 162,142 af in Amistad and 40,536 af in Falcon, Mexico's inflows exceeding 353 cfs into Amistad will be credited to U. S. to repay balance of loan
Enforcement	-	IBWC (U.S. and Mexico) will reinforce activities governing

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		taking of water from Rio Grande belonging to each country by obtaining pump locations, capacities and updating joint operations of Anzalduas Dam
	-	U. S. will rely on Texas and Mexico will rely on Comision Nacional del Agua (CNA) to control pumping from Rio Grande
Other	-	U. S. and Mexico will continue activities for better water accounting to ascertain water available ". . . at a given moment."
	-	U. S. and Mexico will continue practice of exchanging information to develop conservation and planning strategies

Minute Number 293 was also a recognition by all parties on both sides of the Rio Grande below Fort Quitman, Texas, that a period of short water supply was being encountered in the region. Indeed, by the end of the five year cycle, ending October 2, 1997, there was a deficit of 1,023,849 acre feet in Mexico deliveries from the names tributaries as defined in the 1944 Treaty.

By September 30, 2001, additional deficits were encountered. At the close of the fourth year of the next five year accounting cycle, that is, from October 1, 1997 - September 30, 2001, the prior five year cycle deficit and four years into the next cycle, Mexico's obligation totaled 1,303,818 acre feet.

In an April 2002 Report of the U.S. Section IBWC,[7] the existing conditions summarized as follows:

1. The deficit in quantities of inflows allotted to the United States from the Treaty Tributaries for the five-year accounting cycle ending October 2, 1997 was 1,023,849 acre-feet and at the close, on September 30, 2001, of the fourth year of the current accounting cycle, Mexico's total inflow deficit was 1,303,818 acre-feet.
2. During the previous five-year accounting cycle and the first four years of the current five-year accounting cycle (through September 30, 2001), the total volume of inflows to the five largest reservoirs on the Treaty Tributaries was approximately 11.7 million acre-feet.
   During this period, Mexico released approximately 10.2 million acre-feet from these reservoirs primarily for use in irrigation upstream of the Rio Grande and in part for evacuation of water from flood storage in Luis L. Leon Reservoir on the Rio Conchos. Some stored water also was released to the Rio Grande. During this nine-year period, Mexico provided approximately 1,242,200 acre-feet of inflows from the Treaty Tributaries.

[7] "Update of the Hydrologic, Climatologic, Storage, and Run-off Data for the United States and the Mexican portion of the Rio Grande Basin: October 19, 1992 - September 2001." Prepared by United States Section International Boundary and Water Commission with technical assistance from R.J. Brandes Company, Austin, Texas, dated April 2002. The "named tributaries" being those identified in 1844 Treaty, mainly the Rio Conchos.

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3. Examination of rainfall data in the Treaty Tributaries indicate that the annual rainfall amounts and patterns that occurred between 1994 and 1997 were similar to those that occurred in 1982-1985, but the quantities in inflows from the Treaty Tributaries to the Rio Grande were considerably different in the two periods. More information is needed concerning water demands in Mexico and Mexico's reservoir operations during those two periods.
4. Since 1992, Mexico's total usage of surface water for irrigation from the reservoirs in the Treaty Tributaries has been significantly reduced in some years with the exception of the irrigation district below Luis L. Leon Reservoir which has experienced an increase relative to conditions prior to 1992. More information is needed on irrigation application rates and system losses.

Minute No. 307

During the 1944 Treaty repayment period, representatives of both countries met to resolve the "crisis" developed by the Mexico deficit. One of the results of these meetings, at the highest levels of their governments, produced an agreement in Minute No. 307.[8] Minute No. 307 was agreed to by high-level officials at a meeting of the two Governments at the Department of State in Washington on March 16, 2001. The IBWC Commissioners made note of discussions by President George W. Bush and Mexican Presidente Vicente Fox Quesada held in Guanajuato on February 16, 2001, when a request was made of Mexico to provide to the U.S. a volume of 600,000 acre feet of water through July 31, 2001.

It was agreed that Mexico would attempt to provide this amount of water by contributing one-half of its portion of the unmeasured tributary flows in the Rio Grande, from flows from the named Mexican tributaries and releases from Mexican Interior reservoirs. If this amount of water could not be provided by July 31, 2001, a contingency plan was agreed upon so as to extend this period through September 30, 2001. This plan would consider an extension of the assignment of Mexico's share of water from unmeasured tributaries through September, 2001, and further releases from designated Mexican Interior reservoirs would be considered.

It was also agreed that the two Countries would continue further discussions on the deficit reduction so as to arrive at a plan on additional measures that will be taken before the end of 2001. Significantly, it was agreed by the two Governments to work jointly to identify measures of cooperation on drought management and sustainable management of the Rio Grande Basin so as to prevent a reoccurrence of this deficit.

[8] Minute 307 is attached as Appendix A.

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After a limited amount of water was transferred by Mexico contributing its 50 percent share of unmeasured tributary flows pursuant to Minute 307, several lawsuits were filed by water users in the State of Tamaulipas against the Mexican Section of the IBWC (CILA) and its federal water agency (CNA) enjoining them from making these transfers. The contention was made that such transfers violated the provision of the Treaty that Mexico's deficits are to be repaid from waters from the Conchos and the named measured tributaries in the 1944 Treaty, and not from unmeasured tributaries. However, for water accounting purposes, over the 5-year cycle and annual period, Mexico's two-thirds share of the water from the named tributaries is subject to transfer to make up the deficit, and use of the 50 percent water contribution is only a measure of an amount of water that ultimately can be accounted for as a portion of Mexico's two-thirds share from the named tributaries. All of these lawsuits were dismissed by Mexican courts.

Mexico failed in its commitments to provide the 600,000 acre feet contemplated by Minute No. 307. Thereafter, Mexico did not produce a plan by December 31, 2001, to repay the 1,024,000 acre feet deficit by October 2002. The U.S. Section of the IBWC presented technical proposals, but Mexico did not respond.

Minute 308

In view of these events, it was not until June 28, 2002, that the two Governments officially responded to the ongoing conditions under the 1944 Treaty dealing with the Mexico water deficit under 4B(c) of the Treaty. This was done by Minute 308.[9]

This Minute resulted from a meeting of the IBWC making note of conversations on these matters between United States President, George W. Bush, and Mexican President, Vicente Fox Quesada, in Monterrey, Nuevo Leon, on March 20, 2002, and their subsequent conversations in Washington, D.C., on June 6, 2002.

The Minute outlined various conditions of flows to that date ending at the accounting period October 26, 2002, and forecast additional flows in the Basin in the future. It also indicated financing by both governments for improvements in the irrigated areas in the Basin and further collaboration regarding the collection and sharing of data between the two Governments. The Minute contained certain commitments regarding the accounting of water between the parties to reduce the ongoing Mexico deficit, and importantly indicated actions to be taken by both Governments in establishing Advisory Councils. Both Countries agreed to establish a forum for the exchange of information, and to encourage information flow to the IBWC from governmental and non-governmental organizations in their respective Countries.

Since the text of the Minute is attached, no further detail is deemed necessary in this paper at this time, except to note that both Countries agreed to convene a " . . . binational Summit meeting of experts and water users from each Country for the purpose of providing the proper authorities and stakeholders information concerning sustainable management of the Rio Grande Basin. Taking the

[9] Minute 308 is attached as Appendix B.

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recommendations of the Summit into account, the two Governments will consider a Bi-National sustainable management plan for the Basin." Minute 308, paragraph G. 2.

This is the basis for this Summit meeting over three years later. Another important provision of Minute 308 was that the two Governments recognized that the additional funding for projects in the Basin would conserve waters in Mexico in that those conserved waters would be dedicated to " . . . ensure their conveyance to the Rio Grande." (Recommendation No. 2, page 4, of Minute 308). This is a significant agreement between the two Countries meaning that whatever water is conserved in the projects on the Rio Conchos and the other named tributaries in the 1944 Treaty will be dedicated to " . . . ensure their conveyance to the Rio Grande."

Minute 309

Minute 309 principally addresses the conservation projects being funded by the North American Development Bank (NADBank) and the estimated volumes of water saved by the projects undertaken by the Government of Mexico so as to modernize and improve the technology of irrigation districts and units in the Rio Grande Basin in Mexico so as to make them sustainable and taking the necessary measures to ensure conveyance of saved waters to the Rio Grande.[10]

At this point in time, it is only noted that this is an important Minute in that it reports on the activities directed toward conservation projects in Mexico so as to ensure deliveries pursuant to the 1944 Treaty under Article 4B(c) and Minute No. 234.

VI. PRINCIPLES OF MEXICAN WATER DEFICIT ACCOUNTING IMPOSED BY THE TREATY

A. "Extraordinary Drought"

As previously noted, annual deficits caused by extraordinary drought or serious hydraulic accident are recognized by the 1944 Treaty, and shall be made up in the following five-year cycle. If an annual deficit is not caused by extraordinary drought or hydraulic accident, it is not a *qualified deficit* and must be made up by Mexico within that five-year cycle in which it occurs. It is not deferred for repayment in the following five-year cycle.

The term "extraordinary drought," although not expressly defined in the Treaty, as other terms were in Article 1, is implicitly defined in the second subparagraph of Article 4 B(d) as an event which makes it difficult for Mexico ". . . to make available the run-off of 350,000 acre feet (431,721,000 cubic meters) annually." In other words, it is a drought condition when there is less than 1,050,000 acre feet (350,000 acre feet U.S. share and 700,000 acre-feet Mexican share) of run-off waters in the watersheds of the named Mexican tributaries to allow Mexico to deliver to the Rio Grande the required amount of

[10]Minute 309 is attached as Appendix C.

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1,050,000 acre feet to the Rio Grande. This amount is measured at the Rio Grande, without regard to conveyance losses in Mexico. In other words, Mexico must assume conveyance losses in Mexico, and deliver to the Rio Grande this required amount.

If there is sufficient run-off water in the watershed of the Mexican tributaries, then an extraordinary drought event does not exist.

The Treaty contemplates that the guaranteed 350,000 acre-feet annual amounts is a *minimum* and that normally more than this amount would flow into the Rio Grande. In order to clarify the 350,000 acre-feet guarantee, the Treaty states in Article 4 B.(c) that the U.S. does not acquire a continuing right to these excess flows but has the right to use them once they reach the Rio Grande.

The Treaty allocated to the U.S. one-third of the run-off in the watersheds of the named Mexican tributaries, and two-thirds of the run-off to downstream Mexican users.

Treaty water accounting in this respect takes place on an annual basis,[11] and only annual deficits created by extraordinary drought or hydraulic accident are qualified and entitled to the remedy of repayment during the following five-year cycle established by the Treaty for repayment of deficits.

Since the 1944 Treaty, there has been considerable reservoir development and improved reservoir management techniques in Mexico on the named Mexican tributaries associated with the Treaty guaranteed water. These developments have enhanced Mexico's ability to capture and conserve the run-off water from the watershed of the tributaries.

Mexico has the sovereign right to pursue better reservoir management and development. Such development was made in view of its responsibility under the 1944 Treaty, which requires the required deliveries to the Rio Grande. This development has the positive effect on its ability to perform its Treaty obligations to provide this run-off water so as to comply with its obligations set forth in Article 4 B.(c) and (d). Article 4 of the Treaty assures the U.S. that it will receive a minimum of 350,000 acre feet annually constituting its share of the **run-off** of the named Mexican tributaries unimpeded by reservoir systems. It is subject to Mexico's historical normal use of the run-off water before it is stored, however, stored water is subject to the minimum required by the 1944 Treaty to flow to the Rio Grande for U.S. and other Mexico users on the Rio Grande downstream. In any event, an average annual minimum of 350,000 acre-feet must reach the Rio Grande to assure downstream U.S. users, and to provide Mexican users on the Rio Grande an average minimum of 700,000 acre feet (Mexico's share) under the 1944 Treaty.

[11] See, *e.g.* United States of America Department of State, Water Bulletin Number 63 entitled *Flow of the Rio Grande and Related Data from Elephant Butte Dam, New Mexico to the Gulf of Mexico, 1993,* which is one of the annual reports released and agreed to by both countries each year.

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B. Measurement of Water at Fort Quitman

Pursuant to the 1906 Convention, among other things, Mexico is entitled to 60,000 acre feet of water annually from Elephant Butte Reservoir, and in exchange for this water, Mexico waived any interest or claim to waters downstream from its delivery point to Fort Quitman, Texas. This guarantee is subject to drought conditions when both countries share in shortages on a pro-rata basis.

The 1944 Treaty between the U.S. and Mexico, among other things noted above, divided the flows in the Rio Grande **from** Fort Quitman downstream to the Gulf between the U.S. and Mexico.

Mexico waived its claims to waters in the Rio Grande **above** Fort Quitman in the 1906 Convention, and Rio Grande waters constituting inflows from Fort Quitman downstream to the Gulf of Mexico are governed by the 1944 Treaty. By virtue of the interaction between the 1906 Convention and the 1944 Treaty, waters in the Rio Grande flowing at Fort Quitman are U.S. waters.

Historical precedent shows this interaction between the 1906 Convention and the 1944 Treaty. During the negotiations for the 1944 Treaty, Mexico expressed its desire to increase the 60,000 acre feet delivery guarantee from Elephant Butte Reservoir provided for in the 1906 Convention by demanding more Upper Rio Grande water than the 60,000 acre feet, and also insisted ". . . on one-half of the run-off entering the stream between El Paso and Fort Quitman." The U.S. refused to consider this request with the contention that the earlier 1906 Convention had settled the question and accordingly, Mexico's requested change in ownership of water in the Rio Grande downstream from Mexico's 1906 Convention delivery point and upstream of Fort Quitman was not included in the 1944 Treaty. [12]

Water in the Rio Grande between El Paso and Fort Quitman, including return flows from each country, is 100 percent owned by the U.S. Accounting of water ownership consistent with these long-standing agreements between the U.S. and Mexico is entrusted to the IBWC because, as noted above, Article 24 of the 1944 Treaty granted the IBWC the power and duty to enforce the 1944 Treaty and other treaties and agreements, including the 1906 Convention, between the two countries.

It is clear under the 1906 Convention that Mexico waived all flows of the River to Fort Quitman, Texas. This was in exchange of the United States's agreement to commit 60,000 acre feet under the circumstances outlined in the 1906 Convention.

Therefore, in water accounting all flows at Fort Quitman should be 100 percent U. S. waters.

C. Mexico Conserved Waters are Dedicated to U. S. Deliveries to the Rio Grande

Under the terms of Minutes 308 and 309 and the various funding mechanisms provided by the NADBank, all waters conserved by these projects in Mexico are dedicated to the obligations of Mexico

[12] See, Hundley, *supra* footnote 3 at pg. 131.

in fulfilling its obligations under Article 4B(c) of the 1944 Treaty to provide an annual minimum of 350,000 acre feet, averaged over five year cycles, from the named Mexico tributaries. For the future of the Lower Rio Grande, below Fort Quitman, Texas, this will be significant as is shown by future water planning in Texas, which is the only State in the United States which depends on this water supply.

VII. TEXAS REGIONAL WATER PLANNING

After a drought in 1996 in Texas, the 75th Texas Legislature, in 1997, enacted Senate Bill 1 (SB 1). This legislation provided a major overhaul of many longstanding Texas water laws and policies. It was in part a response to the statewide drought of 1996 and increasing public awareness of the state's rapidly increasing water demands. SB 1 addressed a wide range of issues and concerns including state, regional, and local planning for water conservation, water supply and drought management; administration of state water rights programs; interbasin transfer policy; groundwater management; water marketing; state financial assistance for water-related projects; and state programs for water data collection and dissemination.

SB1 radically altered the manner in which future Texas water plans are to be prepared. Historically, the Texas water plan was prepared by the Texas Water Development Board (TWDB), with input from other state and local agencies and the public. With SB 1, the Texas Legislature established a "bottom up" approach whereby future state water plans are based on regional water plans prepared and adopted by appointed regional water planning group (RWPGs). The RWPGs serve without compensation and are responsible for overseeing the preparation of the regional water plans.

The regional water plans are based on an assessment of future water demands and available water supply. They include specific recommendations for meeting identified water needs through 2030. The plans may also include recommendations regarding strategies for meeting long-term (2030-2050) needs, as well as recommendations regarding legislative designation of ecologically unique rivers and streams, reservoir sites, and policy issues. By law, the regional water plans were completed by January 5, 2001, at which time the TWDB compiled a new state water plan, which has been approved. The regional water plans and the state water plan are to be updated every five years, and a new plan is currently in progress.

In February 1998 the TWDB to accelerate the planning process adopted administrative rules, which included the delineation of 16 regional water planning areas in the state and the definition of the procedures and requirements for the development of the regional water plans. The TWDB also appointed the initial members of 16 RWPGs. Subsequently, the RWPGs adopted by-laws, selected a political subdivision to act as its administrative agent, and developed a scope of work and budget for preparation of the regional water plans. Funding for the preparation of the regional water plans was provided in the form of grants from the TWDB.

Initially designated by TWDB as "Region M," the Rio Grande Regional Water Planning Area (herein referred to as the "Rio Grande Region") consists of the eight counties adjacent to or in proximity to the middle and lower Rio Grande from essentially Amistad Reservoir to the Gulf. It is composed of Cameron, Hidalgo, Starr, Webb, Maverick, Jim Hogg, Zapata and Willacy counties in

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Texas, where more than 95 percent of the irrigation and urban development in the Lower Reach has historically occurred. In the three lower Texas counties, there was over 750,000 acres under irrigation, and population of near 1,000,000 not considering the population across the border in Mexico of an amount in excess of 1,000,000.

The Rio Grande Regional Water Planning Group, which initially adopted the Regional Plan in 2001, consisted of 17 voting members representing 10 of the 11 interest groups categories specified in SB 1. In addition to its voting membership, the Rio Grande RWPG includes non-voting members representing state agencies and the Mexican federal government. Region E was established, which is the other significant planning group in the Upper Rio Grande in Texas.

The 2001 Regional Water Plan for the Rio Grande Regional Water Planning Group approved by the state included in its projections of water supply, an assumption that Mexico would comply with the 1944 Treaty. In its Plan, specific fact findings and recommendations were adopted. The details of these findings are set out on Attachment A to this article.

In summary, the findings in its 2001 Plan indicate the efforts for several years in coordination of water affairs between Texas and Mexico in the Lower Reach, and the extreme and vital importance that Mexico's compliance to the 1944 Treaty is to the welfare of the South Texas region included in the Lower Reach of Rio Grande in Texas.

VIII. CONCLUSION

After decades of disputes between the U.S. and Mexico over the rights to water in the Rio Grande, the rights were determined and allocated in the first half of the 20th Century by the 1906 Convention and 1944 Treaty. In the last half of the 20th Century dams and reservoirs contemplated by these agreements have been constructed, in the U. S. and others have been constructed in Mexico pursuant to its sovereign authority. Experience has been gained by the IBWC in the implementation of the international agreements and existing circumstances. It can be expected that challenges will occur in the 21st century testing the integrity of these agreements in view of activities in both countries, and the Rio Grande's ability to serve those in both countries who rely on its waters.

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APPENDIX A: MINUTE 307

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DUPLICATE ORIGINAL

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

Washington, D.C.
March 16, 2001

Minute No. 307

PARTIAL COVERAGE OF ALLOCATION OF THE RIO GRANDE TREATY TRIBUTARY WATER DEFICIT FROM FORT QUITMAN TO FALCON DAM

The Commission met at the Department of State in Washington at 10 a.m. on March 16, 2001, with high-level representatives and officials of the two Governments, to consider measures proposed by the Government of Mexico in the fourth year of the current five-year accounting cycle, in partial fulfillment of its obligation under subparagraph (c) of paragraph B of Article 4 of the United States – Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, dated February 3, 1944.

The Commissioners made note of the discussions by United States President George W. Bush and Mexican President Vicente Fox Quezada held in San Cristobal, Guanajuato on February 16, 2001, at which the request was made of Mexico to provide to the United States a volume of 600,000 acre-feet (af), equivalent to 740 million cubic meters (Mm3) of water through July 31, 2001 in order to reduce the present deficit in the allocation of the portion of the Mexican Rio Grande tributaries. In furtherance of that conversation, the Commissioners reviewed the data provided by the Principal Engineers and observed that from the end of September 2000 through March 3, 2001, a volume of 232,674 af (287 Mm3) had been accounted in favor of the United States, such that there remains to be covered through July 31, 2001 a volume of 367,252 af (453 Mm3). They observed that this volume could be covered based on the following estimates:

a) Unmeasured Treaty Tributary Runoff – It is estimated that from March 4, 2001 to July 31, 2001, runoff to the Rio Grande, from rainfall to the unmeasured tributaries, will be between 159,710 af (197 Mm3) and 239,159 af (295 Mm3).

b) One-third of Treaty Tributaries Runoff - It is estimated that from March 4, 2001 to July 31, 2001, the runoff to the Rio Grande from the six Mexican tributaries and one third assignment of this volume to the United States in accordance with the Treaty, will range from 64,046 af (79 Mm3) to 84,314 af (104 Mm3).

c) Venustiano Carranza Dam Releases - An additional net volume of 38,103 af (47 Mm3) can be expected from Venustiano Carranza Dam, which is the one-third that corresponds to the United States, after losses, from the 138,631 af (171 Mm3) which are pending transfer from this dam.

Based on the above, the Commissioners observed that the Principal Engineers of the Commission identified two scenarios, a more positive one under which one could expect a volume of 594,250 af (733 Mm3) by July 31, 2001 and a more conservative estimate under which one could expect a volume of 494,533 af (610 Mm3), which includes the flows delivered since October 2000. On this basis, there results a range of 494,533 af to 594,250 af, which is the volume that could reasonably be expected by July 31. The above demonstrates that it is necessary to agree to a contingency plan in the event that the more favorable scenario does not occur and that by July 31, Mexico has not been able to deliver the requested volume of 600,000 af (740 Mm3). This contingency plan could consider in the first case, the extension of assignment of the unmeasured tributaries through September, which could be feasible to meet the United States request. In the second case, consideration could be given to covering the shortfall through September 30 with waters from the Luis L. Leon, La Fragua, Centenario and San Miguel Dams.

The Commissioners made note that for the estimates provided by the Principal Engineers on the above mentioned quantities an average of runoff recorded in 1993 - 1999 and an average runoff recorded in 1999 were considered.

The Commissioners discussed the need for the two Governments to continue discussions through the Commission to arrive at an agreement before the end of 2001 on additional measures that the Government of Mexico will take to cover the outstanding prior cycle deficit and on any other measures that they consider necessary concerning the last year of the current cycle.

At the same time, they observed that the two Governments, animated by a spirit of friendship that prevails in the relationship between the two countries and committed to prevent recurrence of the situation considered in these discussions will work jointly to identify measures of cooperation in the areas of drought management and sustainable management of this basin.

Based on the above, the Commissioners submit the following recommendations for the approval of the two Governments:

1. That the two Governments adopt the framework described in this Minute to ensure that Mexico provides to the United States 600,000 af (740 Mm3) in accordance with the two scenarios described above.

2. That the two Governments continue discussions, through the Commission, to arrive at an agreement before the end of 2001 to develop additional measures that the Government of Mexico will undertake to cover the outstanding prior cycle deficit and on any other measures that they consider necessary concerning the last year of the current cycle.

3. That the Government of the United States and the Government of Mexico, animated by the spirit of friendship that prevails in the relationship between the two countries and committed to prevent recurrence like the situation considered here will work jointly to identify measures of cooperation on drought management and sustainable management of this basin.

4. That this Minute shall enter into force when the Government of the United States and the Government of the United Mexican States have approved this Minute.

The meeting was adjourned.

Robert Ortega
Acting United States Commissioner

J. Arturo Herrera Solis
Mexican Commissioner

Manuel R. Ybarra
United States Section Secretary

Jose de Jesus Luevano Grano
Mexican Section Secretary

APPENDIX B: MINUTE 308

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INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

Minute 308

June 28, 2002
Ciudad Juárez, Chihuahua

United States Allocation of Rio Grande Waters During the last Year of the Current Cycle

The Commission met at the offices of the Mexican Section in Ciudad Juárez, Chihuahua at 5:00 pm on June 28, 2002 to consider the Government of Mexico's proposals concerning the United States' allocation of Rio Grande waters during the last year of the present five year cycle in the framework of Paragraph B of Article 4 of the United States – Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, dated February 3, 1944.

The Commissioners made note of the conversations on this matter between United States President George W. Bush and Mexican President Vicente Fox Quesada in Monterrey, Nuevo Leon on March 20, 2002, to their subsequent conversations and to the June 6, 2002 meeting in Washington of delegations of the two countries at which the two Commissioners participated.

Based on the above, the Commissioners:

A. Observed that the Mexican allotment to the United States on the Rio Grande during the last year of the current cycle can be made based on the following:

   a) The National Water Commission will request of the Secretariat of Foreign Relations that the Mexican Section of the Commission, on the date which the present Minute enters into force and as part of normal joint accounting of the storages of both countries at the international Amistad and Falcon dams, to join the United States Section of the Commission for the Commission to account in favor of the United States the contingency assignment of 90,000 acre-feet – af (111 Million Cubic Meters – Mm^3) subject to the following understandings:

      1. The Commission will continue its weekly preliminary accounting of the inflows, releases and storage at the international dams;

      2. At the accounting period ending October 26, 2002, the Commission will issue a joint report of new Mexican inflows to the international dams recorded since the date of entry into force of this Minute;

3. If, by October 26, 2002, the new Mexican inflows have replaced the volume of 90,000 af (111 Mm^3) this volume will remain assigned to the United States in the Commission's final accounting and at that time, the losses attributed to conveyance of this volume to the international dams estimated at 28,845 af (35.5 Mm^3) will be accounted in favor of Mexico.

4. If, by October 26, 2002, the new Mexican inflows have not replaced the volume of 90,000 af (111 Mm^3) the Commission will make a compensating adjustment to Mexico's favor that is equal to the difference between 90,000 af (111 Mm^3) and the quantity of Mexico's inflows.

5. If, by October 26, 2002 and after making the aforementioned compensating adjustment and providing that Mexico's releases at the Amistad and Falcon Dams from July 1 to October 26, 2002 were consistent with those of the same timeframe in 2001 and yet the volume of water belonging to Mexico in storage at Amistad and Falcon dams falls below 243,213 af (300 Mm3), a quantity that the Government of Mexico considers is needed to supply Mexico's Rio Grande communities for the following 10 months, then the Government of the United States authorizes the United States Commissioner to make available to Mexico volumes of water allotted to the United States necessary to maintain the volume of 243,213 af (300 Mm3) in Mexico's storage, which would be repaid with Mexican source water in excess of the volume of 243,213 af (300 Mm3).

b) The One-Third flows from measured Treaty Tributaries as follows:

1. The volume flowing into the Rio Grande between October 1, 2001 and May 31, 2002, was 13,620 af (16.80 Mm^3);

2. Based on an estimate by Mexico's National Water Commission of a 90 per cent probability, one-third of the volume flowing into the Rio Grande from the six Mexican tributaries could be at least 12,566 af (15.50 Mm^3) in June 1 – 30, 2002;

3. Based on the referenced probability the one-third volume flowing to the Rio Grande from the six Mexican tributaries could be 8,999 af (11.10 Mm^3) in July 1 –31, 2002;

4. Similarly, the one-third volume flowing to the Rio Grande from the six Mexican tributaries could be at least 5,918 af (7.30 Mm^3) in August 1 – 31, 2002; and

5. Similarly, also, the one-third volume flowing to the Rio Grande from the six Mexican tributaries could be at least 15,971 af (19.70 Mm^3) in September 1 – 30, 2002.

B. The Commissioners observed the information of the Government of Mexico that it intended to finance the modernization and technical enhancement for sustainability in irrigated areas of the Districts and Irrigation Units in the Rio Grande Basin, and to improve the efficiency in water use in the border cities.

C. The Commissioners noted the information of the Government of Mexico that Mexico proposes a capital investment of $1,535,000,000 pesos in the next four years. In this period, approximately 321,041 af (396 Mm^3) could be conserved in the irrigation districts. The conserved volume could increase by 46,210 af (57.00 Mm^3) with an additional expenditure of $310,000,000 pesos.

D. The Commissioners also observed the support of both Governments to increasing data exchange relating to the management of hydrological systems in both countries in a timely manner to enable the Commission to adopt principles and understandings under which both Governments provide the highest priority to fulfilling their respective obligations under the 1944 Water Treaty.

E. The Commissioners also observed that the United States Department of the Treasury and Mexico's Secretariat of Treasury and Public Credit and exchanged letters on this date under which financial measure are proposed to support the water conservation projects, including those to be carried out through the North American Development Bank.

F. The Commissioners noted the intent of the two Governments of there being review and observation by the Commission of the water conservation projects and provision of its findings to the two Governments and appropriate international funding institutions concerning the estimated volumes of salvaged waters and the measures necessary to ensure their conveyance to the Rio Grande.

G. The Commissioners considered the application of Recommendation 3 of Minute No. 307, dated March 16, 2001 in the following manner:

1. Measures of Cooperation on Drought Management -- Mexico's National Water Commission will present to the International Boundary and Water Commission a progress report on its studies concerning drought management planning to support the Commission as a forum under which the proper authorities in each country may coordinate their respective drought management plans.

2. Sustainable Management of the Basin -- The Commission took note of the desire of both Governments to convene a bi-national summit meeting of experts and water users from each country for the purpose of providing the proper authorities and stakeholders information concerning sustainable management of the Rio Grande Basin. Taking the recommendations of the summit into account, the two Governments will consider a binational sustainable management plan for the basin.

3. International Advisory Council -- The Commission, subject to provision of financial and personnel resources to each Section by the respective governments as a step to strengthen the Commission's role in the area of sustainable management of the basin and drought management planning, will establish a forum for the exchange of information and advice to the Commission from government and non-government organizations in their respective countries.

Based on the foregoing, the Commissioners recommend the following to the two Governments, for their approval:

1. The International Boundary and Water Commission will account in favor of the United States of 90,000 acre feet - af (111 Million Cubic Meters – Mm^3) of waters assigned to Mexico in the international Amistad and Falcon Reservoirs with the understandings in Part A hereinabove.

2. The Government of the United States and the Government of Mexico will urge the appropriate international funding institutions, to which they are a party, to ensure analyses and consideration of the Commission's observations concerning the water conservation projects cited in Parts B – E. The Commission will provide its findings to the two Governments and these institutions, concerning the estimated volumes of conserved waters by these projects and the measures necessary to ensure their conveyance to the Rio Grande.

3. The two Governments will continue discussions through the Commission regarding measures to be taken concerning the deficit in the allocation of water from the Mexican tributaries.

4. The two Governments will support an increase in data exchange relating to the management of the hydrological systems in both countries in a timely manner to enable the Commission to adopt principles and understandings for application in the next cycle under which both Governments will provide the highest priority to fulfilling their respective obligations under the 1944 Water Treaty.

5. The Government of the United States and the Government of Mexico will support the Commission's application of point 3 of Minute 307 of March 16,

2001 outlined in Part G of this Minute with regard to drought management and the sustainable management of this basin.

6. This Minute shall enter into force upon approval of the Government of the United States of America and the Government of United Mexican States.

The meeting was adjourned.

Carlos M. Ramirez
United States Commissioner

J. Arturo Herrera Solís
Mexican Commissioner

Manuel R. Ybarra
United States Section Secretary

José de Jesús Luévano Grano
Mexican Section Secretary

APPENDIX C: MINUTE 309

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INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

El Paso, Texas
July 3, 2003

Minute 309

VOLUMES OF WATER SAVED WITH THE MODERNIZATION AND IMPROVED TECHNOLOGY PROJECTS FOR THE IRRIGATION DISTRICTS IN THE RIO CONCHOS BASIN AND MEASURES FOR THEIR CONVEYANCE TO THE RIO GRANDE

The Commission met at the offices of the United States Section in El Paso, Texas at 3:00 p.m. on July 3, 2003, to address the stipulations in recommendation No. 2 of Commission Minute No. 308, entitled "United States Allocation of Rio Grande Water During the Last Year of The Current Cycle", dated June 28, 2002, relative to the fact that the Commission will provide its observations to the two governments and to the North American Development Bank (NADBank), with respect to the estimated volumes of water saved by the projects undertaken by the Government of Mexico to modernize and improve the technology of the Irrigation Districts and Units in the Rio Grande Basin making them sustainable and taking the necessary measures to ensure the conveyance of the saved waters to the Rio Grande.

Part I. - Volumes of Water Conserved

The Commissioners noted the information provided by the Government of Mexico relative to the modernization and improved technology projects proposed for the three Irrigation Districts in the Rio Conchos basin: District 005 Delicias, supplied by La Boquilla Dam located on the Rio Conchos and the Francisco I. Madero Dam located on the Rio San Pedro; Irrigation District 090 Lower Rio Conchos, supplied by the Luis L. Leon Dam located on the Rio Conchos; and District 103 Rio Florido, supplied by the San Gabriel and Pico de Aguila Dams located on the Rio Florido. The Commissioners also noted that the modernization and technology works referenced in Minute No. 308 will be initiated in the three irrigation districts on the Rio Conchos, and the $40 million that corresponds to Mexico from the Water Conservation Investment Fund, created by the NADBank from its retained earnings, following completion of required NADBank approvals and procedures, will be applied totally toward the works in Irrigation District 005 Delicias, which were certified by the Border Environment Cooperation Commission (BECC) on October 17, 2002. The Commissioners observed that the construction projects started at the end of 2002 and ending in 2006, yielding, as a result, water savings that will increase annually until reaching, upon completion of the works, a savings estimated to be 321,043 acre-feet - <af> (396 Million Cubic Meters-<Mm^3>) annually, considering a base volume of water of 846,385 af (1,044 Mm^3), which was the average releases from the dams for the years 1996, 1997 and 1998, measured upon release from the storage dams

that supply each district as shown below:

Irrigation District	Base Volume		Savings	
	af	Mm^3	af	Mm^3
005 Delicias and Labores Viejas	694,782	857	278,075	343
090 Lower Rio Conchos	77,828	96	20,268	25
103 Rio Florido	73,775	91	22,700	28
Total	846,385	1,044	321,043	396

The Commissioners also observed the information from Mexico in the sense that in order to attain the estimated total water savings, a capital investment will be required in the amount of $1,535,000,000 pesos, and that the program of water savings will be subject to the timely availability of resources for its implementation. If this level of investment is not allocated the amount of savings may be reduced.

The Commissioners also observed from the information provided by Mexico that of the total water savings estimated at 321,043 af (396 Mm^3), 21,484 af (26.5 Mm^3) would be reached in the first year, another 86,748 af (107.0 Mm^3) in the second year, another 137,418 af (169.5 Mm^3) in the third year, and another 75,398 af (93.0 Mm^3) in the fourth year.

In the following table the investments required in million pesos and the estimate volumes of savings in thousand acre-feet and millions of cubic meters appear.

	Year 1		Year 2		Year 3		Year 4		Total	
Irrigation District	Investment	Savings (Mm^3)	Investment	Savings (Mm^3)	Investment	Savings (Mm^3)	Investment	Savings (Mm^3)	Investment	Savings (Mm^3)
005 Delicias and Labores Viejas	78.5	16.2 (20.0)	357.0	73.0 (90.0)	594.0	121.6 (150.0)	330.5	67.3 (83.0)	1,360.0	278.1 (343.0)
090 Lower Rio Conchos	15.0	2.8 (3.5)	38.0	7.3 (9.0)	42.0	7.7 (9.5)	15.0	2.4 (3.0)	110.0	20.2 (25.0)
103 Rio Florido	5.5	2.4 (3.0)	18.0	6.5 (8.0)	23.0	8.1 (10.0)	18.5	5.7 (7.0)	65.0	22.7 (28.0)
TOTAL	**99.0**	**21.4 (26.5)**	**413.0**	**86.8 (107.0)**	**659.0**	**137.4 (169.5)**	**364.0**	**75.4 (93.0)**	**1,535.0**	**321.0 (396.0)**

The Commissioners observed that the Government of Mexico considered that the estimated volumes of water conserved by the proposed modernization and technology activities are similar to water savings from projects carried out in other irrigation districts in Mexico and the estimated volumes of water saved were determined utilizing two methodologies, which were

provided to the Commission and discussed in the meeting of November 7, 2002, in the main offices of the Mexican Section.

In both methodologies, the volume of water saved is a function of the increase in the global efficiency of an irrigation district in a given year with regard to the baseline year of reference. The conveyance and application efficiencies are established on the two dates being compared.

One methodology calculates the conveyance efficiency based on inflow and outflow balances in the system; the application efficiency is a function of the water being applied and crop requirements.

The other methodology determines the conveyance efficiency by considering the total canal length, including those to be lined, as well as the efficiencies of existing lined and unlined canals, so that application efficiency considers the irrigated surface areas and efficiencies for each type of improved irrigation technology works against the current irrigated surface areas and efficiencies in the district.

- The Commissioners observed that the principal modernization and improved technology activities are the following: The lining of canals to reduce losses in: 7.5 miles - (mi) <12 kilometers - (km)> of main canals, 321.9 mi (518 km) of lateral canals, and 130.5 mi (250km) in smaller systems. The control structures will be improved and measurement structures will be installed to improve the operation of the distribution network and the delivery of water to the irrigation users.
- The installation of low pressure supply systems for water distribution and the application of water with multi-gate pipes on 56,216 acres - (ac) (22,750 hectares - ha), to take advantage of the existing hydraulic head and reduce losses and maintenance.
- Land leveling of 80,309 ac (32,500 ha) to reduce water losses in gravity flow irrigation. The rehabilitation of stilling wells and pumping equipment, water distribution in high pressure lines and the implementation of drip irrigation or sprinkler systems in 49,421 ac (20,000 ha), of fruits, vegetables and alfalfa.
- The construction of pumping stations, supplied by open channels, low pressure water distribution networks and the application of water with multi-gated piping on 34,595 ac (14,000 ha). The rehabilitation of stilling wells and pumping equipment, the distribution of the water by low pressure lines tubing and the irrigation with multi-gated piping on 17,298 ac (7,000 ha). In both cases crops such as cereals, bean, cotton, peanuts and olive trees will be irrigated.

Upon completion of construction of the infrastructure modernization and irrigation technology works, the global efficiency in the irrigation districts is estimated to increase: from 33 to 55 percent in Irrigation District 005, Delicias; from 35 to 47 percent in Irrigation District

090, Lower Rio Conchos; and from 33 to 48 percent in Irrigation District 103, Rio Florido.

The Commissioners observed that Mexico's National Water Commission (CNA), will prepare an annual report on: a) The volume of water released from the storage dams in the three irrigation districts on the Rio Conchos, b) The types and areas of crops irrigated with waters from the storage dams, c) The efficiency reached by each district, d) The volume of water saved through the modernization and improved technology activities, e) The progress made during the past year regarding works constructed and amounts expended, f) The volumes saved transferred to the Rio Grande and, g) The program of activities proposed for the following year. This report will be sent to Mexico's Secretariat of Foreign Relations during the last week of November of each year, which will provide it to the International Boundary and Water Commission.

Part II. - Measures necessary to ensure conveyance to the Rio Grande

The Commissioners noted the information of the Government of Mexico in the sense that the volume estimated at 321,043 af (396 Mm^3) would be saved considering the use of an annual volume of 846,385 af (1,044 Mm^3) in conditions prior to the improved modernization and technology works. The volume saved is measured at the release points from the storage dams that supply each irrigation district. They observed that in the years in which the volumes of water released to the irrigation districts from the storage dams and registered at the same release points are less than 846,385 af (1,044 Mm^3), the volumes saved will be proportionally reduced. In these cases, the saved volumes will be determined by CNA, using the methodology described in Part I of this Minute. This information will be sent to Mexico's Secretariat of Foreign Relations to be reviewed by the International Boundary and Water Commission.

The Government of Mexico will transfer to the Rio Grande the saved volumes of water taking into account the attainment of the annual average deliveries in accordance with the "Treaty between the United States of America and Mexico for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande", signed on February 3, 1944, as well as any volume that could be applied to cover shortages in a previous cycle.

The Commission took note of the legal and regulatory framework, as well as of the operation of the hydraulic system that will be established by the Mexican government to transfer the volume of water saved in the three Rio Conchos irrigation districts to the Rio Grande in the following way:

- The volumes of water saved by the modernization and technology projects in any given agricultural year will be transferred from the San Gabriel-Pico de Aguila and La Boquilla-Francisco I. Madero dam systems and Luis L. Leon Dam during December and January of each year. The transfer to the Rio Grande of the volumes saved that arrive at Luis L. Leon Dam plus the volumes saved pertaining to the Irrigation District 090 Lower

Rio Conchos will begin in January of each year.

- The Government of Mexico, through the CNA, will install, operate and maintain automatic gauging stations at strategic points on the Florido, Conchos and San Pedro Rivers, downstream of Pico de Aguila, La Boquilla, Francisco I. Madero and Luis L. Leon dams, to provide monitoring of releases of the saved volumes from the said dams.
- The Government of Mexico, through the CNA, will have legal authority over the volume of water saved and will ensure its conveyance to the Rio Grande, after joint technical analysis by CNA and the Commission as previously described.

The Commissioners observed that, because the modernization and technology projects in the three Rio Conchos irrigation districts will occur over several years, it is important that the Commission be informed of the advances reached annually, regarding works, investments and volumes of water saved, as well as the program of activities proposed for the following year. Also, they noted that the Government of Mexico, through CNA, will provide the required technical information and allow physical access to project sites, at a frequency the Commission considers appropriate, so it can conduct joint field observations to view the construction and progress of works.

The Commissioners took note of the exchange of letters by the Department of Treasury of the United States, and the Secretaría de Hacienda y Crédito Público de México on June 28, 2002, regarding the potential financial support for water conservation projects in Mexico.

Based on the above, the Commissioners recommend the following for the approval of the two governments:

1. That this Minute constitutes the report that Minute No. 308 stipulated that the Commission present to the two Governments and to the NADBank regarding the modernization and technology projects proposed for the three Rio Conchos irrigation districts, to be executed between the end of 2002 and the end of 2006, which will generate savings that will increase annually until they reach, at their completion, an annual volume estimated at 321,043 af (396 Mm^3). The volume is estimated on an average of 846,385 af (1,044 Mm^3), measured at the release points from the storage reservoirs that supply each irrigation district, as described in Part I of this Minute. The modernization and technology works stated in Minute No. 308 will be initiated by the three irrigation districts of the Rio Conchos and the $40 million that corresponds to Mexico from the Water Conservation Investment Fund, created from the NADBank's retained earnings, following completion of required NADBank approvals and procedures, will be applied totally to the works in the Delicias Irrigation District No. 005, which were certified by BECC on October 17, 2002.
2. In order to attain the estimated total water savings, a capital investment will be required in the amount of $1,535,000,000 pesos, and the program of water savings will be subject to the timely availability of resources for its implementation. If this level of investment is not allocated, the

amount of savings may be reduced.
3. When the volumes of water released to the irrigation districts from the storage dams and registered at the same release points are less than 846,385 af (1,044 Mm^3), the volumes saved will be proportionally reduced.
4. The Government of Mexico through the CNA, will prepare an annual report on: a) The volume of water released from the storage dams in the three irrigation districts on the Rio Conchos, b) The types and areas of crops irrigated with waters from the storage dams, c) The efficiency reached by each district, d) The volume of water saved through the modernization and improved technology activities, e) The progress made during the past year regarding works constructed and amounts expended, f) The volumes saved transferred to the Rio Grande and, g) The program of activities proposed after the following year. This report will be sent to Mexico's Secretariat of Foreign Relations during the last week of November of each year and discussed within the Commission, as outlined in Part II of this Minute.
5. The Government of Mexico, through CNA, will have legal authority over the volume of water saved as a result of the modernization and technology works that are mentioned in Part I of this Minute.
6. The Government of Mexico will transfer to the Rio Grande the saved volumes of water taking into account the attainment of the annual average deliveries in accordance with the 1944 Water Treaty, as well as any volume that could be applied to cover shortages in a previous cycle.
7. The Government of Mexico through CNA, will install, operate and maintain automatic gauging stations at strategic points on the Florido, Conchos and San Pedro Rivers, downstream of Pico de Aguila, La Boquilla, Francisco I. Madero and Luis L. Leon dam systems, to provide monitoring of the volumes saved from the said dams.
8. The volumes of water saved by the modernization and technology projects in any given agricultural year will be transferred from the San Gabriel-Pico de Aguila and La Boquilla-Francisco I. Madero dam systems and Luis L. Leon Dam during December and January of each year. The transfer to the Rio Grande of the volumes saved that arrive at Luis L. Leon Dam plus the volumes saved pertaining to the Irrigation District 090 Lower Rio Conchos will begin in January of each year. Transfers will be accomplished as described in Part II of this Minute.
9. The Government of Mexico, through CNA, will provide the required technical information and allow physical access to facilities so that the International Boundary and Water Commission can conduct joint field observations to view the construction and advancement of works, at a frequency it considers appropriate.
10. That both Governments continue giving priority to the development of water conservation projects consistent with the terms, objectives and spirit of cooperation of Minute No. 308 and the present Minute.
11. That this Minute will enter into force upon notification of approval by the Governments of he United States of America and Mexico through the respective Sections of the Commission.

The meeting was adjourned.

Carlos M. Ramírez
United States Commissioner

J. Arturo Herrera Solís
Mexican Commissioner

Carlos Peña, Jr.
Secretary of the United States Section

Jesus Luévano Grano
Secretary of the Mexican Section

ATTACHMENT A

The recent Rio Grande Regional Water Plan, approved by the State of Texas and included in the State Water Plan (January 2002) provided in parts as follows:

6.3.2 Mexico's Compliance with the 1944 Treaty

6.3.2.1 Background

It is important to note that the minimum inflow requirements stipulated in paragraph B(c) of the Treaty for the United States from the six Mexican tributaries has not been satisfied by Mexico since October 1992 (see section 3.8.3 of this report). The total deficit as of October 1999 was approximately 1,400,000 acre-feet, and Mexico's ability to repay this deficit within the terms of the 1944 Treaty now is questionable. The uncertainty related to the availability, or unavailability, of this water from Mexico obviously has a direct bearing on water supply planning for the RGWPR.

6.3.2.2 Current Mexican Water Deficits under the 1944 Treaty

As discussed above, the 1944 Treaty between the United States and Mexico contains a provision whereby Mexico is to provide the United States with a minimum of 350,000 acre-feet per year, averaged in five-year cycles, of inflows to the Rio Grande from six named tributaries, all located below Fort Quitman, Texas. The inflows from these tributaries contribute directly to the Amistad-Falcon water supply that is extensively relied upon by water users in the Rio Grande Region. Hence, when these tributary inflows are reduced, the available water supply for the region also is reduced. Detailed discussions on firm yield of the Amistad-Falcon Reservoir System and the potential impacts on firm yield of changes in historical inflows are presented in Section 3.4.3.

The IBWC is responsible for measuring the Mexican tributary inflows and performing the necessary water accounting in accordance with the provisions of the 1944 Treaty. Since October 1992, data reported by the IBWC indicate that Mexico has failed to deliver the required minimum inflows to the United States, and therefore, Mexico now has accrued deficits for the five-year accounting cycle that ended on 2 October 1997, as well as for the current five-year accounting cycle that will end on 2 October 2002. The total inflow deficit owed by Mexico for the previous five-year cycle is 1,024,000 acre-feet, and from 2 October 1997 through September 2000 of the current five-year accounting cycle, the accrued deficit is 384,100 acre-feet.

6.3.2.3. Findings and Conclusions

Because of the substantial amount of the current Mexican water deficits and because agricultural

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interests in the Lower Rio Grande Valley have been severely impacted during the current drought as available water supplies from Amistad and Falcon Reservoirs have diminished, there has been increased concern by all Rio Grande water users regarding the reasons for the deficits and Mexico's ability to repay the deficits in accordance with the terms of the 1944 Treaty. To begin to address these issues, special studies were undertaken as part of this regional water planning effort for the Rio Grande Region, and preliminary results pertaining to the Mexican water deficits were presented in a separate report. For the purpose of summarizing current results from these ongoing Mexican deficit studies, a Summary of Findings is included below (for additional details refer to the Mexican deficit report.[13]

F. Numerous meetings have been convened for the purpose of discussing all aspects of the Mexican water deficit situation and for the exchange of data for better management of waters of the Rio Grande Basin. Representation at these meetings has included the Rio Grande RWPG, local water rights stakeholders, the United States and Mexican Sections of the IBWC, TNRCC, TWDB, and the National Water Commission of Mexico (CNA). Mexican representatives to these meetings have presented extensive data and information for evaluation. Data provided by Mexico relating to historical rainfall during this period shows average rainfall in the Mexican tributary basins for the for the period 1993 through 1999 of over 90 percent of normal, while data provided by Mexico related to historical tributary reservoir inflows during this period shows inflows of 60 to 70 percent of normal. The inflows stored in Mexico's tributary reservoirs over this same period totaled almost 5,000,000 acre-feet as derived from positive monthly incremental changes in storage in individual reservoirs. During this same period over 3,000,000 acre-feet of water actually reached the Rio Grande for a total of approximately 8,000,000 acre-feet of stored water and water which actually reached the Rio Grande. This is an annual average of 380,000 acre-feet, U.S. share of water, which exceeds the average minimum of 350,000 acre-feet U.S. share required under the 1944 Treaty. Mexico, however, has stored inflows in tributary reservoirs to provide water supplies for use within Mexico. Mexico's stated operating policy for its tributary reservoirs is to optimize its storage capacity.

G. Paragraph B(c) of Article 4 of the 1944 Treaty between the United States and Mexico allots one-third of the flow reaching the Rio Grande from six named Mexican tributaries to the U.S., with the provision that this amount of flow shall

[13] R. J. Brandes Company; "Preliminary Analysis of Mexico's Rio Grande Water Deficit Under the 1944 Treaty"; Second Draft Report to the Rio Grande Regional Water Planning Group and the Lower Rio Grande Valley Development Council; Austin, Texas; April 3, 2000.

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not be less than 350,000 acre-feet annually as an average amount in cycles of five consecutive years. This provision requires Mexico to deliver to the United States in the Rio Grande a minimum of 1,750,000 acre-feet of water from named Mexican tributaries in five-year cycles. The Treaty does not contain conditional language that water needs in Mexico are a consideration with reference to this guarantee.

H. The 1944 Treaty further provides that Mexico make up any deficiencies in the amount of water delivered to the U.S. from the named tributaries during a given five-year cycle in the subsequent - five-year cycle, when either "extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries" has occurred, "making it difficult for Mexico to make available the runoff of 350,000 acre-feet (431,721,000 cubic meters) annually" during the previous five-year cycle. When the flows in the Mexican tributaries from runoff from the tributary watersheds during a five-year cycle are insufficient to provide the minimum average annual requirement, then Mexico shall make up this deficit by delivery of flows to the Rio Grande for the U.S. during the following five-year cycle. The allotment of water to the U.S. from the Mexican tributaries is dependent upon the runoff from the tributary watersheds reaching the Rio Grande from the named tributaries.

I. The U.S. and Mexican Section of the IBWC have agreed in Minute No. 234 as to the method by which a Mexican deficit in water will be repaid during a subsequent five-year cycle. In the event there is insufficient run-off from the Mexican tributaries during a five-year cycle, which prevents Mexico from providing the average annual amount of 350,000 acre-feet, Minute No. 234 provides that “. ..deficiency shall be made up m the following five-year cycle, together with any quantity of water which is needed to avoid a deficiency in the aforesaid following cycle. ..,” by one or a combination of ways: (a) amounts of water reaching the Rio Grande from the Mexican tributaries in excess of the minimum 350,000 acre-feet guaranteed by the Treaty; (b) waters belonging to Mexico reaching the Rio Grande (its two-thirds portion) provided the U.S. is able to conserve such water; and (c) transfer of Mexican owned water in storage in Amistad and Falcon Reservoirs provided the U.S. is able to conserve the water.

J. Based on records published annually by the IBWC regarding historical flows in the Rio Grande and its major tributaries, the deficit in the quantities of inflows

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allotted to the United States from the Mexican tributaries during the five-year accounting cycle ending October 2, 1997, was 1,024,000 acre-feet. From October 1997 through September 2000, the cumulative deficit in the current accounting cycle was 384,100 acre-feet, or since October 1992, the total amount of the inflow deficit that has been incurred by Mexico on the six tributaries identified in the 1944 Treaty was 1,408,100 acre-feet as of October 2000.

K. Mexico has 12 major reservoirs located in the tributary basins identified in the 1944 Treaty with a combined conservation storage capacity of over 4.4 million acre-feet. Water stored in these reservoirs is diverted and released for municipal, industrial and irrigation uses in Mexico. One of the reservoirs, Luis Leon on the Rio Conchos, also has over 400,000 acre-feet of flood control storage capacity available above its conservation pool.

L. Based upon data provided by Mexico during the five-year accounting cycle ending October 1997, a total of approximately 3,600,000 acre-feet of water, as derived from positive monthly incremental changes in storage in the individual reservoirs, was stored in Mexican reservoirs located in the 1944 Treaty tributary basins, after diversions and releases by Mexico to meet its water demands at the time of storage. Through October 1999 of the current five-year accounting cycle, the total amount of excess water stored in the Mexican tributary reservoirs since October 1992 was near 5,000,000 acre-feet, after diversion and releases for use in Mexico. This 5,000,000 acre-feet stored for later use in Mexico, or over 1,600,000 acre-feet, U.S. share, is more than the total Rio Grande inflow deficit incurred by Mexico during this same period under the 1944 Treaty of 1,400,000 acre-feet. The quantities of inflows stored in the Mexican tributary reservoirs, including amounts of water in the flood pool of Luis L. Leon Reservoir, is water that would otherwise have been passed downstream in the named tributaries to the Rio Grande in order to meet the minimum allotment to the United States of an average of 350,000 acre-feet per year in accordance with the provisions of the 1944 Treaty

M. Additional in-depth studies have been authorized and funded through the TWDB in an attempt to refine the estimates of inflows to the Rio Grande from the Mexican tributaries pursuant to the 1944 Treaty. Progress is limited, however, due to the lack of site-specific information regarding Mexico's tributary reservoirs and the specific demands for water by Mexico from each of the reservoirs. Mexico continues to provide this needed data so that it can be assembled to allow, when combined with data available to Texas, a preliminary reservoir operations model to be developed for Mexico's tributary reservoirs so that simulations of their available supplies can be made under different demand conditions and operating

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scenarios. Such results could contribute to the development of a long-range operating plan for the reservoirs that would both optimize the use of Mexico's available water supplies for its internal needs and assure compliance with its 1944 Treaty obligations. In the short term, such results would useful in formulating a repayment schedule for Mexico's current deficits.

6.3.2.4 Recommendation

Recognizing that Mexico's full compliance with the 1944 Treaty provisions and Minute No.234 is essential to providing the water supply needs of the Region, the Rio Grande Regional Water Planning Group hereby strongly recommends that the government of the United States take all necessary and appropriate actions to ensure full compliance by Mexico with the terms of the 1944 Treaty and Minute No. 234 governing the development and use of the waters of the Rio Grande. This includes full and expeditious repayment of current water deficits in accordance with Minute No. 234, since Mexico has failed to come up with an acceptable repayment plan to date. It is also recommended that the dialog continue between the United States and Mexico with regard to the development of an operating plan for Mexican tributary reservoirs that will ensure full compliance with the treaty while also optimizing the amount of water supply available to Mexico for beneficial use. It is further recommended that the United States Section of the International Boundary and Water Commission continue to seek and provide opportunities for direct stakeholder participation in bi-national discussions regarding the management of the waters of the Rio Grande. In particular, the State of Texas may be represented directly by the Secretary of State's Office, the Texas Natural Resource Conservation Commission, and the Texas Water Development Board. Further, the Governor should designate one of these agencies to have the lead role in representing the State on this issue.

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