The Effects of Interstate Compacts On New Mexico Water Supply

By

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Outline

Introduction

Controversies involving interstate streams may be resolved by any one of several procedures. When the controversy involved private persons who are citizens of different states, the matter may be adjudicated by a Federal District Court. An example of this type action is the decree on the Gila River in southwestern New Mexico. Such action is not generally satisfactory since the decision of the court may be altered or negated by subsequent Supreme Court decisions of interstate compacts. The settlement of controversies over interstate waters in suits in which the states concerned are not before the courts is a troubled subject where, according to James Rogers* much easy deciding may have to be unsaid and undone in the years to come.

When the controversy is between states, or between a state and citizens of another state, the Supreme Court of the United States has original jurisdiction. The finality of the decrees of this court overcomes the objections to Federal Court decisions. The Supreme Court has been extremely wary of establishing a set of principles as guides to later decisions and has served more as an arbiter. The first purpose of ordinary law is the promulgation of a code of conduct which shall be certain even before being just, but the Supreme Court has found it unwise to adhere to this principle in considering the broader issues of interstate comity.

War is of course a common method of resolving controversies between sovereignties and, in his darker moments, the State Engineer has often felt that war is the only practical answer to many of our interstate problems. This forthright solution is, however, forbidden by the Constitution.

*Interstate Compacts, Colorado Water Conservation Board, 1946

The legal basis of all interstate stream compacts is the Constitution of the United States which forbids alliances and treaties between states, but permits agreements or compacts to be consummated with the consent of Congress. Compacts are generally preferable to judicial procedures for the resolution of controversies over interstate waters, because of the inflexibility of court decrees. Compacts usually provide the flexibility necessary to meet changing physical and economic conditions in the areas involved.

The negotiation of compacts is at best a difficult procedure requiring a blending of engineering and legal talent. It is essential that the lawyers involved in the negotiations fully comprehend the engineering aspects of the negotiations, and that the engineers have a clear conception of the legal considerations. Unless this is so, inequities and ambiguities which will be the subject of future controversies will inevitably find their way into the compact.

Compacting has as a procedure for the resolution of interstate controversies, beeen criticized because the states cannot maintain the trained diplomatic corps required for negotiations and because of the fact that a relatively small number of persons negotiate and resolve issues of tremendous importance to diverse local interests not adequately represented in the negotiations. I feel that the provision requiring any compact to be ratified by the legislature of each State and approved by the Congress largely overcomes this latter objection.

New Mexico is a party to seven interstate stream compacts. All of our major interstate streams are covered by such compacts. The mechanisms used in these compacts to establish the equities of the states were varied to meet the conditions encountered in each basin. These mechanisms are divided into four general classifications and one or more of these mechanisms can be detected in any one compact:

1-Priority

By this mechanism the decreed rights in both states are supplied in strict accordance with the priority of the use, and the state boundary is largely ignored.

2-Lump Sum

By this mechanism a fixed amount of water is allocated to one or more of the parties to the compact for its consumption annually.

3-Limitation of Storage

In its strictest form this mechanism provides for water use limited only by the amount of conservation storage which the state is permitted to construct and utilize.

4-Inflow-Outflow Schedules

By this mechanism the upstream states' obligation to deliver water is determined by the relationship of the inflow above major areas of use to the outflow therefrom. This mechanism has the virtue of accommodating, at least in a measure, the vagaries of climatology.

I will attempt a brief review of each of our water compacts.

Colorado River Compact of 1922

The Colorado River Compact was signed in the Ben Hur Room at the old Governor's Palace in Santa Fe, New Mexico, on November 24, 1922. It was the first interstate water compact to be negotiated in the United States. Stephen B. Davis, Jr., signed as Commissioner for the State of New Mexico. It is of interest that former President Herbert Hoover served as Chairman of the compacting commission having been appointed by the President as the representative of the United States. Signatory states were Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming. New Mexico's share of the waters of the San Juan, Little Colorado, and Gila River Basins is involved in this agreement.

The major purposes of the compact are to provide for the equitable division and apportionment of the use of the waters of the Colorado River system; to establish the relative importance of different beneficial uses of water, and to secure the expeditious agricultural and industrial development of the Colorado River Basin, the storage of its waters, and the protection of life and property from floods. To these ends the Colorado River Basin is divided into two basins and the use of part of the water of the Colorado River system is apportioned between the two with the provision that further equitable

apportionments may be made. The Upper Basin states are Arizona, Colorado, New Mexico, Utah and Wyoming. These are the states from which waters naturally drain into the Colorado River system above Lee Ferry, a point on the main stream of the Colorado River about one mile below the mouth of the Paria River. The Lower Basin states are Arizona, California, Nevada, New Mexico and Utah. Tributaries of the Colorado River drain from these states into the main stream of the Colorado below Lee Ferry.

The compact apportions in perpetuity to the Upper Basin states and the Lower Basin states respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum. The compact also gives the Lower Basin the right to increase its beneficial consumptive use of waters by 1,000,000 acre-feet per annum over and above 7,500,000 acre-feet per annum. This additional allotment, I presume, was to permit the lower basin the unrestricted use of the waters of the Gila River, which is tributary to the Colorado at Yuma, Arizona.

The Upper Division states are restricted from causing the flow at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet in any period of ten consecutive years.

It was recognized that because of the construction of Laguna dam above Yuma the Colorado River had ceased to be navigable and the use of its waters for this purpose was declared subservient to domestic, agricultural and power uses.

The compact provided for the impoundment of water for generation of power but declared this use subservient to agricultural and domestic uses. It provides that the States of the Upper Division shall not withhold water and the States of the Lower Division shall not require the delivery of water which cannot reasonably be applied to domestic and agricultural uses.

At the time the Colorado River Compact was negotiated it was thought that the average annual water supply at Lee Ferry exceeded by about 4,000,000 acre-feet the 16,000,000 acre-feet per annum allocated; accordingly, provision was made for further apportionment after October 1, 1963, if and when either basin had reached its total beneficial consumptive use of water allocated. This delayed apportionment, I presume, was intended to provide for the apportionment of water in a manner to fit best whatever pattern the development of the Upper and Lower Basin states might follow. Probably it was also intended to afford a margin of safety in the allocation of water.

In a report dated October 1953, Raymond A. Hill states his belief that the average annual water supply at Lee Ferry may be less than 14,000,000 acre-feet - - inadequate for the 7,500,000 acre-feet per annum allocated respectively to the Upper and Lower Basins. If this is true, it may become necessary at some future date to resolve the question of whether the Upper and Lower Basins share such shortages equally, or whether the Upper Basin is bound unconditionally to the section providing that it shall not deplete the flow of the stream below 75,000,000 acre-feet per annum in any ten year period. Most Upper Basin interests contend that the intent of this section was to provide for over and under deliveries at Lee Ferry and not to establish the priority of the Lower Basin allocation.

Arizona and California are at this time involved in litigation in the Supreme Court seeking an equitable apportionment of the waters allocated to Lower Basin states. New Mexico in her role as a Lower Basin state, is a party to this litigation. The Gila and Little Colorado Rivers, which are tributary to the Colorado below Lee Ferry, carry about 275,000 acre-feet per annum from New Mexico into Arizona. Presumably New Mexico's share in these waters will be adjudicated in the suit. As a part of her strategy to delay or defeat the Upper Colorado River Storage Project, California tried urgently to involve the Upper Basin States as necessary parties in this litigation. This effort was rejected by the Supreme Court which held that only New Mexico and Utah, which are also Lower Basin states, are necessary parties and necessary only in their roles as Lower Basin States.

Upper Colorado River Compact

The Upper Colorado River Compact was signed in Santa Fe in October 1948. Colorado, New Mexico, Utah, Wyoming and Arizona are the signatory states. Mr. Tom McClure, then State Engineer, was appointed by the New Mexico Interstate Stream Commission to negotiate for New Mexico. However, Mr. McClure died soon after his appointment and was replaced by Fred E. Wilson, who signed for the State of New Mexico.

The primary objective of the Upper Colorado River Compact was to equitably apportion among the Upper Basin states the water allocated to the Upper Basin by the Colorado River Compact. The water was divided in the following manner: Arizona was allocated the consumptive use of 50,000 acre-feet per annum, and the remaining consumptive use was allocated 51.75% to

Colorado, 14% to Wyoming, 23% to Utah and 11.25% to New Mexico. New Mexico's 11 1/4% of the 7,500,000 acre-feet allocated the Upper Basin amounts to 843,000 acre-feet. New Mexico's allotment is available from the waters of the San Juan River and its tributaries which discharge an average of 2,200,000 acre-feet per annum of water past the Shiprock gage.

Colorado assented to the diversions and storage of water in Colorado for use in New Mexico. The construction, maintenance and operation of any facilities by New Mexico in Colorado, however, are subject to Colorado law including the payment of property taxes. This provision foresaw and enabled the San Juan-Chama transmountain diversion, which contemplates three storage reservoirs, and other diversion works in the State of Colorado, to bring water from the San Juan Basin into the Rio Grande Basin in New Mexico.

The compact also apportions reservoir losses. The importance of a provision of this sort is emphasized by the fact that the total evaporation loss from the four storage reservoirs recently approved by the Congress in authorizing the Upper Colorado River Storage Project is 630,000 acre-feet per annum. Losses from reservoirs existing at the time of the signing of the compact are charged to the state in which the reservoir is located. Losses from reservoir capacity constructed in the future to supply water for use in a particular state is charged against the allocation of that state. Loss resulting from reservoir capacity constructed to meet the obligations to deliver at Lee Ferry, imposed by Article III of the Colorado River Compact, are charged against the states in proportion to the water allocated them under the Upper Colorado River Compact. Such reservoir capacity is deemed to be for the common benefit of all the states of the Upper Division. The reservoirs in the Upper Colorado River Storage Project are in this category.

The compact sets forth that the water apportionment made in the compact shall not be taken as any basis for the allocation among the signatory states of any benefits resulting from the generation of power. This provision makes it evident that the States foresaw that power revenues in excess of repayment costs of the structures would be forthcoming from contemplated storage reservoirs. This provision figured in the negotiations leading up to the authorization of the Upper Colorado River Storage Project, when Colorado argued that excess power revenue credits should be allocated among the states, for

use in financing participating irrigation projects in the same proportion that the Upper Colorado river waters were allocated. The authorizing legislation finally allocated these power revenues in accordance with a formula based on each state's proportion of undeveloped water and need for power revenues to finance participating irrigation projects. Although New Mexico's proportion of undeveloped water is less than 16% the State was allocated 17% of the power revenue credits.

The compact provides for an administrative commission to insure the equitable operation of the compact, and John Bliss, who has recently retired as State Engineer after many years in that office, is at this time Commissioner for New Mexico. He has played an important and effective role in the negotiations leading up to the authorization of the Colorado River Storage Project and Participating Projects.

LaPlata River Compact

The LaPlata River Compact between the states of Colorado and New Mexico was signed in 1922 in Santa Fe just three days after agreement was reached on the Colorado River. Stephen B. Davis, Jr., signed for the state of New Mexico and Delph E. Carpenter, who has been called the "father of the compact method" signed for Colorado.

The compact provides for the equitable distribution of the waters of the LaPlata River by a few simple provisions. Operation is based upon the stream flows at two gaging stations, the Hesperus station near the head of irrigation in Colorado and the State Line station.

Each year from the 1st of December to the 15th of February, each state is given the unrestricted right to use all of the water which may flow within its boundaries. From the 15th of February to the 1st of December, each state is granted the right to the unrestricted use of all waters within its boundaries if the Interstate gage indicates flows in excess of 100 cu. ft., per second. If the flow of the Interstate gage is less than 100 cu. ft., per second, New Mexico is granted an amount equal to one-half the flow at the Hesperus gage on the preceding day; provided that, whenever the flow of the river is so low that the greatest beneficial use of its waters may be secured by distributing all of its waters successively to the lands in each state, in alternating periods, the State Engineers of the two states can so rotate the water for such periods and for such times as they may jointly determine.

An unusual provision indicates great confidence on the part of New Mexico in the good faith of her sister state. It is provided that, "a substantial delivery of water under the terms of this article shall be deemed a compliance with its provisions and minor and compensating irregularities in flow or delivery shall be disregarded."

The rotation provision of the compact eventually became the subject of litigation in the Supreme Court of the United States. As I stated earlier, the Supreme Court has tried to avoid establishing a set of principles for the adjudication of interstate controversies, but a few very important such principles were established in the case of Hinderlider vs LaPlata and Cherry Creek Ditch Company which involved an interpretation of the LaPlata River Compact. This case is perhaps the compact's major claim to fame.

The principles established are as follow:

1-No state can claim the exclusive right to the use of all waters within its boundaries; there must be an equitable apportionment of the benefits of the interstate stream between the states affected.

2-The appropriators and users of water in a state are represented by the state under which their claims arise, and are bound by the limitations which may be imposed upon the state either by Supreme Court decree or by interstate compacts.

3-States have the unquestioned authority to agree upon the division and use of the waters of an interstate stream, even if such division and use may have the effect of disturbing or destroying the rights of individual appropriators which had theretofore been recognized by the laws of either state.

LaPlata River is a tributary of the San Juan which in turn is a tributary of the Colorado, therefore, LaPlata water apportioned to New Mexico under this compact is a part of the water allocated to New Mexico under the Upper Colorado River Compact and to the Upper Basin by the Colorado River Compact of 1922. Thus the LaPlata is affected by three compacts.

Costilla Creek Compact

The Costilla Creek Compact was signed at Santa Fe in 1944 by Thomas McClure as Commissioner for New Mexico. Colorado and New Mexico are the signatory states. Costilla Creek crosses and recrosses the Colorado-New Mexico line three times and its waters are used by irrigators in the two states through a complex distribution system. Although the discharge of this stream amounts to an average annual supply of only about 20,000 acre-feet, the waters have been the subject of bitterstrife and controversy. The principal objectives of the Costilla Compact are to provide for the equitable division and apportionment of the use of the creek's waters and to provide for the integrated operation of the existing irrigation facilities on the stream in the two states. One of the prime sources of controversy was the storage of water in Costilla Reservoir in New Mexico for use in Colorado. The compact provides for the allocation of storage benefits of this reservoir between the states, and for the supplying of water to rights in New Mexico and Colorado in accordance with the relative priorities of these rights. The control of water under this compact is accomplished by a watermaster appointed by the New Mexico State Engineer.

Canadian River Compact

The Canadian River Compact among the states of New Mexico, Texas and Oklahoma, was signed at Santa Fe in 1950. John H. Bliss, then State Engineer, was appointed by the Interstate Stream Commission to negotiate this compact and signed for the State of New Mexico. This compact which was negotiated subsequent to the construction of Conchas Dam and Reservoir and the Arch Hurley Conservancy District, apportions the beneficial consumptive use of the waters of the Canadian River by limiting conservation storage which may be constructed in each of the states. The article most affecting the rights of New Mexico is Article IV which states:

"(a) New Mexico shall have free and unrestricted use of all waters originating in the drainage basin of Canadian River above Conchas Dam.

(b) New Mexico shall have free and unrestricted use of all waters originating in the drainage basin of Canadian River in New Mexico below

Conchas Dam, provided that the amount of conservation storage in New Mexico available for impounding of these waters which originate in the drainage basin of Canadian River below Conchas Dam shall be limited to an aggregate of 200,000 acre-feet."

"(c) The right of New Mexico to provide conservation storage in the drainage basin of North Canadian River shall be limited to the storage of such water as at that time may be unappropriated under the laws of New Mexico and of Oklahoma."

The compact defines the term conservation storage as that portion of the capacity of reservoirs available for the storage of water for release for domestic, municipal, irrigation and industrial uses and excludes any portion of the reservoirs allocated solely to flood control, power production, and sediment control.

The average annual flow of the Canadian River at Logan, New Mexcio near the New Mexico-Texas state line is about 275,000 acre-feet. This large and somewhat erratic water supply has remained undeveloped and unused to this time primarily because there is very little irrigable acreage below Conchas Dam along the Canadian or its tributaries other than the acreage which has already been developed by the Arch Hurley Conservancy District. The Interstate Stream Commission is at this time engaged in a study of the feasibility of developing the waters of the Canadian below Conchas for industrial use. It is possible that development for such use may make feasible some irrigation as a by-product.

Pecos River Compact

The Pecos River Compact was signed in Santa Fe in December, 1948. The signatory states are New Mexico and Texas. John H. Bliss signed for the State of New Mexico and is still serving as our Pecos River Commissioner. The Major purposes of the compact are to provide for the equitable division and apportionment of the use of the waters of the Pecos River and to facilitate the construction of works for the salvage of water and the more efficient use of water in the Pecos River Basin in New Mexico and Texas. Beneficial consumptive uses of the waters of the Pecos River in New Mexico deplete the stream by an average of about 500,000 acre-feet per annum.

Under the compact it is New Mexico's obligation not to deplete the flow of the Pecos River by man's activities below the flow that would have occurred under the conditions of usage existing in 1947 in New Mexico. The effect of these conditions of usage and the natural conditions on the river, was determined by an Engineering Advisory Committee established to implement the compact negotiations. The records for the period 1938 to 1947 were found by the Advisory Committee to represent well the conditions existing on the river in 1947.

The compact provides that the inflow-outflow method shall be used to determine whether or not New Mexico is meeting its obligations under the compact. In applying the method this general procedure is followed: The river in New Mexico is divided into five reaches in each of which the tributary flood inflows are determined by a comparison of the inflow and outflow hydrographs. The flood inflow is added to the quantity of water entering the reach and this total is compared with the total quantity of water leaving that reach to determine whether depletions over and above the 1947 condition have occurred. In order for New Mexico to fulfill its commitments the three-year running average of the algebraic sum of the departures from the 1947 condition in these five reaches must not be negative. There is no compact provision for the accrual of debits or credits, although it is recognized that natural variations from the normal may occur over periods of several years duration.

New Mexico's obligation is confined to depletions by man's activities. Diminution of flow by encroachment of salt cedars or by deterioration of the channel of the stream is an interstate obligation and problem. Determination of such increased nonbeneficial consumptive uses is a function of the Engineering Advisory Committee which reports to the Commission.

The compact imposes an obligation on both states to cooperate in water salvage programs. The most pressing water salvage project on the Pecos River is in the delta area above McMillan Reservoir. This reservoir serves the Carlsbad Irrigation District. Legislation authorizing a substantially nonreimbursable water salvage project in this area has recently been introduced in the Congress. The introduction of this legislation is a culmination of at least a year's negotiation between the two states in arriving at a mutually satisfactory project.

The compact provides that water salvaged shall be allocated 43% to Texas, and 57% to New Mexico. Water salvaged

in the McMillan delta project will be available for first use by the Carlsbad Irrigation District. This District will bear New Mexico's share of the operation and maintenance cost of the project.

There are no storage limitations set forth in the compact, and both states are obligated to cooperate in the construction of facilities of mutual benefit.

Rio Grande Compact

The Rio Grande Compact among New Mexico, Texas and Colorado was signed in Santa Fe in 1938. Mr. Tom McClure, then State Engineer for New Mexico, signed for New Mexico. John Bliss served as his engineering advisor and played an important role in the negotiation of this compact.

The purpose of this compact is to provide an equitable apportionment among the three signatory states of the waters of the Rio Grande above Fort Quitman, Texas. The mechanism used for apportioning the water is a relatively inflexible version of the inflow-outflow method. The equities developed in the river by each state were defined by a study of the pre-compact conditions of flow which existed in each State. On the basis of this study schedules establishing the outflow which must be maintained with a given index inflow were drawn to define the obligations of each of the upstream states. Colorado's oblication to deliver water at Lobatos near the Colorado-New Mexico state line is established by index inflows indicated by gages on tributaries to the Rio Grande in Colorado and by a gage on the main stem of the Rio Grande at Del Norte, Colorado. New Mexico's obligation to deliver water to Elephant Butte Reservoir is established by the flow of the river at Otowi gage, located on the Rio Grande near Espanola and just below the confluence of the Chama River and the Rio Grande.

Otowi gage is some 80 miles below the Colorado-New Mexico line and it might seem that New Mexico is granted the unrestricted use of the river in the reach above Otowi and below the Colorado line. The compact, however, provides that the schedule is subject to appropriate adjustments for any depletion in New Mexico of the natural run-off at Otowi gage.

As I have said, the mechanism for apportionment of the water is basically the inflow-outflow method, but the Rio Grande index gages are located at points rather widely separated on the main stream, and tributary inflows between

these gages are not separately determined as in the Pecos Compact. Because of this, long term climatological changes which might affect the relationship of tributary inflows to main stream discharges could result in inequities affecting adversely either the upstream or downstream states. For example, if the ratio of the precipitation in the Rio Grande Basin above Otowi gage to the precipitation in the basin below the gage becomes greater than it was during the period of record, the Middle Rio Grande Valley in New Mexico would receive an inequitably small portion of the available water supply. We have recently made a climatological study to determine whether this might have happened. While New Mexico's ability to meet its commitments under the compact seems to follow climatological changes fairly closely, there is as yet no good evidence that the Middle Valley has been adversely affected by such changes.

Prior to 1949 the gage at San Marcial was used to measure New Mexico's water deliveries and the schedule was based on the nine months water supply excluding the months of July, August and September when erratic tributary inflows usually occur. Since 1949 the gage below Elephant Butte Dam, corrected for changes in storage in Elephant Butte Reservoir, has been used to measure New Mexico's deliveries and the schedule is based on the 12 months water supply. This change was made because of the relative inaccuracy of the gage at San Marcial and also to take into account the tributary inflow from the relatively heavy summer precipitation in the Middle Valley.

These numbers provide a concept of the water supply and the effect of this schedule: The average annual flow of the Rio Grande at Otowi is 1,300,000 acre-feet. At this flow the present schedule requires a delivery to Elephant Butte reservoir of 897,000 acre-feet.

It is of interest that in this new schedule, bank storage in Elephant Butte Reservoir becomes a factor. When the reservoir is full water seeps into the reservoir banks and is stored there. As the reservoir is drained the water stored in the banks returns to the reservoir and is available for use. It seems possible that a generally declining reservoir during the period upon which the new schedule is based may have affected the accuracy of the correlation of the San Marcial and Elephant Butte effective supply gages. During most of the period since the establishment of the new schedule, the reservoir has remained at consistently low levels and little or no water has become available from bank storage. Furthermore, as storage is increased from the minima of the last few

years, water will be withdrawn to bank storage and the outflows measuring New Mexico's deliveries may be correspondingly decreased.

Under historic conditions substantial departures from the average relationship between index inflow and outflow sometimes occurred. For this reason the compact made provision for the accrual of debits or credits by the upstream states. These debits and credits are computed annually. Colorado's limit for accrued debits is 100,000 acre-feet and New Mexico's limit is 200,000 acre-feet. The accrued debits of these states cannot exceed these amounts unless the excess is offset by hold-over storage. Neither New Mexico nor Colorado can acquire, in any one year, a credit in excess of 150,000 acre-feet and New Mexico may not be charged in any one year a debit in excess of 150,000 acre-feet.

Storage rights were carefully defined and limited in drafting the compact. The priority of the storage right of Elephant Butte Reservoir over later upstream storages is carefully guarded. Within the physical limitation of the storage capacity of reservoirs constructed after 1929, New Mexico must retain water in storage at all times to the extent of its accrued debit. In January of any year the Commissioner for New Mexico may demand of Colorado, and the Commissioner for Texas may demand of Colorado and New Mexico the release of stored water up to the amount of the accrued debits of Colorado and New Mexico, or up to an amount sufficient to bring the quantity of usable water in Elephant Butte Reservoir to 600,000 acre-feet by March 1st.

If less than 400,000 acre-feet are stored in Elephant Butte Reservoir, neither Colorado nor New Mexico may increase the amount of water stored in reservoirs constructed after 1929, unless the average annual release of water from Elephant Butte has exceeded 790,000 acre-feet per annum, the normal project release. If, however, New Mexico or Colorado have credits in the water stored in Elephant Butte, they may relinquish these credits for the right to increase storage in their own reservoirs.

In the event of spill of water from Elephant Butte Reservoir all of the debits of Colorado and New Mexico are cancelled. Also, in any year in which the aggregate debits of Colorado and New Mexico exceed the unfilled capacity of Elephant Butte Reservoir, the debits are reduced proportionately to an aggregate amount equal to the minimum unfilled capacity. This provision assumes that if Colorado and New

Mexico had delivered the debit water, the amount of the debits over and above the minimum unfilled capacity would have been spilled.

On the other hand, if Colorado and New Mexico have credit water in Elephant Butte Reservoir at the time of spill, these credits are reduced by the amount of spill plus the amount of increase in storage in Colorado and New Mexico up to the time of spill. This provision is based on the fact that Colorado and New Mexico have no storage rights in Elephant Butte, and therefore, the first water spilled must be theirs.

The Rio Grande compact also foresaw the San Juan-Chama diversion. Article X provides that if water is imported into the Rio Grande Basin, the State having the right to the use of the imported water shall be given credit therefore in the application of the schedules.

The Rio Grande compact contains an anomaly which is probably unique. The compact does not, in fact, apportion the waters between New Mexico and Texas, but rather between the water users in New Mexico above Elephant Butte on one hand and the water users in Texas and New Mexico below Elephant Butte on the other hand. This fact creates a serious administrative problem for the New Mexico Interstate Stream Commission and the State Engineer. It makes it impossible for the State Engineer to administer Rio Grande waters in New Mexico in accordance with the well established doctrine of priority. When the State Engineer as compact commissioner acts to effectuate the compact, he must bear in mind the interests of users both above and below the reservoir. When litigation arises the attorneys for New Mexico are in the strange position of opposing some of their own clients.

In spite of the detailed definition of storage rights contained in the compact, it is silent on the subject of storage for flood and silt control. Through the wisdom of the Compact Commissioners, the compact has been operated as though the term "storage" applied only to conservation storage and storage for flood and silt control beyond the storage limitations set forth in the compact has been permitted.

Article XIII of the compact provides that the Commission may, by unanimous consent, review provisions of the compact which are not substantive in character and which do not affect the basic principles of the compact. Any changes to which the Commissioners might agree, except changes in gaging stations,

must be ratified by the legislatures of the respective states and consented to by the Congress. While this article seems to restrict changes to those not basic in nature, it seems reasonable to suppose that changes which are substantive in nature could be made if ratified and approved.

A motion passed at the recent meeting of the Rio Grande Compact Commission provides that the Engineer Advisors will undertake to study, in the light of the experience of the past 16 years, the operational procedures and the methods of computation required to carry out in a practical manner the intent of the Rio Grande Compact, and make recommendations to the Commissioners. It is my hope that this motion is a harbinger of a new spirit on this troubled river.

Conclusion

Your Chairman, Dr. Stucky, has asked me to comment if possible on the economic effects of these compacts on the State of New Mexico. First, it is difficult to express water supply in terms of dollars. Perhaps a reasonable value for the direct and indirect benefits from water being used in agriculture is about $40 per acre-foot, but this value may vary greatly among agricultural enterprises and may vary even more among the various types of use, including domestic and industrial uses. The interstate compacts profoundly affect our economy because they determine and control our water supply. It is difficult to assess this affect accurately because it would be necessary to visualize conditions as they might have existed if the compacts had not been consummated. These conditions would depend upon a number of physical, economic, political, and social factors. One can reasonably suppose that without the compacts the delay of projects necessary for flood protection and the full development of our water supply would have been greatly extended by opposition in the Congress from representatives of states competing with us for this water supply. One can also reasonably suppose that we would have been engaged to a greater extent in prolonged and expensive litigation in Federal District Courts and in the Supreme Court of the United States. Additional delay would have resulted from the uncertainty about what the final judgment of these courts might be.

Despite the apparent impossibility of arriving at compacts which are equitable in all their provisions, and despite the frustrations which arise from living under these compacts, it is my opinion that our compacts have greatly improved the economy of New Mexico by serving to secure our water supply and our way of life on these rivers.