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Managing the Upper Rio Grande: Old Institutions, New Players

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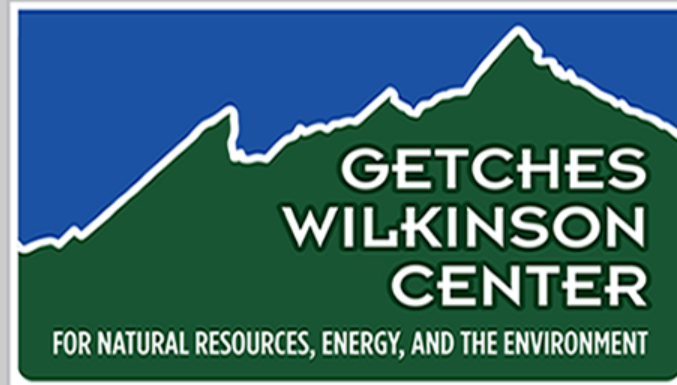
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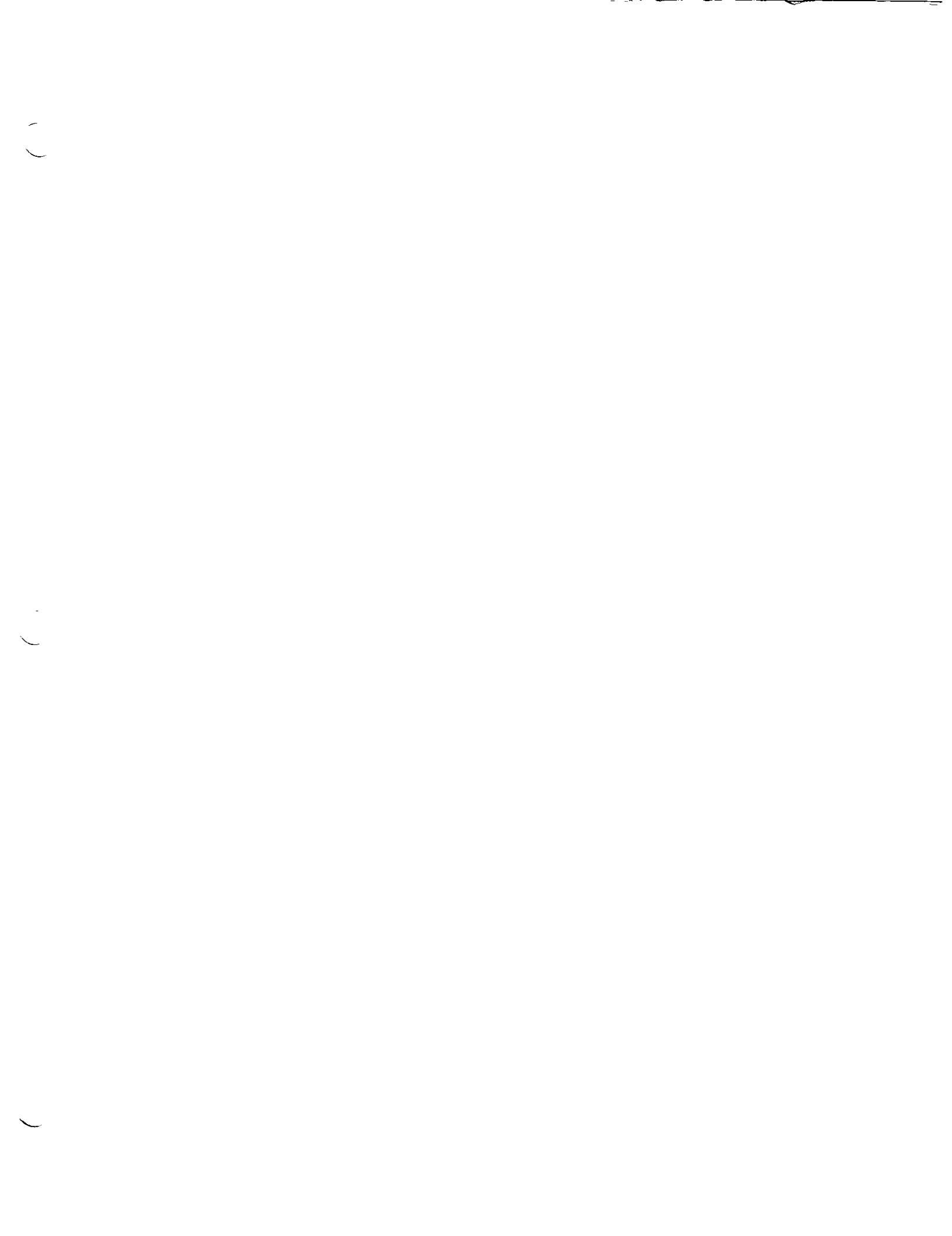
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**MANAGING THE UPPER RIO GRANDE:
OLD INSTITUTIONS, NEW PLAYERS**

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Steven J. Shupe

ABSTRACT: During the mid-1980s, Western Network undertook a study of how water management decisions are made in the upper Rio Grande basin extending from southern Colorado to Fort Quitman, Texas. The study, funded by grants from several foundations, resulted in a report entitled THE UPPER RIO GRANDE: A Guide to Decision-Making.* In addition to describing the current laws, physical structures, and institutions that affect the movement and use of Rio Grande waters, the report discusses the pressure to adapt water management in order to meet changing needs. The speaker, a co-author of the report (along with John Folk-Williams), presents the findings of this study and an assessment of how the new pressures on Rio Grande waters can be accommodated in water management strategies. The following textual material is taken from the report to provide background to the speech. Section I presents a chronology of significant events in the basin that affect water management, while Section II summarizes the major provisions of the Rio Grande Compact.

I. Chronology of Significant Events in the Basin

A. Pre-Compact Period

1880s - Water fully appropriated for irrigation.

1889 - Beginning of drought cycle which aggravates problem of overappropriation in the Upper Rio Grande.

1890s - Periodic complaints from the Mexican government regarding loss of water that Juarez-area farmers had historically used.

*For copies of the report, contact Western Network, 1215 Paseo de Peralta, Santa Fe, NM 87501; (505)982-9805.

1893 - Rio Grande Dam and Irrigation Company files for right of way to construct a dam at the Elephant Butte site.

1895 - Secretary of Interior approves the application for right of way for Elephant Butte Dam.

August 1896 - Mexico submits petition to the State Department opposing the private development of Elephant Butte Reservoir as undermining the potential for an international dam project.

December 1896 - Moratorium ordered by the Secretary of Interior on the approval of right-of-way applications for water projects on the Rio Grande. This embargo precludes development of any major storage facilities in the basin.

1902 - The Reclamation Act of 1902 is passed into law, establishing the Reclamation Service.

1903 - Reclamation Service identifies Elephant Butte as most suitable site for a federal project to satisfy both domestic and Mexican irrigation needs.

1906 - Reclamation Service files with the New Mexico Territorial Engineer for a right to 730,000 acre feet of the upper Rio Grande at Elephant Butte, later amending the application in 1908 for all unappropriated flows.

May 1906 - Mexico and the United States sign treaty providing for an annual delivery of 60,000 acre feet to Mexico in exchange for its dropping all further claims to damages or waters from the upper Rio Grande.

1906 - The secretarial moratorium of 1896 is modified to allow construction of the Elephant Butte Dam as well as other storage facilities constructed for the benefit of water rights existing prior to March 1, 1903.

1906 to 1929 - Several small dams are constructed in Colorado and New Mexico in order to capture runoff needed for irrigation under pre-1903 water rights upstream of Elephant Butte.

1916 - Construction of Elephant Butte Dam is completed.

May 1918 - The Elephant Butte Irrigation District of New Mexico is authorized to contract with the Reclamation Service for irrigation works serving the area downstream of the dam. New Mexico lands eligible for water deliveries from Elephant Butte Reservoir include 88,350 acres.

December 1922 - Contract negotiations are completed between the Reclamation Service and the El Paso Valley Water Improvement District #1 for delivery of Elephant Butte water to up to 66,650 acres of farmland in Texas.

B. The Compact Formulation Period

1923 - Colorado and New Mexico legislatures each pass statutes authorizing the designation of a commissioner to pursue formulation of an interstate compact for the Rio Grande.

1925 - The Secretary of Interior rescinds the 1896 moratorium and authorizes a diversion for a proposed reservoir in Colorado.

1925 - The Middle Rio Grande Conservancy District is organized in New Mexico to develop a plan for the reclamation, irrigation, and flood protection of the area upriver of Elephant Butte.

1926 - Texas appoints a compact commissioner.

December 19, 1928 - First meeting of the Rio Grande Compact conference takes place in Santa Fe.

February 12, 1929 - A temporary Rio Grande Compact

designed to maintain the status quo is signed. Major provisions of the temporary compact include:

- The requirement that each state shall maintain stream flow gaging stations and exchange records of measurements.
- A statement of intent that the delivery of water to Mexico is a federal obligation.
- A finding that a drainage project to salvage water from the Closed Basin in Colorado is essential, as is a stateline reservoir.
- A stipulation that neither New Mexico nor Colorado shall increase diversions or storage of water on the Rio Grande until such time as the resulting depletions are offset by drainage projects.
- Provisions for the creation of a Compact Commission that will permanently and equitably apportion the Rio Grande.

1930 - U.S. Census shows the following amounts of irrigated acreage in the upper Rio Grande basin: Texas - 79,400 acres; New Mexico - 380,000 acres; Colorado - 550,000 acres.

1930 - Construction begins on the flood control, drainage, and irrigation projects of the Middle Rio Grande Conservancy District.

Early 1930s - Efforts fail in Congress to obtain funding for the Closed Basin Project in Colorado. Partial funding is offered by the Public Works Administration, but with conditions attached which Colorado finds unacceptable.

December 10, 1934 - The Rio Grande Compact Commission convenes to begin formulating a permanent compact.

January 1935 - Commission adjourns after passing resolution to extend the temporary compact expiration date from June 1935 to June 1937.

October 1935 - Texas files suit in the Supreme Court against New Mexico and the Middle Rio Grande

Conservancy District, seeking enjoinder of diversions that allegedly diminish the quality and quantity of water available from Elephant Butte.

December 1935 - The Compact Commission meets with the National Resources Committee to discuss mutual studies and the need for additional hydrologic and water use data on the upper Rio Grande. A resolution is adopted by the Commission requesting federal assistance in undertaking a Joint Investigation.

May 1936 - A special master is appointed by the Supreme Court to hear the case of Texas v. New Mexico filed in the previous October.

June 1937 - The National Resources Committee delivers its final report of the Joint Investigation to the states.

September-December 1937 - The Commission meets to review the Joint Investigation report. A technical committee reviews the engineering aspects of possible solutions and issues a report with recommendations for compact provisions.

March 3, 1938 - The Rio Grande Compact Commissioners, after reviewing the technical report, meet to finalize provisions.

March 18, 1938 - The Rio Grande Compact Commission approves a compact allocating the waters of the upper Rio Grande.

C. The Post-Compact Period.

February 21, 1939 - Colorado approves the proposed compact

March 1, 1939 - New Mexico and Texas approve the proposed compact.

May 31, 1939 - President Roosevelt signs the compact following Congressional ratification earlier in the day.

October 1939 - The Supreme Court dismisses the case of Texas v. New Mexico in light of the agreement embodied in the compact.

December 1939 - The Commission adopts rules and regulations for administering the compact.

January 1940 - The compact's delivery schedule and requirements take effect.

Spring 1942 - Elephant Butte and Caballo reservoirs are filled to capacity and spill.

February 1948 - At its annual meeting, the Commission modifies New Mexico's delivery schedule, moving the gaging station from San Marcial to below Elephant Butte.

1948 - The Middle Rio Grande Project is authorized by Congress for additional flood control, storage, channel rectification, restoration of irrigation works, and other efforts above Elephant Butte.

1951 - New Mexico's accrued water debit under the compact reaches 331,000 af.

October 1951 - Texas files suit in the Supreme Court against New Mexico and the Middle Rio Grande Conservancy District, charging violation of the compact and requesting enjoinder of diversions until the accrued water debit is reduced to 200,000 af.

1952 - Colorado's accrued water debit exceeds its 100,000 af ceiling.

1956 - The New Mexico State Engineer assumes jurisdiction over groundwater use in the Rio Grande

Valley in order to protect surface rights as well as to facilitate the state's ability to meet compact obligations.

February 1957 - Supreme Court dismisses Texas's suit filed in October 1951 due to the absence of the United States as an indispensable party.

December 1965 - Colorado's accrued debit stands at 939,900 af.

October 1966 - New Mexico and Texas file suit in the Supreme Court against Colorado for alleged violation of the compact.

May 1968 - Following negotiations between the states, the 1966 case is stayed on the condition that Colorado hereafter meets its compact delivery requirements each year.

1972 - Congress authorizes the Closed Basin Project for salvaging the water in the San Luis Valley of Colorado and delivering it to the Rio Grande. Annual deliveries are expected to exceed 100,000 af.

August 1975 - The Colorado State Engineer promulgates rules governing the administration of water rights in the Rio Grande basin of Colorado. A long legal battle ensues.

1970s - New Mexico and Colorado consistently deliver water in accordance with annual compact requirements.

December 1983 - The Colorado Supreme Court issues its decision striking down many provisions of the state engineer's rules for regulating water rights in the San Luis Valley. The court finds that:

- Separate administration of the Conejos River and the Rio Grande mainstem for compact purposes is lawful.
- Alamosa, La Jara, and Trinchera creeks cannot be

administered in order to meet compact requirements.

- Senior surface rights are not strictly protected from interference by junior well pumping, due to the need to promote maximum utilization of all the region's water supplies.

Spring 1985 - After several seasons of heavy runoff, Elephant Butte and Caballo reservoirs fill to capacity.

July 2, 1985 - The compact commission meets and determines that an "actual spill" from Elephant Butte occurred on June 13, 1985, thereby eliminating the accrued water debits of Colorado and New Mexico.

Summer 1985 - Storage of excess waters in Cochiti and Abiquiu reservoirs creates controversy and problems with high water levels.

October 1985 - Water is delivered from the Closed Basin Project to the Rio Grande; this marks the completion of the early stages of the project.

November 1985 - New Mexico, Colorado, and Texas jointly file a stipulated motion to the United States Supreme Court for dismissal of the 1966 complaint against Colorado.

March 3, 1986 - The Compact Commission determines that another "actual spill" occurred on this date.

January 1, 1987 - For the third year in a row, an "actual spill" occurs at Elephant Butte.

January 31, 1988 - A fourth "spill" is determined by the Rio Grande Compact Commission.

II. Major Provisions of the Rio Grande Compact

A. Allocation of the Flow

The compact was designed to stabilize the water allocation pattern in the upper Rio Grande as it existed in 1929. Colorado received a right to quantities reflecting its historic use under specific flow regimes, as did New Mexico for uses upstream of Elephant Butte. The compact required that these users leave in the river the same general quantity of flow that had been delivered to the Elephant Butte reach in the past. If the states wished to increase their upstream diversion beyond the 1929 level, they would somehow have to augment the supply through salvage, conservation methods, drainage projects, or transbasin imports.

The compact reflects the perception during negotiations that a guaranteed annual release of 790,000 af from Elephant Butte Reservoir would protect existing downstream uses in Texas, New Mexico and Mexico. In order to ensure this amount of release, the compact established delivery schedules for the upstream reaches. These schedules dictate that Colorado and New Mexico administrators must analyze streamflow data each year to predict the amount of runoff entering the basin, calculate the state's delivery requirement, and regulate the water use to ensure that the delivery obligations are met. The specifics of these scheduled delivery requirements for each state are summarized below.

1. Colorado's delivery obligation:

During a typical runoff year, Colorado must deliver approximately one-third of the total Rio Grande flow to the New Mexico state line in accordance with compact requirements. In a year of high runoff, the compact delivery schedule increases this obligation to over 50%, while in dry years, Colorado must deliver only about 20% of the Rio Grande to New Mexico.

The compact divides the Rio Grande drainage in Colorado into two sub-basins with separate delivery schedules. The Conejos River sub-basin and Rio Grande mainstem sub-basin are each thoroughly gaged and measured to ensure that the delivery schedules can be met. Inflow into the Conejos basin is measured by totaling the flow from gages on the basin's three major tributaries (Conejos, Los Pinos and San Antonio rivers). The outflow requirement is then monitored at gages near the mouth of the Conejos River. For the Rio Grande mainstem, the gage at Del Norte is used to measure inflow, with gage measurements just north of the New Mexico border used to monitor compliance with the delivery obligation from the Rio Grande. Colorado's overall annual obligation is the sum of the Rio Grande mainstem and Conejos delivery schedules minus 10,000 af.

2. New Mexico's delivery obligation:

The amount of water that New Mexico must deliver to Elephant Butte is predicted on a similar schedule in the compact. The state must ensure that about 60% of the Rio Grande flow passing the Otowi gage (located a few miles south of Espanola) reaches Elephant Butte

Reservoir. During extremely wet years, however, this requirement increases to over 80%.

Article IV of the compact details the delivery schedule for New Mexico as established in 1938. This schedule, however, is obsolete due to a resolution of the Compact Commission in 1948. In that year, the Commission moved the location of the downstream gaging station from San Marcial (just above Elephant Butte Reservoir) to a point below the dam. A new delivery schedule, formulated in order to reflect this change in monitoring location, can be found in any post-1948 annual report following the text of the original compact.

3. Modification to reflect ongoing developments:

The basic calculations for basin water inflow and delivery outflow must be modified to reflect changes in:

- a. post-1929 diversions made above the inflow index gages in the respective states;
- b. transbasin imports; and
- c. operation of post-compact reservoirs above the inflow index gages.

B. Debits

The compact does not require that New Mexico and Colorado strictly adhere to the scheduled delivery requirements each and every year. The states are allowed to underdeliver in accordance with the following conditions.

1. New Mexico debt limit:

New Mexico may not be charged with a debit of more than 150,000 af in any one year, nor may it accumulate an accrued water debit greater than 200,000 af. (See Article I for definitions of accrued debit, credits, usable water, etc.) More than 200,000 af may be underdelivered, however, if such water is held in New Mexican reservoirs constructed after 1929. (Art. VI)

2. Colorado debt limit:

Colorado in general may not underdeliver by more than 100,000 af in any one year, nor may it accumulate an accrued water debit greater than this amount. More than 100,000 af may be underdelivered, however, if such water is held in Colorado reservoirs constructed after 1937. (Art. VI)

3. Storage of debit water:

Each state is required to store water equivalent to its accrued debit, to the extent physically possible, in reservoirs constructed after 1929 (New Mexico) or 1937 (Colorado). (Art. VI)

4. Call for debit water:

When usable water in Elephant Butte and Caballo reservoirs is less than 600,000 af before March 1, and if additional water is needed in order to release 790,000 af in the coming season, Texas or New Mexico may demand the release of accrued debit water stored in post-1929 reservoirs. (Art. XIII)

5. Use of debit water:

In order for a state which is storing accrued debit water to divert and use such water, it must receive the unanimous approval of the Commission. Any such water diverted and used must be replaced by additional storage at the earliest opportunity. (Art. VI)

6. Debit reduction:

If the sum of the accrued debits of Colorado and New Mexico exceeds the unfilled capacity of Elephant Butte and Caballo reservoirs, then the debits are reduced proportionally to equal the unfilled capacity. (Art. VI) It follows that when the unfilled capacity becomes zero (i.e., when an actual spill of usable water occurs), the entire debit of each state is eliminated. In addition, no annual debits are computed in a year in which an actual spill occurs. (Art. VI)

C. Credits

When New Mexico and Colorado deliver more water than is required under the compact schedule, they are able to take credit for the overdelivery, pursuant to the following conditions:

1. Credit ceiling: The maximum amount of credit that either state may claim in any one year is 150,000 af. (Art. VI)

2. Annual credits at spill: No annual credits may be claimed in years in which there is an actual spill from Elephant Butte. (Art. VI)

3. Accrued credits at spill: Accrued credits are reduced in an amount equal to that which is actually

spilled from Elephant Butte. (Art. VI)

4. Evaporation: Evaporative loss of stored credits and debits must be calculated and taken into account. (Art. VI)

D. Other Substantive Provisions

1. Storage restrictions:

In general, no water may be stored in post-1929 reservoirs when total usable water in Elephant Butte and Caballo reservoirs is less than 400,000 af. (Art. VII)

2. Water quality:

a. In order for Colorado to take credit for delivery of Closed Basin water when its total dissolved solids level exceeds 350 parts per million, sodium ions in such water must constitute less than 45% of total positive ions. (Art. III)

b. The compact recognizes each state's right to file suit in the United States Supreme Court if another state diminishes the quality of Rio Grande water to its detriment. (Art. XI)

3. Transbasin imports:

The state having the right to use imported water shall have exclusive right to take credit for the water under the delivery schedules of the compact. (Art. X)

4. Indian and international obligation:

The compact states that it in no way affects the obligations of the United States owed to Mexico or to Indian tribes, nor does it impair the rights of tribes.

D. Notes About the Compact

1. Project storage

Article I of the compact defines "project storage" as Elephant Butte Reservoir and, by implication, Caballo Reservoir. The total initial storage of these reservoirs, as reflected in the definition, was 2,638,860 af. Due to sedimentation, total project storage is now only 2,441,800 af (2,110,800 for Elephant Butte; 331,000 af for Caballo). Also, during the period from June 1 to November 15, 100,000 af of the Caballo capacity is removed as available "project storage" and is reserved solely for flood control.

2. Project releases

It was anticipated by the drafters of the compact that annual releases of 790,000 af from project storage would be needed to satisfy New Mexican, Texan, and Mexican water needs between Elephant Butte and Fort Quitman, Texas. In recent years, however, the annual demand for project water has been slightly less than 700,000 af.

3. Underdeliveries by New Mexico

New Mexico has difficulties achieving its delivery obligations to Elephant Butte under certain climatic conditions. This occurs most commonly in years of

abundant snowfall and spring runoff which flows past the inflow index gage at Otowi. If such conditions are followed by a lack of summer thunderstorms, which create most of the inflow below Otowi, New Mexico will likely underdeliver.

4. The 1985 spill

Although no water actually flowed over the Elephant Butte spillway, an "actual spill of usable water from project storage" occurred on June 13, 1985. This significant event canceled the accrued debits of both New Mexico and Colorado. In order to prevent flooding in the town of Truth or Consequences, the compact states had agreed to store spring flood waters in upstream reservoirs rather than at Elephant Butte. Absent this storage, a physical spill would have occurred at Elephant Butte; therefore, an "actual spill" as defined in the compact resulted on paper. This paper spill was not the same as a "hypothetical spill" as defined (somewhat ambiguously) in Article I of the compact. Such a hypothetical spill has never occurred, nor is it expected to be applied. A hypothetical spill could only follow years in which more than 790,000 af were released from project storage.

5. The Closed Basin Project

The Closed Basin Project was authorized by Congress in 1972 to salvage roughly 100,000 af annually from the Rio Grande area of Colorado. This project of the Bureau of Reclamation involves a series of wells and canals that transport water from the Closed Basin (which has no hydrologic outlet) to the Rio Grande channel. The cost of the project is completely

shouldered by the federal government, and is estimated to total \$77 million when complete. The early stages of the project were finished in 1985, with an estimated in-place capacity to transport 12,000 af/yr to the Rio Grande.

6. Post-1937 Colorado reservoirs

Certain provisions of the compact make more sense from the viewpoint of 1938 assumptions than from the facts in the 1980s. For instance, Article VI speaks of Colorado storing its debits in post-1937 reservoirs. This provision was included with the anticipation that major federal dam projects (e.g., Wagon Wheel Gap with a proposed capacity of 1 million af) would be built in Colorado's Rio Grande basin. Since 1937, however, only the Platoro Reservoir has been constructed, with a usable capacity of 54,000 af.

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