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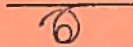


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REPORT

of the

**RIO GRANDE COMPACT
COMMISSION
2003**

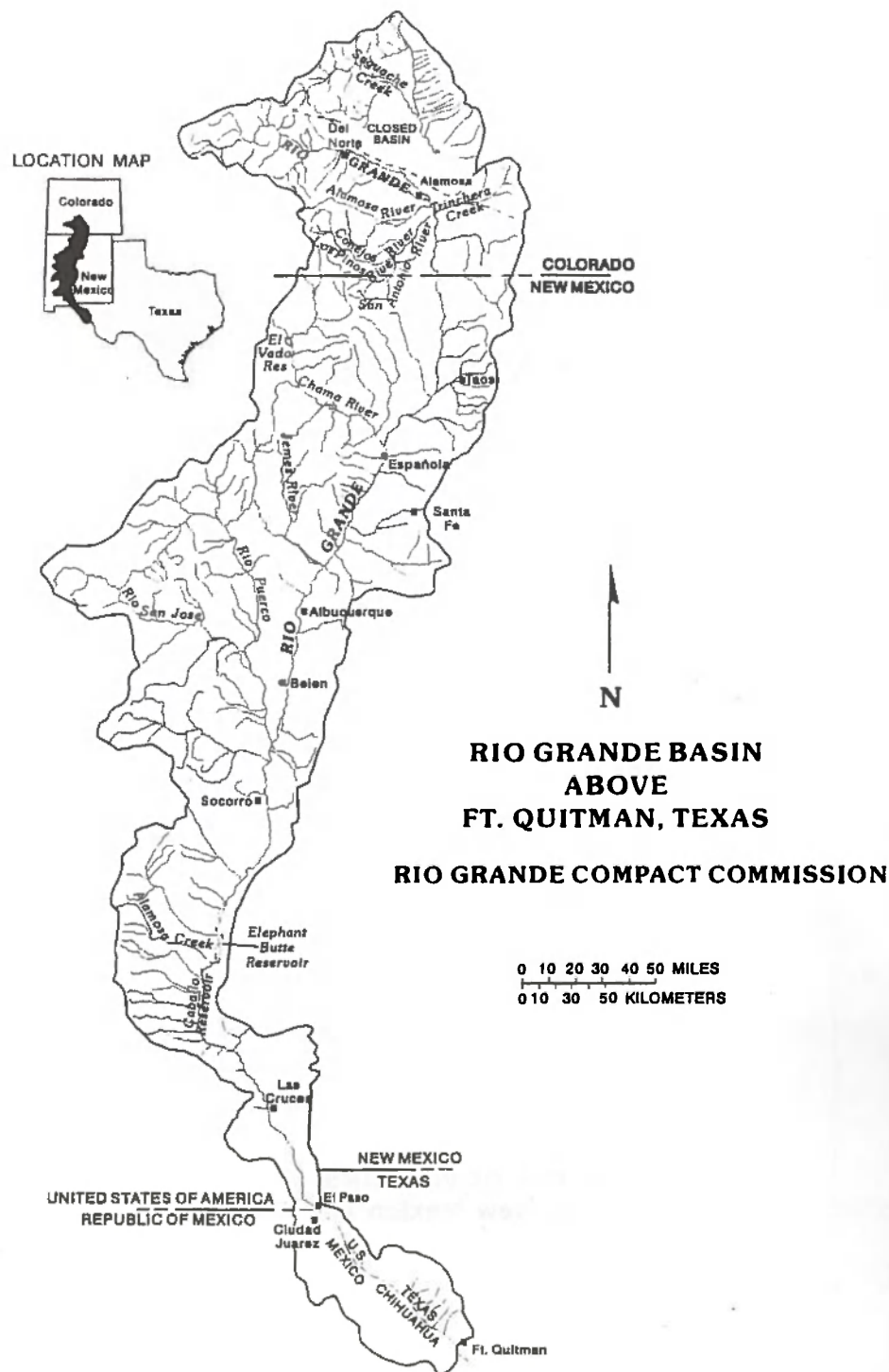


**TO THE GOVERNORS OF
Colorado, New Mexico and Texas**

**REPORT
of the
RIO GRANDE COMPACT
COMMISSION
2003**

6

**TO THE GOVERNORS OF
Colorado, New Mexico and Texas**



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RIO GRANDE COMPACT COMMISSION REPORT

RIO GRANDE COMPACT COMMISSION
COLORADO TEXAS NEW MEXICO

March 25, 2004

The Honorable Bill Richardson
 Governor of the State of New Mexico
 Santa Fe, New Mexico

The Honorable Rick Perry
 Governor of the State of Texas
 Austin, Texas

The Honorable Bill Owens
 Governor of the State of Colorado
 Denver, Colorado

Honorable Governors:

The 65th Annual Meeting of the Rio Grande Compact Commission was held in Alamosa, Colorado, on March 25, 2004.

The Commission reviewed its prior reports and the current reports of the Secretary and the Engineer Advisers relative to streamflow at Compact gaging stations and storage in reservoirs in 2003. The Commission found that:

- (a) Deliveries of water at the Colorado-New Mexico state line by Colorado amounted to 83,800 acre-feet in 2003 and the scheduled delivery for the year was 114,800 acre-feet.
- (b) Deliveries of water into Elephant Butte Reservoir by New Mexico, as measured by the Elephant Butte Effective Supply, amounted to 222,800 acre-feet in 2003 and the scheduled delivery for the year was 270,300 acre-feet.
- (c) The actual release of usable water from Project Storage was 365,700 acre-feet.
- (d) New Mexico relinquished 122,500 acre-feet of credit water to Texas on April 23, 2003.

The Commission agreed to the accounting of accrued credits for 2003, as follows:

- (1) The Commissioners found that the accrued credit for deliveries by Colorado at the Colorado-New Mexico State Line was 1,200 acre-feet on January 1, 2004.
- (2) The Commissioners found that the accrued credit for deliveries by New Mexico at Elephant Butte Dam was 54,000 acre-feet on January 1, 2004.
- (3) The Commissioners found that the accrued departure from normal release from Project Storage as of January 1, 2004 was a credit of 489,800 acre-feet.

ANNUAL REPORT TO GOVERNORS

The Commission reviewed the cost of operation and found that the expenses of the administration of the Rio Grande Compact were \$183,674 in the fiscal year ending June 30, 2003. The United States bore \$63,192 of this total; the balance of \$120,482 was borne equally by the three States party to the Compact.

Respectfully,


 John R. D'Antonio Jr., Commissioner for New Mexico


 Joe G. Hanson, Commissioner for Texas


 Harold D. Simpson, Commissioner for Colorado

RIO GRANDE COMPACT COMMISSION REPORT

RIO GRANDE COMPACT

The State of Colorado, the State of New Mexico, and the State of Texas, desiring to remove all causes of present and future controversy among these States and between citizens of one of these States and citizens of another State with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters, have resolved to conclude a Compact for the attainment of these purposes, and to that end, through their respective Governors, have named as their respective Commissioners:

For the State of Colorado
For the State of New Mexico
For the State of Texas

M. C. Hinderlider
Thomas M. McClure
Frank B. Clayton

who, after negotiations participated in by S. O. Harper, appointed by the President as the representative of the United States of America, have agreed upon the following articles, to-wit:

ARTICLE I

(a) The State of Colorado, the State of New Mexico, the State of Texas, and the United States of America, are hereinafter designated "Colorado," "New Mexico," "Texas," and the "United States," respectively.

(b) "The Commission" means the agency created by this Compact for the administration thereof.

(c) The term "Rio Grande Basin" means all of the territory drained by the Rio Grande and its tributaries in Colorado, in New Mexico, and in Texas above Fort Quitman, including the Closed Basin in Colorado.

(d) The "Closed Basin" means that part of the Rio Grande Basin in Colorado where the streams drain into the San Luis Lakes and adjacent territory, and do not normally contribute to the flow of the Rio Grande.

(e) The term "tributary" means any stream which naturally contributes to the flow of the Rio Grande.

(f) "Transmountain Diversion" is water imported into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande Basin, exclusive of the Closed Basin.

(g) "Annual Debits" are the amounts by which actual deliveries in any calendar year fall below scheduled deliveries.

(h) "Annual Credits" are the amounts by which actual deliveries in any calendar year exceed scheduled deliveries.

(i) "Accrued Debits" are the amounts by which the sum of all annual debits exceeds the sum of all annual credits over any common period of time.

(j) "Accrued Credits" are the amounts by which the sum of all annual credits exceeds the sum of all annual debits over any common period of time.

(k) "Project Storage" is the combined capacity of Elephant Butte Reservoir and all other reservoirs actually available for the storage of usable water below Elephant Butte and above the first diversion to lands of the Rio Grande Project, but not more than a total of 2,638,860 acre feet.

RIO GRANDE COMPACT

(l) "Usable Water" is all water, exclusive of credit water, which is in project storage and which is available for release in accordance with irrigation demands, including deliveries to Mexico.

(m) "Credit Water" is that amount of water in project storage which is equal to the accrued credit of Colorado, or New Mexico, or both.

(n) "Unfilled Capacity" is the difference between the total physical capacity of project storage and the amount of usable water then in storage.

(o) "Actual Release" is the amount of usable water released in any calendar year from the lowest reservoir comprising project storage.

(p) "Actual Spill" is all water which is actually spilled from Elephant Butte Reservoir, or is released therefrom for flood control, in excess of the current demand on project storage and which does not become usable water by storage in another reservoir; provided, that actual spill of usable water cannot occur until all credit water shall have been spilled.

(q) "Hypothetical Spill" is the time in any year at which usable water would have spilled from project storage if 790,000 acre feet had been released therefrom at rates proportional to the actual release in every year from the starting date to the end of the year in which hypothetical spill occurs; in computing hypothetical spill the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following the effective date of this Compact, and thereafter the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following each actual spill.

ARTICLE II

The Commission shall cause to be maintained and operated a stream gaging station equipped with an automatic water stage recorder at each of the following points, to-wit:

(a) On the Rio Grande near Del Norte above the principal points of diversion to the San Luis Valley;

(b) On the Conejos River near Mogote;

(c) On the Los Pinos River near Ortiz;

(d) On the San Antonio River at Ortiz;

(e) On the Conejos River at its mouths near Los Sauces;

(f) On the Rio Grande near Lobatos;

(g) On the Rio Chama below El Vado Reservoir;

(h) On the Rio Grande at Otowi Bridge near San Ildefonso;

(i) On the Rio Grande near San Acacia;

(j) On the Rio Grande at San Marcial;

(k) On the Rio Grande below Elephant Butte Reservoir;

(l) On the Rio Grande below Caballo Reservoir.

Similar gaging stations shall be maintained and operated below any other reservoir constructed after 1929, and at such other points as may be necessary for the securing of records required for the carrying out of the Compact; and automatic water stage recorders shall be maintained and operated on each of the reservoirs mentioned, and on all others constructed after 1929.

RIO GRANDE COMPACT COMMISSION REPORT

Such gaging stations shall be equipped, maintained and operated by the Commission directly or in cooperation with an appropriate Federal or State agency, and the equipment, method and frequency of measurement at such stations shall be such as to produce reliable records at all times. (Note: See Resolution of Commission printed elsewhere in this report.)

ARTICLE III

The obligation of Colorado to deliver water in the Rio Grande at the Colorado-New Mexico State Line, measured at or near Lobatos, in each calendar year, shall be ten thousand acre feet less than the sum of those quantities set forth in the two following tabulations of relationship, which correspond to the quantities at the upper index stations:

DISCHARGE OF CONEJOS RIVER

Quantities in thousands of acre feet

Conejos Index Supply (1)	Conejos River at Mouths (2)
100	0
150	20
200	45
250	75
300	109
350	147
400	188
450	232
500	278
550	326
600	376
650	426
700	476

Intermediate quantities shall be computed by proportional parts.

(1) Conejos Index Supply is the natural flow of Conejos River at the U.S.G.S. gaging station near Mogote during the calendar year, plus the natural flow of Los Pinos River at the U.S.G.S. gaging station near Ortiz and the natural flow of San Antonio River at the U.S.G.S. gaging station at Ortiz, both during the months of April to October, inclusive.

(2) Conejos River at Mouths is the combined discharge of branches of this river at the U.S.G.S. gaging stations near Los Sauces during the calendar year.

DISCHARGE OF RIO GRANDE EXCLUSIVE OF CONEJOS RIVER

Quantities in thousands of acre feet

Rio Grande at Del Norte (3)	Rio Grande at Lobatos less Conejos at Mouths (4)
200	60
250	65
300	75
350	86
400	98
450	112
500	127
550	144
600	162

RIO GRANDE COMPACT

DISCHARGE OF RIO GRANDE EXCLUSIVE OF CONEJOS RIVER--Con.

Quantities in thousands of acre feet

Rio Grande at Del Norte (3)	Rio Grande at Lobatos less Conejos at Mouths (4)
650	182
700	204
750	229
800	257
850	292
900	335
950	380
1,000	430
1,100	540
1,200	640
1,300	740
1,400	840

Intermediate quantities shall be computed by proportional parts.

(3) Rio Grande at Del Norte is the recorded flow of the Rio Grande at the U.S.G.S. gaging station near Del Norte during the calendar year (measured above all principal points of diversion to San Luis Valley) corrected for the operation of reservoirs constructed after 1937.

(4) Rio Grande at Lobatos less Conejos at Mouths is the total flow of the Rio Grande at the U.S.G.S. gaging station near Lobatos, less the discharge of Conejos River at its Mouths, during the calendar year.

The application of these schedules shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) any new or increased depletion of the runoff above inflow index gaging stations; and (c) any transmountain diversions into the drainage basin of the Rio Grande above Lobatos.

In event any works are constructed after 1937 for the purpose of delivering water into the Rio Grande from the Closed Basin, Colorado shall not be credited with the amount of such water delivered, unless the proportion of sodium ions shall be less than forty-five percent of the total positive ions in that water when the total dissolved solids in such water exceeds three hundred fifty parts per million.

ARTICLE IV

The obligation of New Mexico to deliver water in the Rio Grande at San Marcial, during each calendar year, exclusive of the months of July, August, and September, shall be that quantity set forth in the following tabulation of relationship, which corresponds to the quantity at the upper index station:

RIO GRANDE COMPACT COMMISSION REPORT

DISCHARGE OF RIO GRANDE AT OTOWI BRIDGE AND AT SAN MARCIAL
EXCLUSIVE OF JULY, AUGUST AND SEPTEMBER

Quantities in thousands of acre feet

Otowi Index Supply (5)	San Marcial Index Supply (6)
100	0
200	65
300	141
400	219
500	300
600	383
700	469
800	557
900	648
1,000	742
1,100	839
1,200	939
1,300	1,042
1,400	1,148
1,500	1,257
1,600	1,370
1,700	1,489
1,800	1,608
1,900	1,730
2,000	1,856
2,100	1,985
2,200	2,117
2,300	2,253

Intermediate quantities shall be computed by proportional parts.

(5) The Otowi Index Supply is the recorded flow of the Rio Grande at the U.S.G.S. gaging station at Otowi Bridge near San Ildefonso (formerly station near Buckman) during the calendar year, exclusive of the flow during the months of July, August and September, corrected for the operation of reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and Otowi Bridge.

(6) San Marcial Index Supply is the recorded flow of the Rio Grande at the gaging station at San Marcial during the calendar year exclusive of the flow during the months of July, August and September.

The application of this schedule shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) depletion after 1929 in New Mexico at any time of the year of the natural runoff at Otowi Bridge; (c) depletion of the runoff during July, August and September of tributaries between Otowi Bridge and San Marcial, by works constructed after 1937; and (d) any transmountain diversions into the Rio Grande between Lobatos and San Marcial.

Concurrent records shall be kept of the flow of the Rio Grande at San Marcial, near San Acacia, and of the release from Elephant Butte Reservoir to the end that the records at these three stations may be correlated. (Note: See Resolution of Commission printed elsewhere in this report.)

RIO GRANDE COMPACT

ARTICLE V

If at any time it should be the unanimous finding and determination of the Commission that because of changed physical conditions, or for any other reason, reliable records are not obtainable, or cannot be obtained, at any of the stream gaging stations herein referred to, such stations may, with the unanimous approval of the Commission, be abandoned, and with such approval another station, or other stations, shall be established and new measurements shall be substituted which, in the unanimous opinion of the Commission, will result in substantially the same results so far as the rights and obligations to deliver water are concerned, as would have existed if such substitution of stations and measurements had not been so made. (Note: See Resolution of Commission printed elsewhere in this report.)

ARTICLE VI

Commencing with the year following the effective date of this Compact, all credits and debits of Colorado and New Mexico shall be computed for each calendar year; provided, that in a year of actual spill no annual credits nor annual debits shall be computed for that year.

In the case of Colorado, no annual debit nor accrued debit shall exceed 100,000 acre feet, except as either or both may be caused by holdover storage of water in reservoirs constructed after 1937 in the drainage basin of the Rio Grande above Lobatos. Within the physical limitations of storage capacity in such reservoirs, Colorado shall retain water in storage at all times to the extent of its accrued debit.

In the case of New Mexico, the accrued debit shall not exceed 200,000 acre feet at any time, except as such debit may be caused by holdover storage of water in reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and San Marcial. Within the physical limitations of storage capacity in such reservoirs, New Mexico shall retain water in storage at all times to the extent of its accrued debit. In computing the magnitude of accrued credits or debits, New Mexico shall not be charged with any greater debit in any one year than the sum of 150,000 acre-feet and all gains in the quantity of water in storage in such year.

The Commission by unanimous action may authorize the release from storage of any amount of water which is then being held in storage by reason of accrued debits of Colorado or New Mexico; provided, that such water shall be replaced at the first opportunity thereafter.

In computing the amount of accrued credits and accrued debits of Colorado or New Mexico, any annual credits in excess of 150,000 acre feet shall be taken as equal to that amount.

In any year in which actual spill occurs, the accrued credits of Colorado, or New Mexico, or both, at the beginning of the year shall be reduced in proportion to their respective credits by the amount of such actual spill; provided that the amount of actual spill shall be deemed to be increased by the aggregate gain in the amount of water in storage, prior to the time of spill, in reservoirs above San Marcial constructed after 1929; provided, further, that if the Commissioners for the States having accrued credits authorize the release of part, or all, of such credits in advance of spill, the amount so released shall be deemed to constitute actual spill.

In any year in which there is actual spill of usable water, or at the time of hypothetical spill thereof, all accrued debits of Colorado, or New Mexico, or both, at the beginning of the year shall be cancelled.

RIO GRANDE COMPACT COMMISSION REPORT

In any year in which the aggregate of accrued debits of Colorado and New Mexico exceeds the minimum unfilled capacity of project storage, such debits shall be reduced proportionally to an aggregate amount equal to such minimum unfilled capacity.

To the extent that accrued credits are impounded in reservoirs between San Marcial and Courchesne, and to the extent that accrued debits are impounded in reservoirs above San Marcial, such credits and debits shall be reduced annually to compensate for evaporation losses in the proportion that such credits or debits bore to the total amount of water in such reservoirs during the year.

ARTICLE VII

Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000 acre feet of usable water in project storage; provided, that if the actual releases of usable water from the beginning of the calendar year following the effective date of this Compact, or from the beginning of the calendar year following actual spill, have aggregated more than an average of 790,000 acre feet per annum, the time at which such minimum stage is reached shall be adjusted to compensate for the difference between the total actual release and releases at such average rate; provided, further, that Colorado, or New Mexico, or both, may relinquish accrued credits at any time, and Texas may accept such relinquished water, and in such event the state, or states, so relinquishing shall be entitled to store water in the amount of the water so relinquished.

ARTICLE VIII

During the month of January of any year the Commissioner for Texas may demand of Colorado and New Mexico, and the Commissioner for New Mexico may demand of Colorado, the release of water from storage reservoirs constructed after 1929 to the amount of the accrued debits of Colorado and New Mexico, respectively, and such releases shall be made by each at the greatest rate practicable under the conditions then prevailing, and in proportion to the total debit of each, and in amounts, limited by their accrued debits, sufficient to bring the quantity of usable water in project storage to 600,000 acre feet by March first and to maintain this quantity in storage until April thirtieth, to the end that a normal release of 790,000 acre feet may be made from project storage in that year.

ARTICLE IX

Colorado agrees with New Mexico that in event the United States or the State of New Mexico decides to construct the necessary works for diverting the waters of the San Juan River, or any of its tributaries, into the Rio Grande, Colorado hereby consents to the construction of said works and the diversion of waters from the San Juan River, or the tributaries thereof, into the Rio Grande in New Mexico, provided the present and prospective uses of water in Colorado by other diversions from the San Juan River, or its tributaries, are protected.

ARTICLE X

In the event water from another drainage basin shall be imported into the Rio Grande Basin by the United States or Colorado or New Mexico, or any of them jointly, the State having the right to the use of such water shall be given proper credit therefor in the application of the schedules.

ARTICLE XI

New Mexico and Texas agree that upon the effective date of this Compact all controversies between said States relative to the quantity or quality of the water of the Rio Grande are composed and settled; however, nothing herein shall be interpreted to prevent

RIO GRANDE COMPACT

recourse by a signatory state to the Supreme Court of the United States for redress should the character or quality of the water, at the point of delivery, be changed hereafter by one signatory state to the injury of another. Nothing herein shall be construed as an admission by any signatory state that the use of water for irrigation causes increase of salinity for which the user is responsible in law.

ARTICLE XII

To administer the provisions of this Compact there shall be constituted a Commission composed of one representative from each state, to be known as the Rio Grande Compact Commission. The State Engineer of Colorado shall be ex-officio the Rio Grande Compact Commissioner for Colorado. The State Engineer of New Mexico shall be ex-officio the Rio Grande Compact Commissioner for New Mexico. The Rio Grande Compact Commissioner for Texas shall be appointed by the Governor of Texas. The President of the United States shall be requested to designate a representative of the United States to sit with such Commission, and such representative of the United States, if so designated by the President, shall act as Chairman of the Commission without vote.

The salaries and personal expenses of the Rio Grande Compact Commissioners for the three States shall be paid by their respective States, and all other expenses incident to the administration of this Compact, not borne by the United States, shall be borne equally by the three States.

In addition to the powers and duties hereinbefore specifically conferred upon such Commission, and the members thereof, the jurisdiction of such Commission shall extend only to the collection, correlation and presentation of factual data and the maintenance of records having a bearing upon the administration of this Compact, and, by unanimous action, to the making of recommendations to the respective States upon matters connected with the administration of this Compact. In connection therewith, the Commission may employ such engineering and clerical aid as may be reasonably necessary within the limit of funds provided for that purpose by the respective States. Annual reports compiled for each calendar year shall be made by the Commission and transmitted to the Governors of the signatory States on or before March first following the year covered by the report. The Commission may, by unanimous action, adopt rules and regulations consistent with the provisions of this Compact to govern their proceedings.

The findings of the Commission shall not be conclusive in any court or tribunal which may be called upon to interpret or enforce this Compact.

ARTICLE XIII

At the expiration of every five-year period after the effective date of this Compact, the Commission may, by unanimous consent, review any provisions hereof which are not substantive in character and which do not affect the basic principles upon which the Compact is founded, and shall meet for the consideration of such questions on the request of any member of the Commission; provided, however, that the provisions hereof shall remain in full force and effect until changed and amended within the intent of the Compact by unanimous action of the Commissioners, and until any changes in this Compact are ratified by the legislatures of the respective states and consented to by the Congress, in the same manner as this Compact is required to be ratified to become effective.

ARTICLE XIV

The schedules herein contained and the quantities of water herein allocated shall never be increased nor diminished by reason of any increase or diminution in the delivery or loss of water to Mexico.

RIO GRANDE COMPACT COMMISSION REPORT

ARTICLE XV

The physical and other conditions characteristic of the Rio Grande and peculiar to the territory drained and served thereby, and to the development thereof, have actuated this Compact and none of the signatory states admits that any provisions herein contained establishes any general principle or precedent applicable to other interstate streams.

ARTICLE XVI

Nothing in this Compact shall be construed as affecting the obligations of the United States of America to Mexico under existing treaties, or to the Indian Tribes, or as impairing the rights of the Indian Tribes.

ARTICLE XVII

This Compact shall become effective when ratified by the legislatures of each of the signatory states and consented to by the Congress of the United States. Notice of ratification shall be given by the Governor of each state to the Governors of the other states and to the President of the United States, and the President of the United States is requested to give notice to the Governors of each of the signatory states of the consent of the Congress of the United States.

IN WITNESS WHEREOF, the Commissioners have signed this Compact in quadruplicate original, one of which shall be deposited in the archives of the Department of State of the United States of America and shall be deemed the authoritative original, and of which a duly certified copy shall be forwarded to the Governor of each of the signatory States.

Done at the City of Santa Fe, in the State of New Mexico, on the 18th day of March, in the year of our Lord, One Thousand Nine Hundred and Thirty-eight.

(Sgd.) M. C. HINDERLIDER

(Sgd.) THOMAS M. McCLURE

(Sgd.) FRANK B. CLAYTON

APPROVED:

(Sgd.) S. O. HARPER

RATIFIED BY:

Colorado, February 21, 1939

New Mexico, March 1, 1939

Texas, March 1, 1939

Passed Congress as Public Act No. 96, 76th Congress,

Approved by the President May 31, 1939

RESOLUTION ADOPTED BY RIO GRANDE COMPACT COMMISSION
AT THE ANNUAL MEETING HELD AT EL PASO, TEXAS, FEBRUARY 22-24, 1948, CHANGING
GAGING STATIONS AND MEASUREMENTS OF
DELIVERIES BY NEW MEXICO

RESOLUTION

Whereas, at the Annual Meeting of the Rio Grande Compact Commission in the year 1945, the question was raised as to whether or not a schedule for delivery of water by New Mexico during the entire year could be worked out, and

Whereas, at said meeting the question was referred to the Engineering Advisers for their study, recommendations and report, and

Whereas, said Engineering Advisers have met, studied the problems and under date of February 24, 1947, did submit their Report, which said Report contains the findings of said Engineering Advisers and their recommendations, and

Whereas, the Compact Commission has examined said Report and finds that the matters and things therein found and recommended are proper and within the terms of the Rio Grande Compact, and

Whereas, the Commission has considered said Engineering Advisers' Report and all available evidence, information and material and is fully advised:

Now, Therefore, Be it Resolved:

The Commission finds as follows:

- (a) That because of change of physical conditions, reliable records of the amount of water passing San Marcial are no longer obtainable at the stream gaging station at San Marcial and that the same should be abandoned for Compact purposes.
- (b) That the need for concurrent records at San Marcial and San Acacia no longer exists and that the gaging station at San Acacia should be abandoned for Compact purposes.
- (c) That it is desirable and necessary that the obligations of New Mexico under the Compact to deliver water in the months of July, August, September, should be scheduled.
- (d) That the change in gaging stations and substitution of the new measurements as hereinafter set forth will result in substantially the same results so far as the rights and obligations to deliver water are concerned, and would have existed if such substitution of stations and measurements had not been so made.

Be it Further Resolved:

That the following measurements and schedule thereof shall be substituted for the measurements and schedule thereof as now set forth in Article IV of the Compact:

"The obligation of New Mexico to deliver water in the Rio Grande into Elephant Butte Reservoir during each calendar year shall be measured by that quantity set forth in the following tabulation of relationship which corresponds to the quantity at the upper index station:

RIO GRANDE COMPACT COMMISSION REPORT
DISCHARGE OF RIO GRANDE AT OTOWI BRIDGE AND ELEPHANT BUTTE EFFECTIVE
SUPPLY

Quantities in thousands of acre-feet

Otowi Index Supply (5)	Elephant Butte Effective Index Supply (6)
100	57
200	114
300	171
400	228
500	286
600	345
700	406
800	471
900	542
1,000	621
1,100	707
1,200	800
1,300	897
1,400	996
1,500	1,095
1,600	1,195
1,700	1,295
1,800	1,395
1,900	1,495
2,000	1,595
2,100	1,695
2,200	1,795
2,300	1,895
2,400	1,995
2,500	2,095
2,600	2,195
2,700	2,295
2,800	2,395
2,900	2,495
3,000	2,595

Intermediate quantities shall be computed by proportional parts.

- (5) The Otowi Index Supply is the recorded flow of the Rio Grande at the U.S.G.S. gaging station at Otowi Bridge near San Idefonso (formerly station near Buckman) during the calendar year, corrected for the operation of reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and Otowi Bridge.
- (6) Elephant Butte Effective Index Supply is the recorded flow of the Rio Grande at the gaging station below Elephant Butte Dam during the calendar year plus the net gain in storage in Elephant Butte Reservoir during the same year or minus the net loss in storage in said reservoir, as the case may be.

RIO GRANDE COMPACT

The application of this schedule shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) depletion after 1929 in New Mexico of the natural runoff at Otowi Bridge; and (c) any transmountain diversions into the Rio Grande between Lobatos and Elephant Butte Reservoir."

Be it Further Resolved:

That the gaging stations at San Acacia and San Marcial be, and the same are hereby abandoned for Compact purposes.

Be it Further Resolved:

That this Resolution has been passed unanimously and shall be effective January 1, 1949, if within 120 days from this date the Commissioner for each State shall have received from the Attorney General of the State represented by him, an opinion approving this Resolution, and shall have so advised the Chairman of the Commission, otherwise, to be of no force and effect.

(Note: The following paragraph appears in the Minutes of the Annual Meeting of the Commission held at Denver, Colorado, February 14-16, 1949.

"The Chairman announced that he had received, pursuant to the Resolution adopted by the Commission at the Ninth Annual Meeting on February 24, 1948, opinions from the Attorneys General of Colorado, New Mexico and Texas that the substitution of stations and measurements of deliveries by New Mexico set forth in said resolution was within the powers of the Commission").

RIO GRANDE COMPACT COMMISSION REPORT
RULES AND REGULATIONS FOR ADMINISTRATION OF
THE RIO GRANDE COMPACT

A Compact, known as the Rio Grande Compact, between the States of Colorado, New Mexico and Texas, having become effective on May 31, 1939 by consent of the Congress of the United States, which equitably apportions the waters of the Rio Grande above Fort Quitman and permits each State to develop its water resources at will, subject only to its obligations to deliver water in accordance with the schedules set forth in the Compact, the following Rules and Regulations have been adopted for its administration by the Rio Grande Compact Commission; to be and remain in force and effect only so long as the same may be satisfactory to each and all members of the Commission, and provided always that on the objection of any member of the Commission, in writing, to the remaining two members of the Commission after a period of sixty days from the date of such objection, the sentence, paragraph or any portion or all of these rules to which any such objection shall be made, shall stand abrogated and shall thereafter have no further force and effect; it being the intent and purpose of the Commission to permit these rules to obtain and be effective only so long as the same may be satisfactory to each and all of the Commissioners.

GAGING STATIONS ¹

Responsibility for the equipping, maintenance and operation of the stream gaging stations and reservoir gaging stations required by the provisions of Article II of the Compact shall be divided among the signatory States as follows:

(a) Gaging stations on streams and reservoirs in the Rio Grande Basin above the Colorado-New Mexico boundary shall be equipped, maintained, and operated by Colorado in cooperation with the U.S. Geological Survey.

(b) Gaging stations on streams and reservoirs in the Rio Grande Basin below Lobatos and above Caballo Reservoir shall be equipped, maintained and operated by New Mexico in cooperation with the U.S. Geological Survey to the extent that such stations are not maintained and operated by some other Federal agency.

(c) Gaging stations on Elephant Butte Reservoir and on Caballo Reservoir, and the stream gaging stations on the Rio Grande below those reservoirs shall be equipped, maintained and operated by or on behalf of Texas through the agency of the U.S. Bureau of Reclamation.

The equipment, method and frequency of measurements at each gaging station shall be sufficient to obtain records at least equal in accuracy to those classified as "good" by the U.S. Geological Survey. Water-stage recorders on the reservoirs specifically named in Article II of the Compact shall have sufficient range below maximum reservoir level to record major fluctuations in storage. Staff gages may be used to determine fluctuations below the range of the water-stage recorders on these and other large reservoirs, and staff gages may be used upon approval of the Commission in lieu of water-stage recorders on small reservoirs, provided that the frequency of observation is sufficient in each case to establish any material changes in water levels in such reservoirs.

¹ Amended at Eleventh Annual Meeting, February 23, 1950.

RULES AND REGULATIONS

RESERVOIR CAPACITIES ¹

Colorado shall file with the Commission a table of areas and capacities for each reservoir in the Rio Grande Basin above Lobatos constructed after 1937; New Mexico shall file with the Commission a table of areas and capacities for each reservoir in the Rio Grande Basin between Lobatos and San Marcial constructed after 1929; and Texas shall file with the Commission tables of areas and capacities for Elephant Butte Reservoir and for all other reservoirs actually available for the storage of water between Elephant Butte and the first diversion to lands under the Rio Grande Project.

Whenever it shall appear that any table of areas and capacities is in error by more than five per cent, the Commission shall use its best efforts to have a re-survey made and a corrected table of areas and capacities to be substituted as soon as practicable. To the end that the Elephant Butte effective supply may be computed accurately, the Commission shall use its best efforts to have the rate of accumulation and the place of deposition of silt in Elephant Butte Reservoir checked at least every three years.

ACTUAL SPILL ^{2, 3, 4}

(a) Water released from Elephant Butte in excess of Project requirements, which is currently passed through Caballo Reservoir, prior to the time of spill, shall be deemed to have been Usable Water released in anticipation of spill, or Credit Water if such release shall have been authorized.

(b) Excess releases from Elephant Butte Reservoir, as defined in (a) above, shall be added to the quantity of water actually in storage in that reservoir, and Actual Spill shall be deemed to have commenced when this sum equals the total capacity of that reservoir to the level of the uncontrolled spillway less capacity reserved for flood purposes, i.e., 1,998,400 acre-feet in the months of October through March inclusive, and 1,973,400 acre-feet in the months of April through September, inclusive, as determined from the 1999 area-capacity table or successor area-capacity tables and flood control storage reservation of 50,000 acre-feet from April through September and 25,000 acre-feet from October through March.

(c) All water actually spilled at Elephant Butte Reservoir, or released therefrom, in excess of Project requirements, which is currently passed through Caballo Reservoir, after the time of spill, shall be considered as Actual Spill, provided that the total quantity of water then in storage in Elephant Butte Reservoir exceeds the physical capacity of that reservoir at the level of the sill of the spillway gates, i.e. -1,830,000 acre-ft in 1942.

(d) Water released from Caballo Reservoir in excess of Project requirements and in excess of water currently released from Elephant Butte Reservoir, shall be deemed Usable Water released, excepting only flood water entering Caballo Reservoir from tributaries below Elephant Butte Reservoir.

DEPARTURES FROM NORMAL RELEASES ⁵

For the purpose of computing the time of Hypothetical Spill required by Article VI and for the purpose of the adjustment set forth in Article VII, no allowance shall be made for the difference between Actual and Hypothetical Evaporation, and any under-release of usable water from Project Storage in excess of 150,000 acre-ft in any year shall be taken as equal to that amount.

¹ Amended at Eleventh Annual Meeting, February 23, 1950.

² Adopted at Fourth Annual Meeting, February 24, 1943.

³ Amended September 9, 1998.

⁴ Amended March 22, 2001; made effective January 1, 2001.

⁵ Adopted June 2, 1959; made effective January 1, 1952.

RIO GRANDE COMPACT COMMISSION REPORT

EVAPORATION LOSSES ⁶, ⁷, ⁸

The Commission shall encourage the equipping, maintenance and operation, in cooperation with the U.S. Weather Bureau or other appropriate agency, of evaporation stations at Elephant Butte Reservoir and at or near each major reservoir in the Rio Grande Basin within Colorado constructed after 1937 and in New Mexico constructed after 1929. The net loss by evaporation from a reservoir surface shall be taken as the difference between the actual evaporation loss and the evapo-transpiration losses which would have occurred naturally, prior to the construction of such reservoir. Changes in evapo-transpiration losses along stream channels below reservoirs may be disregarded.

Net losses by evaporation, as defined above, shall be used in correcting Index Supplies for the operation of reservoirs upstream from Index Gaging Stations as required by the provisions of Article III and Article IV of the Compact.

In the application of the provisions of the last unnumbered paragraph of Article VI of the Compact:

(a) Evaporation losses for which accrued credits shall be reduced shall be taken as the difference between the gross evaporation from the water surface of Elephant Butte Reservoir and rainfall on the same surface.

(b) Evaporation losses for which accrued debits shall be reduced shall be taken as the net loss by evaporation as defined in the first paragraph.

ADJUSTMENT OF RECORDS

The Commission shall keep a record of the location, and description of each gaging station and evaporation station, and, in the event of change in location of any stream gaging station for any reason, it shall ascertain the increment in flow or decrease in flow between such locations for all stages. Wherever practicable, concurrent records shall be obtained for one year before abandonment of the previous station.

NEW OR INCREASED DEPLETIONS

In the event any works are constructed which alter or may be expected to alter the flow at any of the Index Gaging Stations mentioned in the Compact, or which may otherwise necessitate adjustments in the application of the schedules set forth in the Compact, it shall be the duty of the Commissioner specifically concerned to file with the Commission all available information pertaining thereto, and appropriate adjustments shall be made in accordance with the terms of the Compact; provided, however, that any such adjustments shall in no way increase the burden imposed upon Colorado or New Mexico under the schedules of deliveries established by the Compact.

TRANSMOUNTAIN DIVERSIONS

In the event any works are constructed for the delivery of waters into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande Basin, such waters shall be measured at the point of delivery into the Rio Grande Basin and proper allowances shall be made for losses in transit from such points to the Index Gaging Station on the stream with which the imported waters are comingled.

⁶ Amended at Tenth Annual Meeting, February 15, 1949.

⁷ Amended at Twelfth Annual Meeting, February 24, 1951.

⁸ Amended June 2, 1959.

RULES AND REGULATIONS

QUALITY OF WATER

In the event that delivery of water is made from the Closed Basin into the Rio Grande, sufficient samples of such water shall be analyzed to ascertain whether the quality thereof is within the limits established by the Compact.

SECRETARY ⁷/₈

The Commission, subject to the approval of the Director, U.S. Geological Survey, to a cooperative agreement for such purposes, shall employ the U.S. Geological Survey on a yearly basis, to render such engineering and clerical aid as may reasonably be necessary for administration of the Compact. Said agreement shall provide that the Geological Survey shall:

(1) Collect and correlate all factual data and other records having a material bearing on the administration of the Compact and keep each Commissioner advised thereof.

(2) Inspect all gaging stations required for administration of the Compact and make recommendations to the Commission as to any changes or improvements in methods of measurement or facilities for measurement which may be needed to insure that reliable records be obtained.

(3) Report to each Commissioner by letter on or before the fifteenth day of each month, except January, a summary of all hydrographic data then available for the current year - on forms prescribed by the Commission - pertaining to:

- (a) Deliveries by Colorado
- (b) Deliveries by New Mexico
- (c) Operation of Project Storage

(4) Make such investigations as may be requested by the Commission in aid of its administration of the Compact.

(5) Act as Secretary to the Commission and submit to the Commission at its regular meeting in February a report on its activities and a summary of all data needed for determination of debits and credits and other matters pertaining to administration of the Compact.

COSTS ¹

In February of each year, the Commission shall adopt a budget for the ensuing fiscal year beginning July first.

Such budget shall set forth the total cost of maintenance and operating of gaging stations, of evaporation stations, the cost of engineering and clerical aid, and all other necessary expenses excepting the salaries and personal expenses of the Rio Grande Compact Commissioners.

Contributions made directly by the United States and the cost of services rendered by the United States without cost shall be deducted from the total budget amount; the remainder shall then be allocated equally to Colorado, New Mexico and Texas.

¹⁵ The substitution of this section for the section titled "Reports to Commissioners" was adopted at Ninth Annual Meeting, February 22, 1948.

¹¹ Amended at Eleventh Annual Meeting, February 23, 1950.

RIO GRANDE COMPACT COMMISSION REPORT

Expenditures made directly by any State for purposes set forth in the budget shall be credited to that State; contributions in cash or in services by any State under a cooperative agreement with any federal agency shall be credited to such State, but the amount of the federal contribution shall not so be credited; in event any State, through contractual relationships, causes work to be done in the interest of the Commission, such State shall be credited with the cost thereof, unless such cost is borne by the United States.

Costs incurred by the Commission under any cooperative agreement between the Commission and any U.S. Government Agency, not borne by the United States, shall be apportioned equally to each State, and each Commissioner shall arrange for the prompt payment of one-third thereof by his State.

The Commissioner of each State shall report at the annual meeting each year the amount of money expended during the year by the State which he represents, as well as the portion thereof contributed by all cooperating federal agencies, and the Commission shall arrange for such proper reimbursement in cash or credits between States as may be necessary to equalize the contributions made by each State in the equipment, maintenance and operation of all gaging stations authorized by the Commission and established under the terms of the Compact.

It shall be the duty of each Commissioner to endeavor to secure from the Legislature of his State an appropriation of sufficient funds with which to meet the obligations of his State, as provided by the Compact.

MEETING OF COMMISSION ¹/₁, ¹/₁₀

The Commission shall meet in Santa Fe, New Mexico, on the third Thursday of February of each year for the consideration and adoption of the annual report for the calendar year preceding, and for the transaction of any other business consistent with its authority; provided that the Commission may agree to meet elsewhere. Other meetings as may be deemed necessary shall be held at any time and place set by mutual agreement, for the consideration of data collected and for the transaction of any business consistent with its authority.

No action of the Commission shall be effective until approved by the Commissioner from each of the three signatory States.

(Signed) M. C. HINDERLIDER

M. C. Hinderlider

Commissioner for Colorado

(Signed) THOMAS M. MCCLURE

Thomas M. McClure

Commissioner for New Mexico

(Signed) JULIAN P. HARRISON

Julian P. Harrison

Commissioner for Texas

Adopted December 19, 1939.

¹/₁ Amended at Eleventh Annual Meeting, February 23, 1950.

¹/₁₀ Amended at Thirteenth Annual Meeting, February 25, 1952.

REPORT OF THE ENGINEER ADVISERS
TO THE RIO GRANDE COMPACT COMMISSIONERS

February 27, 2004

COMPACT ACCOUNTING

The Engineer Advisers to the Rio Grande Compact Commissioners have reviewed the streamflow and reservoir storage records and other pertinent data and have determined the scheduled and actual deliveries, and release of Usable Water during calendar year 2003. As determined by the Engineer Advisers, scheduled and actual deliveries, release of usable water for the year 2003, and balances as of January 1, 2004 are as follows:

(a) Deliveries by Colorado at the Stateline:	
Balance as of January 1, 2003	42,800 acre-feet
Scheduled delivery	114,800 acre-feet
Actual delivery at Lobatos plus 10,000 acre-feet	83,800 acre-feet
Reduction of credit on account of evaporation	10,600 acre-feet
Accrued credit January 1, 2004	1,200 acre-feet
(b) Deliveries by New Mexico at Elephant Butte Dam:	
Balance as of January 1, 2003	265,000 acre-feet
Scheduled delivery	270,300 acre-feet
Actual delivery	222,800 acre-feet
Reduction of credit on account of evaporation	41,000 acre-feet
Accrued credits relinquishment to Project Storage on April 23, 2003	122,500 acre-feet
Accrued credit January 1, 2004	54,000 acre-feet
(c) Project Storage and Releases:	
Accrued departure (credit) as of January 1, 2003	65,500 acre-feet
Actual release of usable water	365,700 acre-feet
Normal release for year	790,000 acre-feet
Accrued departure (credit) as of January 1, 2004	489,800 acre-feet

Streamflows throughout the basin in Colorado and New Mexico continue to be substantially below normal due to ongoing drought. Usable Water in Project Storage remained below 400,000 acre-feet for the entire year. Consequently, the storage prohibitions of Article VII of the Compact were in effect during the entire year.

The Engineers Advisers met in Albuquerque from February 23 through February 27 to prepare the 2003 Compact water accounting and to discuss continuing and new issues in preparation for the 2004 annual meeting of the Rio Grande Compact Commission (Commission). The Engineer Advisers requested and received the participation of the U.S. Geological Survey (USGS), the U.S. Bureau of Reclamation (Reclamation), the U.S. Army Corps of Engineers (Corps), the International Boundary and Water Commission (IBWC) and the U.S. Fish and Wildlife Service (Service) in part of that meeting to discuss in detail their specific water-related activities in the basin. Mr. Bill Ruth, the Federal Chairman of the Commission attended the federal agency presentation portion of the meeting.

The Engineer Advisers met with employees of the USGS to discuss the operation and stream gage record of the Rio Grande below Elephant Butte Dam gage. This issue was brought to the Advisers' attention by New Mexico after a large change was discovered between the preliminary and final calendar year record for this gage. Accurate development of preliminary data and the

RIO GRANDE COMPACT COMMISSION REPORT

final record is essential for everyday operations and the preparation of the annual Compact accounting. Stream flow record inaccuracies could influence Compact allocations, carryover credit, Rio Grande Project supply and endangered species. Following the detailed discussion, no adjustment was made to the final USGS record. Nonetheless, the Engineer Advisers detailed their ongoing concerns in a letter sent to the New Mexico District USGS Data Chief.

The New Mexico Engineer Adviser declined to sign the 2003 Compact accounting sheets because of a disagreement that arose during the fall of 2002 regarding the monthly reduction of accrued credit water in storage in the Rio Grande Project. Although accrued credit water evaporation has been calculated on a monthly basis since the early 1990's, prior to that time evaporation calculations and credit and debit reductions for evaporation occurred annually.

New Mexico reports it became concerned in November 2002, upon learning that Reclamation planned to change its 2003 operations from those conducted in the 1940's, 1950's, 1960's, 1970's and 1980's due to the change in reporting on the Compact accounting sheets that began in 1990. Reclamation indicated they took that reporting change as direction from the Compact Commission to change operations of Elephant Butte Reservoir. The Texas Commissioner agreed with Reclamation but both the New Mexico and the Colorado Commissioners did not. The Colorado Commissioner indicated that the accounting sheets had been modified on occasion to incorporate technological advances (such as computer spreadsheets) but such modifications do not change the relative benefits under the Compact of any of the signatory states.

New Mexico believes the change in operation reduces the small benefits that accrue to the upstream states under Article VII of the Compact. Specifically, that Texas' use of New Mexico or Colorado accrued credit water during any given year when Article VII is in effect, should be dependent upon New Mexico or Colorado, or both, offering, and Texas accepting relinquishment of the accrued credit water.

This issue was highlighted in the current two-year phased relinquishment agreement between New Mexico and Texas under which Texas agreed to accept in the second year the balance of relinquishment (up to 95,000 acre-feet) if available on March 1, 2004. The 2003 Compact water accounting sheets indicate that amount is 54,000 acre-feet. New Mexico maintains that the entire 54,000 acre-feet is available as of March 1, 2004 because the Compact dictates that credit water is to be reduced annually. Texas, meanwhile, maintains that the amount available as of March 1, 2004 is 54,000 acre-feet less two months of evaporative losses. Recognizing that resolution of this issue will require additional time, the Texas and New Mexico Engineer Advisers will recommend an amendment to the relinquishment agreement to reduce the second year relinquishment amount to 53,000 acre-feet, with New Mexico retaining an accrued credit of 1,000 acre-feet.

Specific directions will be given to Reclamation that they not release the 1,000 acre-feet unless they request and receive authorization to do so from the Commission.

New Mexico also indicated that Article XIII of the Compact, which controls review and modification of non-substantive provisions of the Compact, to the best of its knowledge, was not invoked by the Commission at the time of the 1990 accounting reporting change. Therefore, the New Mexico Engineer Adviser will not sign the 2003 accounting until such a review has occurred and the issue is resolved. The New Mexico Engineer Adviser does not dispute the 2003 accounting results at this time, but does disagree with the methodology that leads to monthly reduction of accrued credits.

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

New Mexico - Texas Relinquishment Agreement

At the 2003 meeting of the Commission, New Mexico entered into discussions with Texas for the relinquishment of a portion of its accrued credits held in Project Storage in Elephant Butte Reservoir. On April 23, 2003 the two states reached agreement for New Mexico to relinquish to Texas a total of 217,500 acre-feet of accrued credits, with 122,500 acre-feet of that amount accepted at that time, and the balance (up to 95,000 acre-feet if available) to be accepted on March 1, 2004. The two letters of agreement that describes the details of the relinquishment are attached to this report.

During 2003 New Mexico stored a total of 88,270 acre-feet of relinquished water. Of that amount, about 60,980 acre-feet was released to meet downstream demand in the middle valley and losses totaled about 1880 acre-feet, leaving a total of about 25,420 acre-feet in storage at the end of 2003. This left a balance of about 34,230 acre-feet of the 2003 relinquishment amount of 122,500 acre-feet to be stored.

The water was stored and released in accordance with either the 2003 Emergency Drought Water Agreement or the 2001 Conservation Water Agreement as described below.

CONTINUING ISSUES

This section of the report addresses issues previously addressed by the Engineer Advisers or the Commission. It reflects information obtained by the Engineer Advisers subsequent to the 2003 Commission meeting, including information obtained in the reports of federal agencies at the 2004 Engineer Advisers meeting.

Compact Accounting Documentation Project

At the 2002 meeting of the Commission, the Commissioners and Reclamation signed a Memorandum of Understanding (MOU) that formally describes the duties, roles, and responsibilities of each party in the water accounting, reporting, and documentation of the waters of the Rio Grande Basin above Fort Quitman, Texas, in accordance with the Compact. The MOU provides that the Engineer Advisers and Reclamation will prepare a manual describing the historic and current accounting procedures and that Reclamation and the Engineer Advisers will formally review the accounting and reporting procedures for potential modifications and enhancements every five years, or more frequently if necessary. The Engineer Advisers are preparing a draft of the documentation manual and will continue to work in 2004 to refine the manual as specific issues related to Compact accounting come up.

Closed Basin Project

The total production of the project was 18,854 acre-feet in 2003 with 13,413 acre-feet of that amount being delivered to the Rio Grande. All deliveries to the Rio Grande met minimum water quality standards. Biofouling problems continue to plague the production wells of the Closed Basin Project. Reclamation replaced eighteen wells in 2003 that were most affected by the iron bacteria and altered operational procedures to minimize bacterial growth. The new well design and operations show some promise to restore the production of the project. Wells will continue to be replaced as budgetary constraints allow. The Closed Basin Project operating committee continues to monitor groundwater levels and groundwater production and adjust project operations pursuant to the enabling legislation.

RIO GRANDE COMPACT COMMISSION REPORT

URGWOM Accounting Model (Narbe Falls)

The Commission approved a resolution in 2001 that approved use by Reclamation of the Upper Rio Grande Water Operations Model (URGWOM) accounting module for Rio Grande Compact accounting, subject to several conditions that the Engineer Advisers found to be substantially fulfilled at their 2002 meeting. Previously the URGWOM accounting model did not include water accounting associated with Narbe Falls Reservoir and San Juan-Chama (SJC) Project water return flows from the Pojoaque Valley Irrigation District (PVID), instead this accounting was performed separately using Reclamation's FORTRAN programs.

At the February 2003 meeting of the Engineer Advisers, Reclamation distributed a technical memorandum that indicated that they had developed a separate RIVERWARE model to perform the Narbe Falls Reservoir/PVID computations. The memorandum summarized the validation of the new model against the FORTRAN program currently used to do the computations. Reclamation indicated that the RIVERWARE model for Narbe Falls produced the same results as the FORTRAN model. The URGWOM model team was asked to provide the RIVERWARE model and FORTRAN code to the Engineer Advisers for review.

Staff of the New Mexico Interstate Stream Commission (ISC) performed an independent review of the model and concluded that, though there were some minor discrepancies between the model and code results, the model is suitable for Compact accounting use. The ISC recommended that Reclamation provide documentation of the loss method programmed in the Narbe Falls RIVERWARE accounting model to ensure that potential sources of error, if any, be identified, understood and corrected. The Engineer Advisers recommend Commission approval of the Narbe Falls RIVERWARE model for use in Compact accounting contingent upon Reclamation providing the model documentation to the Engineer Advisers.

Upper Rio Grande Water Operations Accounting Module

The URGWOM team presented the latest model developments and updates. Currently the model is being used to prepare the annual water operations plan for the Rio Grande in New Mexico above Elephant Butte Dam. The model was updated in 2003 to include different Rio Grande accounts in El Vado Reservoir to accommodate the Emergency Drought Water Agreement (EDWA) (discussed below) and the storage of water by the federal government to guarantee delivery of irrigation water to the Prior and Paramount lands of the six Middle Rio Grande Pueblos. Also the model rules were updated to include Rio Grande Compact accounting and accounting of the Article VII relinquishment of April 23, 2003.

During the Compact accounting review and documentation process, minor discrepancies between Reclamation's final results and the results of the San Juan-Chama (SJC) project water model accounting were noted. One possible reason for these observed differences is the method Reclamation uses to import model results to the final accounting spreadsheet.

The Engineer Advisers request comprehensive evaluation of the method for transferring model results. Specifically, a comprehensive evaluation of how model output is incorporated into the reporting spreadsheets is required. Due to the fact that the RIVERWARE code continues to be refined, the Engineer Advisers request that the URGWOM team provide adequate documentation of any changes and keep the Engineer Advisers completely informed as to all model developments and updates in a timely manner.

Compliance by Federal Agencies with State Water Law and Regulations

The Commission approved resolutions in 2001 and 2002 that requested the Corps, Reclamation and Service comply with

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

state law by obtaining permits from the appropriate state agencies for any water related actions that result in new or additional river depletions. Federal agency representatives have acknowledged the need to comply with applicable state laws regarding these projects. New Mexico reports that Reclamation has met with New Mexico regarding design of several habitat restoration projects and State of New Mexico permitting requirements and are working with ISC staff to develop a joint application to the Office of the State Engineer for permitting of habitat restoration projects planned by the Middle Rio Grande Endangered Species Act Collaborative Program including the Los Lunas habitat restoration project constructed by Reclamation and the Corps in 2002. In addition, New Mexico reports that Reclamation has received a permit from the State Engineer for pumping water during the irrigation season from selected points on the Low Flow Conveyance Channel to the Rio Grande. The Corps presentation indicated they are in the planning stages of numerous habitat restoration projects within the Middle Rio Grande but New Mexico reports that the Corps has not yet submitted permit applications to the Office of the State Engineer for these projects.

Water Resource Development Act Section 729 Comprehensive Planning Study

The Corps provided an update of the on-going Section 729 water resources investigation in the reach of the Rio Grande between San Acacia and Elephant Butte Reservoir. The study includes installation of numerous groundwater observation wells and surface water staff gages through the reach to characterize the interaction of shallow groundwater and surface water in this reach. New Mexico has entered into a cost sharing agreement with the Corps for the study. New Mexico reports that surface water stage and groundwater levels as well as water quality were measured at multiple sites during 2003 to document the hydraulic interaction of surface water and groundwater as the river receded and dried. The data are currently being compiled and evaluated and New Mexico will report on the results at the 2005 meeting of the Engineer Advisers.

Low Flow Conveyance Channel Design, Construction, Operation and Maintenance

Reclamation again discussed its proposed project to relocate the river channel, and the adjacent Low Flow Conveyance Channel (LFCC), to the west side of the valley floor downstream of San Marcial. Reclamation indicated they began consultation with the Service last year on the bottom-up realignment alternative with an initial LFCC capacity of 500 cubic feet per second (cfs) with a three-mile long uncontrolled section in the middle of this design for mitigation purposes related to the Southwestern willow flycatcher. At those meetings, the Service requested Reclamation incorporate operations of the LFCC in the consultation. Reclamation and the Service then met with the ISC, as requested by the Compact Commission at the 2003 meeting, on the proposed project. The ISC outlined the Commission's previous resolutions regarding the proposed project that Reclamation design, construct, operate and maintain the LFCC from San Acacia to the active reservoir pool at Elephant Butte Reservoir at the 2,000 cubic feet per second operational design.

The New Mexico Engineer Adviser reported that the ISC and Reclamation have begun model analysis of alternative LFCC operations using the ISC's MODBranch surface water/groundwater flow model of the San Acacia reach. Those modeling results will be completed this spring and New Mexico will keep the Engineer Advisers informed as to the results of the modeling and progress on the project.

RIO GRANDE COMPACT COMMISSION

Elephant Butte Pilot Channel Project

The Commission approved resolutions in 2000, 2001, 2002 and 2003 requesting that Reclamation continuously extend and maintain a constructed pilot channel from San Marcial through the sediment delta to the active reservoir pool in Elephant Butte Reservoir as the reservoir recedes. The Engineer Advisers assert that maintaining an active river channel from San Marcial through the sediment delta to Elephant Butte Reservoir is important to New Mexico's ability to make Compact deliveries. Reclamation initiated construction on that portion of the pilot channel from the reservoir head to Nogal Canyon in early 2000.

By the end of 2002 due to extensive drought, the active pool of Elephant Butte Reservoir had receded approximately 20 miles to the lower portion of the reservoir below the Narrows. During 2002 Reclamation successfully extended the pilot channel, at a partial design width, to Nogal Canyon, the originally planned and permitted project downstream terminus but has yet to complete that section of the project at its full design width.

In 2003, Reclamation and New Mexico agreed that Reclamation would concentrate on constructing that portion of the pilot channel from the reservoir head to Nogal Canyon, and New Mexico would concentrate on a new phase of the pilot channel from Nogal Canyon to below the Narrows using a private sector construction firm.

Reclamation and New Mexico worked cooperatively to complete required environmental permitting and clearances for the lower phase of the project. New Mexico's contractor commenced construction on the lower phase of the channel just prior to the 2003 meeting of the Engineer Advisers and completed the channel to the Narrows at its full design width in 2003. Additional work was done by the ISC contractor through the Narrows to remove any constrictions or obstructions to flow. Due to the combined efforts of Reclamation and the ISC and its contractor, a defined river channel was opened through the exposed reservoir delta in 2003 allowing the river to be connected to the active reservoir pool. The New Mexico Engineer Adviser anticipates the need to reconstruct portions of the channel as sediment accumulates in 2004 and beyond. Reclamation and New Mexico are currently working cooperatively to complete required environmental permitting and clearances and are seeking funding to maintain and extend the project as necessary below the Narrows.

YEAR 2003 OPERATIONS

Platoro Reservoir Operations for 2003

Platoro Reservoir is located near the headwaters of the Conejos River in Southern Colorado. It is a post-Compact reservoir as defined in the provisions of the Rio Grande Compact and, as such, is subject to Article VII. Article VII provides that, "Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000 acre-feet of usable water in project storage..." Colorado reported that under two different scenarios, for two distinct reasons, Colorado increased storage in Platoro Reservoir during 2003.

During May and June of 2003, the Conejos Water Conservancy District stored pre-Compact direct flow water by exchange in Platoro Reservoir by shorting ditches that were entitled to that water less return flows. This pre-Compact water was re-regulated within 2003 to better meet the crop irrigation requirements under those ditches. This operation is done routinely pursuant to decrees of Colorado's District Water Court. All of this re-regulated water was accounted for and released in 2003, therefore not affecting the Conejos Index Supply. The Colorado Commissioner had discussed this possibility in Commission meetings on at least two occasions prior to 2003.

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

For dam safety reasons, the main gate valve in the dam is normally closed during the winter. This allows the downstream butterfly valves on the end of the outlets to be left open and not operated during the winter. Spray from the outlet will freeze and totally encase the operating arms of these valves resulting in the risk of damage if they are operated during the winter. The bypass valve passes water around the main slidegate for winter operation. In November 2003 this bypass valve was fully opened to attempt to pass the winter inflow to the reservoir. Because of heavy fall precipitation, the bypass valve was unable to pass all the inflow to the reservoir until February 2004. Therefore, approximately 600 acre-feet was stored in November and December of 2003. This water accumulated because of the difference in the outlet capacity at the existing low reservoir head and the inflow. This water will be released as soon as the river and weather conditions allow and delivered to the state line. The downstream states will be notified when this operation is initiated.

Emergency Drought Water Agreement Operations

The State of New Mexico entered into an EDWA with the United States, acting through the Corps and Reclamation. In that agreement, New Mexico allocated the 217,500 acre-feet of relinquished water as follows: a total of 140,000 acre-feet for the Middle Rio Grande Conservancy District (MRGCD), with no more than 46,667 acre-feet available for release in any one year; 70,000 acre-feet for the United States for endangered species purposes and 7,500 acre-feet for the City of Santa Fe. Of the water made available to the United States, a maximum of 20,000 acre-feet could be released in any one year, with the exception of 2003, when a maximum of 30,000 acre-feet was available for release.

During 2003 New Mexico stored a total of 88,270 acre-feet of relinquished water under the EDWA as follows: El Vado Reservoir, 85,460 acre-feet; Abiquiu Reservoir, 1,550 acre-feet and McClure Reservoir, 1,260 acre-feet. Of this water stored in 2003, a balance of about 25,420 acre-feet was left at the end of the year, 24,380 acre-feet in El Vado Reservoir and 1,040 acre-feet in McClure Reservoir.

Middle Rio Grande Endangered Species Conservation Pool Operations

The Commission approved a resolution in 2001 that established the Middle Rio Grande Endangered Species Conservation Pool (Conservation Pool). The agreements and authorizations associated with the Conservation Pool and 2001 and 2002 storage and release operations are described in the 2001 and 2002 reports of the Engineer Advisers.

A total of 1,549 acre-feet of relinquished water was captured in the Conservation Pool in Abiquiu Reservoir on September 9 and 10, 2003. That storage, less losses, was subsequently released during the period from September 18 through 22, 2003. Releases in 2003 totaled 1,536 acre-feet and losses totaled 13 acre-feet.

In summary, a total of 60,363 acre-feet was captured in the Conservation Pool in Abiquiu and Jemez Canyon Reservoirs in 2001, 2002, and 2003 with 53,011 acre-feet released from storage over the same period and 7,354 acre-feet of evaporative and unidentified losses. Ninety-seven percent (97%) of the water stored for Conservation Pool operations was stored in 2001 with the vast majority stored in Abiquiu Reservoir and then released over the next two years. Conservation Pool operations in Jemez Canyon Reservoir (both storage and release) occurred only in 2001 and the Corps has operated the reservoir as a flow-through facility since then. Conservation Pool storage and release operations in Abiquiu Reservoir were small in 2003 and none are anticipated for 2004, since all required permits and authorizations have expired or were due to expire in early 2004.

RIO GRANDE COMPACT COMMISSION REPORT

All water accounting of the Conservation Pool was performed in accordance with the Rules and Regulations of the Compact.

Supplemental Water Program Operations

Reclamation's supplemental water program is intended to provide additional water, primarily through the voluntary leasing of SJC Project water, for endangered species needs. In 2003 Reclamation used a total of 50,158 acre-feet for its supplemental water program. Of this, 14,354 acre-feet was SJC Project water, 1,549 acre-feet was Conservation Pool water and 13,327 acre-feet was EDWA water. The remainder (20,928 acre-feet) was water pumped from the LFCC to the Rio Grande. SJC Project water leased for the program is released for diversion and use by the MRGCD which, in turn, allows an equivalent amount of native Rio Grande water (less conveyance losses) to remain undiverted. Water leased by Reclamation for the program was released during the irrigation season to assist in meeting minimum and target flows below San Acacia Diversion Dam and at the Central Avenue gaging station in Albuquerque. Reclamation reported that they were in compliance with the March 17, 2003 Programmatic Biological Opinion flow targets. Reclamation also operated 17 portable diesel driven pumps at five locations along the LFCC from just north of San Antonio, New Mexico to Ft. Craig during 2003 to pump the estimated (by Reclamation) 20,930 acre-feet of water from the LFCC to the Rio Grande at the cost of approximately \$2 million.

In 2003 Reclamation leased a total of 16,854 acre-feet of SJC Project water from willing SJC Project contractors for use in the program. Included in this amount is 2,990 acre-feet of SJC Project water for which no contract had been executed as required by the authorizing legislation (PL 87-483). The New Mexico and Colorado Engineer Advisers continue to object to this release of uncontracted SJC Project water. Of the leased and available SJC Project water 2,500 acre-feet was not released and will be available for use in 2004.

While no SJC water was taken by Reclamation in 2003 to meet the flow targets of the March 17, 2003 Biological Opinion, Reclamation withheld delivery of approximately 13,000 acre-feet of allocated 2003 SJC water from selected project contractors through the summer in an attempt to force those contractors to lease that water to Reclamation. Upon questioning, Reclamation indicated to New Mexico that, while they did not believe they had discretion to unilaterally take SJC water from the contractors, the U.S. Court of Appeals for the Tenth Circuit might rule they did and Reclamation needed to be prepared for such a ruling. Reclamation further indicated they had discretion to delay delivery of SJC water and they were acting on that discretion. Ultimately, due to late irrigation season middle valley rains and improved coordinated water management in the middle valley, additional stored water releases to meet the flow targets of the Biological Opinion were not needed and Reclamation released the SJC water to its contractors.

Jemez Canyon Reservoir Operations

The Corps reported on Jemez Canyon Reservoir operations. The reservoir is now operated as a dry reservoir as all storage was released in 2001. The Corps is conducting studies on managing sediment in the reservoir including storing or passing sediment. During 2003 the Corps constructed a low head weir at the upper end of the reservoir to prevent headcutting upstream and to limit lowering of the groundwater table within the dry reservoir as a result of an advancing headcut. The Corps is also investigating installation of hydraulic operators on the gates as a replacement for the chain operated system currently in place.

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

REPORTS OF THE FEDERAL AGENCIES

Representatives of Reclamation, the Corps, the Service, and IBWC presented reports to the Engineer Advisers on February 24 and 25, 2004.

San Juan-Chama Project Shortage Sharing

There was concern in 2003 that the low water levels in Navajo Reservoir and a small snowpack could generate a requirement for shortage sharing between the San Juan basin in northwestern New Mexico and diversions for the SJC project. During 2003 a shortage sharing agreement was negotiated (but never used) between the parties on the San Juan River that recognized the significantly reduced diversions of the SJC project in 2002 and 2003 as defacto shortage sharing. Reclamation anticipates, given the existing snowpack at the time of the 2004 meeting of the Engineer Advisers, that shortage sharing with the San Juan basin and the SJC project will not likely be necessary in 2004.

Rio Grande Cutthroat Trout

The Service reported that on February 25, 1998 they received a petition to list the Rio Grande cutthroat trout as an endangered species. The Service subsequently studied the status of the trout and concluded that the listing was not warranted. On June 9, 1999 a complaint was filed against the Service for this decision. On November 8, 2001 a settlement agreement was filed with the court stipulating that the Service would initiate a candidate status review for the trout. The Service completed that review on June 11, 2002 and again concluded that the listing was not warranted. On October 29, 2002 the Service received a notice of intent to sue the Secretary of Interior for not listing the trout as an endangered species. The Service reported to the Engineer Advisers that the plaintiff had filed suit in 2003 seeking to overturn the Service's most recent candidate status review and decision not to list the Rio Grande cutthroat trout as endangered.

Upper Rio Grande Basin Water Operations Review and EIS

Reclamation, Corps and ISC signed a Memorandum of Agreement in January 2000 to conduct a review and an Environmental Impact Statement (EIS) of water operations in the upper Rio Grande basin. This project is a five-year effort that is evaluating alternatives for more efficient operations of Federal water storage and flood control facilities under existing authorities to meet the increasing demands on the upper Rio Grande. Compliance with the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) will be provided. The three joint lead agencies developed multiple alternatives for analysis of coordinated water operations in the upper Rio Grande that seek to promote positive benefits, while implementing each of the agencies own missions and sets of operating rules and guidelines.

The effects of each of the alternatives on basin resources were modeled using flows based on a synthetic 40-year sequence of runoff years, representing a range of climatic conditions from dry to wet. In late 2003, the Steering Committee for the EIS, consisting of a group of cooperating agencies, and public and private sector stakeholders, reviewed the alternatives and selected six action alternatives plus the baseline (no action alternative) for further analysis.

The analysis uses several tools that have been developed, including the URGWOM Planning Model, which estimates flow and storage over 40 years using daily time step values at specific locations along the Rio Grande. Other models being used include the FLO-2D hydraulic model for depth and velocity of flows, a water quality model for predicting temperature, dissolved oxygen, and

RIO GRANDE COMPACT COMMISSION REPORT

other parameters with varying flow an aquatic habitat model integrated with Geographic Information Systems (GIS), and an integrated surface water/ground water interaction model based on MODBranch for evaluating LFCC operations in the San Acacia Reach.

The draft EIS is anticipated to be ready for public review in August 2004, with a Record of Decision anticipated to be issued by each agency in early 2005.

Prior and Paramount Storage for the Six Middle Rio Grande Pueblos

Reclamation provided a detailed accounting of 2003 Prior and Paramount storage and release activities. Reclamation reported they stored 23,664 acre-feet in El Vado Reservoir to guarantee delivery of irrigation water to the Prior and Paramount lands of the six Middle Rio Grande Pueblos in 2003. These are lands recognized as being prior and paramount to other lands of the Middle Rio Grande Conservancy District. A total of 8,747 acre-feet of Prior and Paramount stored water was left over at the end of the irrigation season and subsequently released to the Otowi gage between November and December 31. For 2004, Reclamation estimated that between 12,000 and 20,000 acre-feet will need to be stored for Prior and Paramount guarantee purposes based on the February 1, 2004 runoff forecast. The overall Prior and Paramount storage demand will continue to be refined by Reclamation with later runoff forecasts. Prior and Paramount water will be the first native water stored in 2004. The Texas Engineer Adviser remains concerned about the storage of native Rio Grande water in El Vado Reservoir by Reclamation when the storage prohibitions of Article VII of the Compact are in effect.

March 17, 2003 Middle Rio Grande Programmatic Biological Opinion

The Service discussed the March 17, 2003 Biological Opinion regarding the actions of the Corps and Reclamation in regards to the Rio Grande silvery minnow and southwestern willow flycatcher. The Biological Opinion resulted in a jeopardy opinion related to the actions of the Corps and Reclamation. Reasonable and Prudent Alternatives were identified to alleviate jeopardy for the minnow and flycatcher. Water operations are impacted to provide increased spring flows to enhance spawning of the minnow while different flow regimes are required at other times based on categories of Dry, Average, and Wet snowmelt runoff years. Any time the storage prohibitions of Article VII of the Compact are in effect, the criteria of a Dry category year are in effect.

Rio Grande Silvery Minnow

Silvery minnow salvage operations were presented. The operations occurred from June to September with a total of 713 minnows being salvaged. Approximately 70 miles of the Rio Grande went dry in the Isleta and San Acacia reaches at some time during 2003. The salvaged minnows were released at the Central Avenue Bridge in Albuquerque. The catch rates of the minnow remain very low. The Service continues to augment the population with captive propagation activities. Since 2002, a total of approximately 175,500 minnow have been released near Albuquerque. The next release is planned for March or April 2004 when about 98,000 minnow will be released upstream from Sandia Pueblo.

The Service continues to propagate minnow at the Dexter National Fish Hatchery in southwestern New Mexico and at the City of Albuquerque Biopark. The Service indicated that survival rates of minnows reared in the facilities have increased each year from 15 percent in 2001 to an estimated 75 percent in 2003.

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

The Service discussed reintroduction of the silvery minnow in the Big Bend region of the Rio Grande in Texas and above Cochiti Reservoir. The Service plans to reintroduce the minnow in the Big Bend area as an ESA Section 10(j) experimental, non-essential population. The proposed designation will include a segment of the Rio Grande between Presidio and Amistad Reservoir. If this segment is designated per Section 10(j), the segment cannot be designated as critical habitat for the minnow. Reintroduction per Section 10(j) will require the conductance of an environmental assessment in accordance with the NEPA. The Service has initiated meetings with local stakeholders for this work and pledged to continue to do so.

The Service is also considering a reintroduction of the silvery minnow above Cochiti Reservoir per a Section 10(a)(1)(a) general research permit. This designation provides full ESA endangered species status to such an experimental population subject to the terms of the general research permit issued by the FWS Regional Director. New Mexico expressed their concern over the proposed designation relative to the concerns of its water users above Cochiti Reservoir. New Mexico further requested that the Service hold meetings with the ISC and water users such as the City of Espanola and the City and County of Santa Fe to discuss the proposed designation and address and resolve issues that will arise.

The ongoing activities of the silvery minnow recovery team were discussed. The team was directed in December 2002 to update the current Recovery Plan and revise recovery criteria to address needed actions for downlisting and delisting. The Recovery Team was divided into a Technical Subteam, a Participation Subteam and a Tribal Subteam. The Engineer Advisers are members of the Participation Subteam. The Technical Subteam has met seven times regarding updating the draft plan. Despite concerns raised by the Engineer Advisers and others on the Participation Subteam, the subteam met just once to discuss the revision process and a Terms of Reference document. The Service reported that a draft revised Recovery Plan is proposed for completion in May 2004.

The Engineer Advisers expressed considerable concern to Service representatives regarding the existing Recovery Team process. The Engineer Advisers are concerned that they have had no opportunity to provide input into the process to date. The Engineer Advisers requested that the process be changed to enable them as Recovery Team members to provide input and comment to the proposed changes to the Recovery Plan early on in the process. The Service listened to the concerns and indicated that they would look into the process, report to the Regional Director, and provide more opportunity for the Participation Team to take part in the redrafting of the Recovery Plan. The Engineer Advisers have expressed this concern before to no avail.

Designation of Critical Habitat for the Rio Grande Silvery Minnow

The final rule for designation of critical habitat for the Rio Grande silvery minnow was published by the Service in the February 19, 2003 issue of the Federal Register. Designated critical habitat extends from Cochiti Dam to the power lines just north of Elephant Butte Reservoir, plus the Jemez River from Jemez Canyon Dam to the boundary of Santa Ana Pueblo. Lands of four of the six middle Rio Grande Pueblos were excluded from the designation. The Service indicated that the final EIS and Economic Analysis associated with this designation were also published on February 19, 2003.

RIO GRANDE COMPACT COMMISSION REPORT

Bosque Restoration Projects

The Corps reported that they are in the process of planning or implementing several bosque restoration projects in a 20 mile plus reach of the Rio Grande from the Santa Ana Pueblo south to the Rio Bravo bridge south of Albuquerque. These projects include features and activities ranging from the removal of non-native trees to fire rehabilitation to the installation of gradient control structures (small dams) and open water ponds. New Mexico indicated it was favorable towards these projects but reminded the Corps that habitat restoration permit applications need to be submitted to the Office of the State Engineer to ensure the projects do not cause impairment or increase depletions of water. Offsetting water rights may be required.

Middle Rio Grande Project Channel Maintenance

Reclamation personnel provided a presentation regarding the status of Reclamation's Middle Rio Grande channel maintenance program. In summary Reclamation representatives said that 28 priority level sites remain of concern. As a result of an additional \$9 million being added to the Middle Rio Grande Project budget for the threatened levee sites in FY 2003, Reclamation purchased new equipment and work at one additional site was accomplished while work at an additional seven sites was accelerated. Funds were obligated for additional design work for two sites that began in early FY 2004. Some funds were also used to begin a study to determine if there are ways to accomplish the work more economically and to estimate the amount of priority site work required in the future. Other Middle Rio Grande maintenance activities includes mowing of reaches along the LFCC, Elephant Butte Reservoir pilot channel work, and the Red Canyon Mine blasting and riprap development. In addition, the 2002 Aggradation/Degradation Rangeline Aerial Mapping project of the Cochiti to Elephant Butte reach was completed with the contribution of funding from New Mexico.

San Acacia Levee Project

The San Acacia Levee project would rehabilitate 55 miles of levee between San Acacia and the San Marcial railroad bridge by removing the existing spoil bank levee and replacing it with an engineered levee. The project also includes raising or relocating the railroad bridge at San Marcial. Discussion with the Burlington, Northern and Santa Fe Railroad Company indicated that due to the current track alignment and grade, the San Marcial railroad bridge cannot be raised and still accommodate railroad traffic.

During 2003, the Corps performed a limited re-evaluation of the project including the design flow for the levee project. The evaluation of the flood potential in this reach lowered the design flow by 40 percent bringing it into agreement with the analysis of other agencies. The 100-year design flow is approximately 28,000 cfs. Based on the evaluation so far, the final levee is expected to be smaller and less expensive. The limited evaluation report should be released in fall 2005. The non-Federal sponsor for the project is the MRGCD. The ISC will be a cost-share sponsor of the project. Start of construction will depend on funding but is anticipated to begin in 2008.

The Corps of Engineers reported that, as part of the San Acacia levee replacement project, they are evaluating moving the San Marcial railroad bridge to increase the river channel flow capacity thus increasing the allowable combined release from Cochiti and Jemez Canyon Reservoirs. The current Corps plan is to complete a limited re-evaluation report, conduct NEPA evaluations, and endangered species consultations such that construction can begin in 2008. The State of New Mexico reports that, in the interim, they have developed a scope of work for river channel maintenance at the railroad bridge, basically cleaning plugged spans and removing

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

debris, to increase and maintain the river flow capacity at that point until the relocation project commences. New Mexico is beginning environmental permitting for the project and anticipates conducting the work this year.

Southwestern Willow Flycatcher

The southwestern willow flycatcher was listed as an endangered species on February 27, 1995. Critical habitat for the flycatcher was designated by the Service on July 12, 1997, and subsequently challenged in the U.S. Court of Appeals for the Tenth Circuit. The critical habitat designation was set-aside on May 11, 2001. In May 2002, the Service sent out scoping letters to interested parties to develop information to be used toward a new critical habitat proposal. Scoping meetings to begin the NEPA process were conducted in January and February, 2004 to gather public input toward a critical habitat proposal.

A recovery plan for the flycatcher was prepared by the southwestern willow flycatcher recovery team and finalized by the Service in August, 2002. The recovery plan includes threats and reasons for endangerment, the biology, ecology, and current status of the flycatcher, recovery units, objectives and criteria, prioritized recovery actions, and detailed papers on management issues and threats.

The Service indicated that the 2003 flycatcher census found 186 sites in the middle valley with the majority of those sites in the San Marcial reach. A significant portion of the existing population is within the potentially inundated area of the Elephant Butte Reservoir pool. The census also indicated that approximately 56 percent of the birds were found to be nesting in native trees, and approximately 40 percent of the population nesting in salt cedars. The Service has been working toward creating habitat throughout the middle Rio Grande basin but have not seen success with populations of flycatchers moving into those habitats. The Service hypothesized that the vegetation in the newly created habitat has not yet grown to the point it is considered suitable for occupation by the flycatcher.

The Engineer Advisers recognize a potentially critical issue exists related to inundation of the Elephant Butte Reservoir pool, and the effect of that inundation on the flycatcher habitat that has developed in the pool area. The Engineer Advisers have requested a meeting with BOR and the Service in June 2004 to further discuss the potential issues related to the operation of Elephant Butte Reservoir on the flycatcher and associated habitat.

Rio Grande Project Operations and Storage Projections

Reclamation reported delivery of final allotment of 34 percent of a full supply in 2003 for all three Rio Grande Project water users (Elephant Butte Irrigation District (EBID), El Paso County Water Improvement District No. 1 (EP No. 1), and Mexico). All three users requested release of and diverted almost all of their allotted water. The City of El Paso diverted 24,862 acre-feet of surface water through lease agreements with EP No. 1, down from 50,000 to 55,000 acre-feet in full supply years.

Reclamation reported the low storage volume for Elephant Butte Reservoir was 147,000 acre-feet on September 14, 2003 which was 113 feet below the spillway crest elevation. The low volume for Caballo Reservoir was 4,828 acre-feet on September 19. The lowest combined storage for the project was 156,303 acre-feet on September 19.

Reclamation discussed their Rio Grande Project water allocations for 2004. At the time of the Engineer Advisers meeting, Reclamation indicated that the initial allocation was eight percent of a full allotment. Reclamation estimated the allocation at the end of 2004 would approach 50 percent based on the February forecast of 59 percent of average inflow to Elephant Butte Reservoir as measured at San Marcial for the March through July runoff period. The IBWC reported that the initial allotment for Mexico is 6,733

RIO GRANDE COMPACT COMMISSION REPORT

acre-foot for diversion at International Dam. The IBWC reported that Mexico had been advised of the reduced allocation. Reclamation presented predictions of reservoir operations for Elephant Butte and Catillo Reservoirs based on the February 1, 2004 snowmelt runoff forecasts for March through July 2004. Reclamation indicated that Elephant Butte Reservoir storage is projected to be relatively stable until early July and then be drawn down to approximately 40,500 acre-feet in September 2004, its lowest level since 1971.

Vegetation Management at Elephant Butte and Catillo Reservoirs

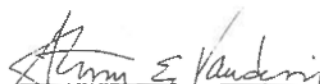
Reclamation reported on the issue of vegetation encroaching into the exposed reservoir bottom of Elephant Butte Reservoir. Salt cedar and other phreatophytes have invaded and continue to grow within the reservoir area as the reservoir recedes. Reclamation is looking into herbicide application, biological control, and mowing within the reservoir area to address this issue. Reclamation expressed concern over their ability to refill the reservoir if this area is determined to be suitable habitat for the southwestern willow flycatcher. New Mexico annually provides cooperative funding for a vegetation management program at Catillo Reservoir and a portion of Elephant Butte Reservoir.

Canalization Project

IBWC presented information regarding the status of their study to ensure the Canalization project is being operated in accordance with the NEPA. The Canalization project is an approximately 115-mile reach of the Rio Grande from Percha Dam to American Dam. IBWC conducted field studies for this project during 1999 and 2000 and held a public workshop in October of 2000. A reformation of design alternatives was completed in late 2003, and a draft EIS was completed and released for public comment in December 2003. IBWC expects to issue a Record of Decision sometime during the summer of 2004.

BUDGET

The Engineer Advisers reviewed the Cost of Operation for the year ending June 30, 2003 and the Budget for Fiscal Year ending June 30, 2005. The Engineer Advisers found that the expenses for the administration of the Rio Grande Compact for the year ending June 30, 2003 were \$183,674. The United States bore \$63,192 of this total, with the balance of \$120,484 borne equally by the three states. The proposed budget for the fiscal year ending June 30, 2005 indicates a total of \$173,989 will be spent for administration. The proposed contribution of the USGS for 2005 remained the same as that for 2004.



Steven E. Vandiver
Engineer Adviser for Colorado



Estevan R. Lopez
Engineer Adviser for New Mexico



Herman R. Sattermeyer
Engineer Adviser for Texas

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

ATTACHMENT TO THE REPORT OF THE ENGINEERS ADVISERS

APRIL 23, 2003

NEW MEXICO-TEXAS RELINQUISHMENT CORRESPONDENCE

RIO GRANDE COMPACT COMMISSION REPORT

NEW MEXICO INTERSTATE STREAM COMMISSION

COMMISSION MEMBERS

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505 (505) 7-6160
 FAX: (505) 27-6100

April 22, 2003

Mr. Joe G. Hansen
 Rio Grande Compact Commissioner for Texas
 P.O. Box 1917
 El Paso, Texas 79950-1917

Subject: Revised Offer of Relinquishment of a Portion of New Mexico's Accrued Rio Grande Compact Credit

Dear Commissioner Hansen:

Thank you for your letter of April 10, 2003 concerning New Mexico's March 27, 2003 offer of relinquishment. For a number of reasons, New Mexico cannot accept your counteroffer and provides this response. In the continuing spirit of Interstate comity and in order to aid Rio Grande water users in both New Mexico and Texas during the ongoing drought, New Mexico hereby revises its earlier offer to relinquish 217,500 acre-feet of its accrued credit currently held in storage in Elephant Butte Reservoir as described here and conditioned below. New Mexico offers to relinquish 122,500 acre-feet retroactive to March 31, 2003 and the remainder of the 217,500 acre-feet, as available, on March 1, 2004.

This relinquishment is offered as set forth in Article VII of the Compact subject to the following conditions:

- This offer is valid until close of business on April 23, 2003.
- Texas agrees to accept the water as Usable Water in Project Storage on the above referenced dates.
- By accepting this offer Texas explicitly agrees to storage of native Rio Grande water in Jemez Canyon and Abiquiu Reservoirs in 2003 by New Mexico in accordance with the April 11, 2001 Resolution of the Compact Commission titled "Resolution of the Rio Grande Compact Commission Regarding The Storage of Native New Mexico Rio Grande Water in U.S. Army Corps of Engineers Middle Rio Grande Project Reservoirs".

REPORT OF THE ENGINEER ADVISERS
TO THE RIO GRANDE COMPACT COMMISSIONERS

- The relinquished water will be stored in post-1929 reservoirs in New Mexico above Elephant Butte Reservoir over as many years as necessary to store the relinquished water on a 1:1 basis when the storage prohibition provision of Article VII is in effect
- This offer of relinquishment is contingent upon New Mexico completing negotiations with the United States and the Middle Rio Grande Conservancy District regarding the use of water stored pursuant to this relinquishment.
- The water stored by New Mexico under this agreement does not include any water that may be stored by the United States for delivery to the prior and paramount lands of the six middle Rio Grande Pueblos.

I look forward to your response and/or acceptance of this offer. Should you have any questions on this matter, please call me at (505) 827-6166 or Estevan Lopez, the Rio Grande Compact Engineer Adviser for New Mexico, at (505) 827-6103.

Sincerely,

John R. D'Antonio, Jr. P.E.
 Rio Grande Compact Commissioner for New Mexico

Cc:	Burt Cortez	Ed Archuleta
	Steve Vandiver	Estevan Lopez
	Herman Settemeyer	Hal Simpson
	John Stroud	Subhas Shah
	Rolf Schmidt-Petersen	Kevin Flanigan
	Gary Essinger	Ed Fifer
	Bill Ruth	Bill Hume
	Steve Farris	Nabil Shafike

RIO GRANDE COMPACT COMMISSION REPORT



STATE OF TEXAS
RIO GRANDE COMPACT COMMISSION
EL PASO

JOE G. HANSON
COMMISSIONER

April 23, 2003

Honorable John D'Antonio, Jr.
Rio Grande Compact Commissioner for New Mexico
Bataan Memorial Bldg. Room 101,
State Capitol
P.O. Box 25102
Santa Fe, NM 87504-5102

Dear Commissioner D'Antonio, Jr.:

In response to your letter of April 22, 2003 and in the spirit of Interstate comity the State of Texas agrees to the following:

- 1) The State of New Mexico agrees to relinquishment of 122,500 acre feet of credit water in storage, and the State of Texas agrees to accept the water as Project water in storage on April 23, 2003. On March 1, 2004, Texas agrees it will accept the balance of the 217,500 acre feet of relinquishment (up to 95,000 acre feet if available) of usable project water in storage.
- 2) The relinquishment and acceptance shall conform with all conditions as set forth in Article VII of the Rio Grande Compact.
- 3) By accepting this offer Texas explicitly agrees to storage of native Rio Grande water in Jemez Canyon and Abiquiu Reservoirs in 2003 by New Mexico in accordance with the April 11, 2001 Resolution of the Compact Commission titled "Resolution of the Rio Grande Compact Commission Regarding the Storage of Native New Mexico Rio Grande Water in U.S. Army Corps of Engineers Middle Rio Grande Project Reservoirs".

REPORT OF THE ENGINEER ADVISERS
TO THE RIO GRANDE COMPACT COMMISSIONERS

Honorable John D'Antonio, Jr.
April 23, 2003
Page 2

4) The relinquished water will be stored in post-1929 reservoirs in New Mexico above Elephant Butte Reservoir over as many years as necessary to store the relinquished water on a 1:1 basis when the storage prohibition provision of Article VII is in effect.

5) The water stored by New Mexico under this agreement does not include any water that may be stored by the United States for delivery to the prior and paramount lands of the six middle Rio Grande Pueblos. While this agreement does not include the water stored by the United States for the six middle Rio Grande Pueblos, Texas does not, by its agreement herein, waive its argument that such storage of water is not in accordance with Article VII of the Rio Grande Compact.

I look forward to your response.

Sincerely,

JOE G. HANSON

JGH/tlb

cc: Burt Cortez
Steve Vandiver
Herman Settemeyer
John Stroud
Rolf Schmidt-Petersen
Gary Esslinger
Bill Ruth
Steve Farris
Ed Archuleta
Estevan Lopez
Hal Simpson
Subhas Shah
Kevin Planigan
Edd Fifer
Bill Hume
Nabil Shafike

RIO GRANDE COMPACT COMMISSION REPORT

NEW MEXICO INTERSTATE STREAM COMMISSION

COMMISSION MEMBERS
101

JIM : UNLAP Chairman, Farmington
J. PHELPS WHITE II, Vice-Chairman, Roswell
6102
JOHN R. D'ANTONIO, JR., Secretary, Santa Fe
BUFORD HARRIS, Mesilla
BLANE SANCHEZ, Lordsburg
JULIA DAVIS STAFFORD, Cimarron
PATRICIO GARCIA, Rio Chama
JUDITH M. ESPINOSA, Albuquerque
AMES WILCOX, Carlsbad



BATAAN MEMORIAL BUILDING, ROOM

STATE CAPITOL
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SANTA FE NEW MEXICO 87504-

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April 23, 2003

Mr. Joe G. Hansen
Rio Grande Compact Commissioner for Texas
P.O. Box 1917
El Paso, Texas 79950-1917

VIA FAX AND REGULAR MAIL

Subject: Revised Offer of Relinquishment of a Portion of New Mexico's
Accrued Rio Grande Compact Credit

Dear Commissioner Hansen:

I am in receipt of your response letter dated April 23, 2003 concerning New Mexico's
April 22, 2003 revised offer of relinquishment and concur with the agreements
described therein.

Based upon the acceptance by Texas, New Mexico will begin storing native Rio
Grande water in its post-1929 reservoirs today.

Sincerely,

John R. D'Antonio, Jr. P.E.
Rio Grande Compact Commissioner for New Mexico

Cc:	Burt Cortez	Ed Archuleta	Steve Vandiver
	Estevan Lopez	Herman Settemeyer	Hal Simpson
	John Stroud	Subhas Shah	Rolf Schmidt-Petersen
	Kevin Flanigan	Gary Esslinger	Edd Fifer
	Bill Ruth	Bill Hume	Steve Farris
	Nabil Shafike	Rio Grande File - Albq. and Santa Fe	

ADDENDUM TO THE

February 27, 2004

REPORT OF THE ENGINEER ADVISERS
TO THE RIO GRANDE COMPACT COMMISSIONERS

Upon further review of the 2003 Rio Grande Compact accounting following the annual meeting of the Rio Grande Compact Commission, the Engineer Advisers discovered an error in the accounting sheet entitled "Rio Grande Compact - Release and Spill from Project Storage." That error consisted of incorrectly calculating the Accrued Departure from Normal Release. The Rules and Regulations for Administration of the Compact, in the section entitled "Departures from Normal Releases," requires that any under-release of usable water from Project Storage in excess of 150,000 acre-feet be accounted as 150,000 acre-feet. As shown on the Project Storage accounting sheet, the 2003 Departure from Normal Release was accounted as 424,300 acre-feet, when it should have been accounted as 150,000. Correction of this error results in the current value of the Accrued Departure from Normal Release being 215,500 acre-feet, not the 489,800 acre-feet shown on the accounting sheet.

/s/ Steven E. Vandiver

Steven E. Vandiver
Engineer Adviser for Colorado

/s/ Estevan R. Lopez

Estevan R. Lopez
Engineer Adviser for New Mexico

/s/ Herman R. Settemeyer

Herman R. Settemeyer
Engineer Adviser for Texas

RIO GRANDE COMPACT COMMISSION REPORT

RESOLUTION OF THE
RIO GRANDE COMPACT COMMISSION
CONCERNING FEDERAL AGENCY OPERATIONS OF THEIR WATER-RELATED
FACILITIES ON THE RIO GRANDE AND COMPACT ACCOUNTING

March 25, 2004
Alamosa, Colorado

WHEREAS, the states of Colorado, New Mexico, and Texas entered into the Rio Grande Compact, signed in 1938, regarding the waters of the Rio Grande above Fort Quitman Texas; and

WHEREAS, the Rio Grande Compact was passed as Public Act No. 96 by the 76th Congress of the United States and approved by the President on May 31, 1939; and

WHEREAS, Article VI of the Rio Grande Compact provides for the computation of all credits and debits of Colorado and New Mexico for each calendar year; and

WHEREAS, Article XIII of the Rio Grande Compact provides for the Rio Grande Compact Commission to review any provisions of the Compact which are not substantive in nature and which do not affect the basic provisions upon which the Rio Grande Compact is founded; and

WHEREAS, in accordance with Article XI of the Rio Grande Compact, annual reports are compiled by the Rio Grande Compact Commission for each calendar year and transmitted to the Governors of the signatory states; and

WHEREAS, such annual reports include Compact accounting sheets documenting the compliance of each signatory state with the Compact; and

WHEREAS, from time to time given technological advances, non-substantive changes have been made by the Engineer Advisers to the Compact accounting sheets; and

WHEREAS, the agencies of the United States operate numerous reservoirs and other water-related facilities in the Rio Grande basin; and

WHEREAS, all such facilities are required to be operated in compliance with the Rio Grande Compact; and

WHEREAS, changes to water operations at federal facilities may affect the accounting of debits and credits and potentially cause harm to one or more of the signatory states; and


WHEREAS, the Engineer Advisers, as part of the Compact Accounting Documentation Project, are reviewing and documenting current Compact accounting and reporting practices.

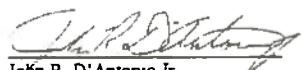
2004 RESOLUTION OF THE COMMISSION


NOW, THEREFORE, BE IT RESOLVED, that the Rio Grande Compact Commission hereby requests those federal agencies that operate water-related facilities within the Rio Grande basin to advise the Rio Grande Compact Commission prior to changing operation of any of those facilities and when deemed necessary by the Rio Grande Compact Commission, seek its unanimous consent for changes prior to implementation; and

BE IT FURTHER RESOLVED, that the Rio Grande Compact Commission directs its Engineer Advisers to evaluate the impact of such accounting and report back to the Commission their findings; and

BE IT FURTHER RESOLVED, that the Secretary of the Rio Grande Compact Commission transmit copies of this resolution to the Secretary of the Interior, the Commissioner, Regional Director, and Albuquerque Area Office Manager of the U.S. Bureau of Reclamation; the New Mexico and Colorado District Chiefs of the U. S. Geological Survey; and the Commander, Division Engineer, and Albuquerque District Engineer of the U. S. Army Corps of Engineers.


Hal D. Simpson
Commissioner for Colorado


John R. D'Antonio Jr.
Commissioner for New Mexico


Joe G. Hanson
Commissioner for Texas

RIO GRANDE COMPACT COMMISSION REPORT

RECORDS OF DELIVERIES AND RELEASES

At the annual meeting of the Compact Commission on March 25, 2004, the records of deliveries and releases and computations of debits and credits for calendar year 2003 were reported. The records and computations as approved by the Commission are reproduced on the next three pages.

The delivery of water in the Rio Grande at the Colorado-New Mexico State line was obtained from the record of streamflow near Lobatos, Colorado; the scheduled delivery was computed as prescribed in Article III.

The delivery of water by New Mexico to Elephant Butte was computed from the record of streamflow below Elephant Butte Dam and the record of operation of Elephant Butte Reservoir; the scheduled delivery was computed as prescribed in the Resolution of the Commission adopted at the Ninth Annual Meeting held February 22-24, 1948, and published in this report.

The actual release from Project Storage during the year was measured at gaging stations below Caballo Dam. On April 23, 2003 New Mexico relinquished a total of 217,500 acre-feet of accrued credits. Texas accepted 122,500 acre-feet of those credits with the balance, if available, to be accepted on March 1, 2004. During 2003 the Commissioners found that the actual release of usable water was 365,700 acre-feet. This resulted in an accrued credit of 489,800 acre-feet as of January 1, 2004.

RIO GRANDE COMPACT - DELIVERIES BY COLORADO AT STATE LINE
YEAR 2003

MO	CONEJO INDEX SUPPLY										RIO GRANDE INDEX SUPPLY										DELIVERIES			
	MEASURED FLOW			ADJUSTMENTS			SUPPLY				ADJUSTMENTS			SUPPLY				LOS RIOS NEAR LOS RIOS		RIO GRANDE LESS LOS RIOS		TOTAL AT LOBATOS		
	LOS RIOS NEAR CARRIZO	LOS RIOS NEAR CARRIZO	LOS RIOS NEAR CARRIZO	TOTAL	STORAGE AT END OF MONTH	CHANGE IN STORAGE	OTHER ADJUSTMENTS	NET ADJUSTMENTS	SUPPLY IN MONTH	ACCUMULATED TOTAL	RECORDED FLOW NEAR FLOTE	STORAGE AT END OF MONTH	CHANGE IN STORAGE	TRANSFERRING DIVERSIONS	OTHER ADJUSTMENTS	NET ADJUSTMENTS	SUPPLY IN MONTH	ACCUMULATED TOTAL	LOS RIOS NEAR LOS RIOS	LOS RIOS NEAR LOS RIOS	LOS RIOS NEAR LOS RIOS	LOS RIOS NEAR LOS RIOS		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
JAN	20	18	18	20	7.8	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	6.9	1.5	8.2	9.6	10.6	11.6	
FEB	18	18	18	20	7.8	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	13.4	1.2	9.7	10.8	11.8	12.8	
MAR	33	33	33	33	7.8	0.0	0.0	0.0	3.3	7.1	0.0	0.0	0.0	0.0	0.0	0.0	9.9	23.3	0.5	9.2	3.7	30.4	31.4	
APR	37	37	37	37	7.8	0.0	0.0	0.0	2.6	2.6	0.0	0.0	0.0	0.0	0.0	0.0	22.2	45.5	0.2	3.3	3.6	33.6	34.6	
MAY	42	42	42	42	7.8	0.0	0.0	0.0	2.6	2.6	0.0	0.0	0.0	0.0	0.0	0.0	110.0	155.5	0.5	6.4	7.2	41.1	42.1	
JUN	34	34	34	34	7.8	0.0	0.0	0.0	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	74.4	229.9	0.3	9.8	10.1	51.2	52.2	
JUL	10	10	10	10	7.8	0.0	0.0	0.0	7.1	14.2	0.0	0.0	0.0	0.0	0.0	0.0	15.5	245.4	0.0	2.8	2.8	54.0	55.0	
AUG	55	55	55	55	7.8	0.0	0.0	0.0	4.8	19.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	259.7	0.0	0.8	0.8	54.8	55.8	
SEPT	17	17	17	17	7.8	0.0	0.0	0.0	15.2	16.2	0.0	0.0	0.0	0.0	0.0	0.0	24.9	284.6	0.1	0.0	0.0	55.7	56.7	
OCT	48	48	48	48	7.8	0.0	0.0	0.0	5.4	17.6	0.0	0.0	0.0	0.0	0.0	0.0	13.7	298.3	0.0	1.1	1.1	56.8	57.8	
NOV	37	37	37	37	7.8	0.0	0.0	0.0	4.0	17.6	0.0	0.0	0.0	0.0	0.0	0.0	11.9	310.2	0.0	6.2	6.2	63.0	64.0	
DEC	24	24	24	24	7.8	0.0	0.0	0.0	2.7	18.3	0.0	0.0	0.0	0.0	0.0	0.0	9.0	319.2	0.5	10.3	10.8	73.8	74.8	
YEAR	1312	1312	1312	1312	7.8	0.0	0.0	0.0	161.3	319.2	0.0	0.0	0.0	0.0	0.0	0.0	319.2	319.2	5.2	6.6	7.3	73.8	74.8	
SUMMARY OF DEBITS AND CREDITS																								
DEBIT										CREDIT														
C1 Balance - Beginning of Year										C1 Balance - End of Year														
C2 Scheduled Delivery from Colorado										C2 Scheduled Delivery from Colorado														
C3 Scheduled Delivery from Elephant Butte Reservoir										C3 Scheduled Delivery from Elephant Butte Reservoir														
C4 Actual Delivery at Lobatos plus 10,000 Acre Feet										C4 Actual Delivery at Lobatos plus 10,000 Acre Feet														
C5 Reduction of Credits - Evaporation										C5 Reduction of Credits - Evaporation														
C6 Reduction of Credits - Evaporation and Spill										C6 Reduction of Credits - Evaporation and Spill														
C7 Balance at End of Year										C7 Balance at End of Year														

APPROVED: _____ Date: 2-27-04 _____
 Eng. Adv. for Colorado: _____ Eng. Adv. for New Mexico: _____
 Eng. Adv. for Texas: _____ Date: 2/27/04

[illegible]

APPROVED: SEU Date: 2/27/04
 Eng. near Advisor for Colorado
 Eng. near Advisor for New Mexico Date: 2/27/04
 Eng. near Advisor for Texas HEB Date: 2/27/04

quantities in thousands of acre feet to nearest hundred

[illegible]

APPROVED _____
 E. Ernest Adams, Jr. _____
 Date 2-27-04 (sig near Adams) or " " 1900 _____
 Date _____
 Expires Ad near for Texas HS _____
 Date 2/27/04

RIO GRANDE COMPACT COMMISSION REPORT

COST OF OPERATION AND BUDGET

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2003

Item	Total Cost	Borne by United States	Borne by		
			Colorado	New Mexico	Texas
GAGING STATIONS					
In Colorado	\$58,888	\$6,780	\$52,108		
In New Mexico, above Caballo Reservoir	\$69,170	\$42,015		\$27,155	
In New Mexico, Caballo Reservoir and below	\$24,780	\$7,390		\$1,890	\$15,500
Subtotal	\$152,838	\$56,185	\$52,108	\$29,045	\$15,500
ADMINISTRATION					
U.S.G.S. Contract	\$28,028	\$7,007	\$7,007	\$7,007	\$7,007
Other expenses	\$2,808		\$936	\$936	\$936
Subtotal	\$30,836	\$7,007	\$7,943	\$7,943	\$7,943
GRAND TOTAL	\$183,674	\$63,192	\$60,051	\$36,988	\$23,443
EQUAL SHARES			\$40,161	\$40,161	\$40,161

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2005

Item	Total Cost	Borne by United States	Borne by		
			Colorado	New Mexico	Texas
GAGING STATIONS					
In Colorado	\$60,902	\$7,474	\$53,428		
In New Mexico, above Caballo Reservoir	\$54,970	\$34,415		\$20,555	
In New Mexico, Caballo Reservoir and below	\$24,140	\$6,390		\$2,250	\$15,500
Subtotal	\$140,012	\$48,279	\$53,428	\$22,805	\$15,500
ADMINISTRATION					
U.S.G.S. Contract	\$30,902	\$7,007	\$7,965	\$7,965	\$7,965
Other expenses	\$3,075		\$1,025	\$1,025	\$1,025
Subtotal	\$33,977	\$7,007	\$8,990	\$8,990	\$8,990
GRAND TOTAL	\$173,989	\$55,286	\$62,418	\$31,795	\$24,490
EQUAL SHARES			\$39,568	\$39,568	\$39,568

ACKNOWLEDGMENTS

This report was prepared by the U.S. Geological Survey, secretary to the Rio Grande Compact Commission. The water-supply data contained in this report have been provided by various Federal and State agencies.

The office of the State Engineer of Colorado provided records of transmountain diversions and of storage for the following:

Squaw Lake	Jumper Creek Reservoir	Mill Creek Reservoir
Rito Hondo Reservoir	Big Meadows Reservoir	Fuchs Reservoir
Hermit Lakes Reservoir No. 3	Alberta Park Reservoir	Platoro Reservoir
Troutvale No. 2 Reservoir	Shaw Lake Enlargement	Trujillo Meadows Reservoir

The office of the State Engineer of Colorado provided records of discharge for the following:

Rio Grande near Del Norte, Colo.	Los Pinos River near Dittus, Colo.
Conejos River below Platoro Reservoir, Colo.	Conejos River near Lasauces, Colo.
Conejos River near Mogote, Colo.	Rio Grande near Lobatos, Colo.
San Antonio River at Ortiz, Colo.	

The U.S. Bureau of Reclamation, Albuquerque, N. Mex., provided the following records:

Azotea Tunnel at Outlet, near Chama, N. Mex.	Storage in Heron Reservoir near Los Ojos, N. Mex.
Willow Creek above Heron Res., near Los Ojos, N. Mex.	Willow Creek below Heron Dam, N. Mex.
Horse Lake Creek above Heron Res., near Los Ojos, N. Mex.	Storage in El Vado Reservoir near Tierra Amarilla, N. Mex.

The U.S. Geological Survey, in cooperation with the U.S. Bureau of Reclamation, Albuquerque, N. Mex., provided the following records:

Storage in Nambe Falls Reservoir near Nambe, N. Mex.
Rio Nambe below Nambe Falls Dam near Nambe, N. Mex.

The U.S. Geological Survey supplied the record for Rio Grande below Elephant Butte Dam, and in cooperation with the New Mexico Interstate Stream Commission, also provided the following:

Rio Chama below El Vado Dam, N. Mex.	Santa Fe River near Santa Fe, N. Mex.
Rio Grande at Otowi Bridge, near San Ildefonso, N. Mex.	Storage in Nichols Reservoir near Santa Fe, N. Mex.
Storage in McClure Reservoir near Santa Fe, N. Mex.	

The U.S. Geological Survey, in cooperation with the Corps of Engineers, Albuquerque, N. Mex., also provided the following records:

Rio Chama below Abiquiu Dam, N. Mex.
Rio Grande below Cochiti Dam, N. Mex.
Gallisco Creek below Gallisteo Dam, N. Mex.
Jemez River below Jemez Canyon Dam, N. Mex.

The Corps of Engineers, Albuquerque, N. Mex., provided the following records of storage:

Abiquiu Reservoir.
Gallisco Reservoir.
Jemez Canyon Reservoir.
Cochiti Lake.

The Laguna Agency, Bureau of Indian Affairs, Laguna, N. Mex., supplied the records of storage in Seama Reservoir.

The U.S. Bureau of Reclamation, El Paso, Texas, provided the following records:

Storage in Elephant Butte Reservoir at Elephant Butte, N. Mex.
Storage in Caballo Reservoir near Arroyo, N. Mex.
Rio Grande below Caballo Dam, N. Mex.
Bonito ditch below Caballo Dam, N. Mex.

The Rio Grande Compact Commission gratefully acknowledges the cooperation received from the agencies listed above.

RIO GRANDE COMPACT COMMISSION REPORT

ACCURACY OF RECORDS

The Rules and Regulations of the Commission state that the equipment, method, and frequency of measurement at each gaging station shall be sufficient to obtain records at least equal in accuracy to those classified as "good" by the U.S. Geological Survey. Within the physical limitations of stream gaging, the agencies obtaining the records at Compact gaging stations have complied with these regulations.

The accuracy of streamflow records depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy attributed to the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true value; "good" within 10 percent; and "fair" within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record. The probable error in a monthly or annual mean discharge depends more on the distribution of the daily errors between the limits than it does on the limits themselves. For this reason, monthly and annual records are more accurate than most daily records.

STREAMFLOW

Rio Grande near Del Norte, Colo

Location. — Water-stage recorder, lat 37°41'22", long 106°27'38", in NW 1/4 sec. 29 T. 40 N. R. 5 E., on right bank, 20 ft downstream from county highway bridge, 6 mi west of Del Norte, and 18 mi upstream from Pinos Creek. Datum of gage is 7,980.25 ft above mean sea level, datum of 1929. Prior to May 16, 1908 staff gage at site 4 mi downstream. Records are equivalent.

Drainage area. — 1,320 sq mi, approximately

Average discharge. — 114 years (1890-2003), 894 ft³/s (647,800 acre-ft per year).

Extremes. — 1889-2003: Maximum discharge, 18,000 ft³/s Oct. 5, 1911 (gage height, 6.80 ft), from rating curve extended above 12,900 ft³/s; minimum daily, 69 ft³/s Aug. 21, 1902.

Remarks. — Records good except those for winter months, which are fair. Flow regulated by four reservoirs: total capacity 126,100 acre-ft, and by several smaller ones. Six transmountain diversions import water into basin above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	3,480	130	100	112	6,900
February	3,250	130	90	116	6,450
March	4,993	205	110	161	9,900
April	11,189	910	152	373	22,190
May	55,467	3,480	435	1,789	110,000
June	37,492	3,080	371	1,250	74,370
July	7,828	368	185	253	15,530
August	7,205	401	171	232	14,290
September	12,556	849	238	419	24,900
October	6,915	320	178	223	13,720
November	5,996	362	120	200	11,890
December	4,560	180	110	147	9,040
Calendar year 2003	160,931	3,480	90	441	319,200

Concejos River below Platoro Reservoir, Colo

Location. — Water-stage recorder and concrete control, lat 37°21'18", long 106°32'37", in NW 1/4NW 1/4 sec. 22 T. 36 N. R. 4 E., on left bank 1,100 ft downstream from valve house for Platoro Reservoir, and 0.7 mi northwest of Platoro. Datum of gage is 9,866.60 ft above mean sea level (levels by Bureau of Reclamation).

Drainage area. — 40 sq mi, approximately.

Average discharge. — 51 years (1890-2003), 91.5 ft³/s (66,320 acre-ft per year).

Extremes. — 1952-2003: Maximum discharge, 1,160 ft³/s Nov. 1, 1957; maximum gage height, 4.29 ft June 15, 1958; no flow Oct. 16-20, 1955.

Remarks. — Records good except those for winter months, which are fair. No diversions above station. Flow completely regulated by Platoro Reservoir (capacity, 59,570 acre-ft).

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	217	7.2	6.8	7.0	430
February	184	6.8	6.4	6.6	365
March	288	25	6.0	9.3	570
April	1,267	135	13	42	2,510
May	7,680	582	33	248	15,230
June	7,182	593	83	239	14,250
July	3,026	150	38	98	6,000
August	1,169	64	14	38	2,320
September	2,343	336	17	78	4,650
October	854	62	12	28	1,690
November	346	48	7.0	12	685
December	267	8.7	8.5	8.6	530
Calendar year 2003	24,822	593	6.0	68.0	49,230

RIO GRANDE COMPACT COMMISSION REPORT

Conejos River near Mogote, Colo.

Location. -- Water-stage recorder, lat 37°03'14" long 106°11'13", in SE 1/4SE 1/4 sec. 34, T. 33 N. R. 7 E. on right bank 25 ft upstream from bridge on State Highway 174, 0.4 mi downstream from Fox Creek, and 5.3 mi west of Mogote. Datum of gage is 8,271.54 ft above mean sea level.

Drainage area. -- 282 sq mi.

Average discharge. -- 93 years (1904, 1912-2003), 323 ft/s (233 800 acre-ft per year).

Extremes. -- 1903-05, 1911-2003: Maximum discharge, 9 000 ft/s Oct. 5, 1911 (gage height, 8.50 ft), from rating curve extended above 3,100 ft/s; minimum daily determined 10 ft/s July 18, 1904.

Remarks. -- Records good except those for winter months, which are fair. Diversions above station for irrigation of about 500 acres. Since 1951 flow partly regulated by Platoro Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	1,016	35	29	32.8	2 020
February	893	41	24	31.9	1 770
March	1,686	87	28	54.4	3 340
April	4,376	370	52	146	8 680
May	21 212	1,500	185	684	42 070
June	17,176	1,310	221	573	34,070
July	5,091	237	88	164	10 100
August	2,790	145	44	90.0	5 530
September	6,432	828	69	214	12,760
October	2,432	131	50	78.5	4,820
November	1,847	121	31	61.6	3 660
December	1,209	48	29	39.0	2,400
Calendar year 2003	66,160	1 500	24	181	131 200

San Antonio River at Ortiz, Colo.

Location. -- Water-stage recorder, lat 36°59'35" long 106°02'17", in New Mexico in NE1/4SE1/4, sec. 24, T. 32 N., R. 8 E., on left bank 800 ft south of New Mexico-Colorado State line, 0.4 mi southeast of Ortiz, and 0.4 mi upstream from Los Pinos River. Altitude of gage is 7 970 ft.

Drainage area. -- 110 sq mi.

Average discharge. -- 63 years (1941-2003), 25.1 ft/s (18,160 acre-ft per year).

Extremes. -- 1920-1925-2003: Maximum discharge, 1,750 ft/s Apr. 15, 1937 (gage height, 5.38 ft), from rating curve extended above 1,100 ft/s; no flow at times.

Remarks. -- Records good except those for winter months, which are fair. A few small diversions above station for irrigation.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	72.6	3.7	1.2	2.3	144
February	196	30	2.8	7.0	388
March	748	84	3.8	24.1	1 480
April	2,321	223	9.3	77.4	4 600
May	1,643	141	11	53.0	3,260
June	90.2	12	0.1	3.0	179
July	0.0	0.0	0.0	0.0	0.0
August	46.8	15	0.0	1.5	93
September	168	59	1.2	5.6	333
October	73.7	8.3	1.1	2.4	146
November	89.1	6.5	1.9	3.0	177
December	67.0	2.7	1.6	2.2	133
Calendar year 2003	5 515	223	0.0	15.1	10,940

STREAMFLOW

Los Pinos River near Ortiz, Colo.

Location. -- Water-stage recorder, lat 36°58'56", long 106°04'23" in New Mexico on line between sec. 26 and 27, T. 32 N. R. 8 E. on left bank 0.9 mi south of New Mexico-Colorado State line, 2.1 mi southwest of Ortiz, and 2.9 mi upstream from mouth. Altitude of gage is 8 040 ft.

Drainage area. -- 167 sq mi.

Average discharge. -- 85 years (1915-20 1925-2003), 118 ft/s (85,330 acre-ft per year).

Extremes. -- 1915-20 1925-2003: Maximum discharge, 3,160 ft/s May 12, 1941 (gage height, 5.77 ft, site and datum then in use), from rating curve extended above 1,600 ft/s; minimum observed, 4.0 ft/s Dec. 17, 1945.

Remarks. -- Records good except those for winter months, which are fair. Diversions above station for irrigation.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	337	13	8.6	10.9	669
February	445	60	9.0	15.9	883
March	797	42	13	25.7	1,580
April	4,287	414	31	143	8,500
May	11 800	531	210	381	23,410
June	3,601	328	26	120	7,140
July	476	25	9.2	15.4	945
August	388	25	6.7	12.5	771
September	1,114	293	11	37.1	2,210
October	526	27	12	17.0	1,040
November	558	29	13	18.6	1,110
December	524	20	13	16.9	1,040
Calendar year 2003	24,854	531	6.7	68.1	49,300

Conejos River near Lasasues, Colo.

Location. -- Water-stage recorder, lat 37°18'01", long 105°44'47", in sec. 2 and 11 (two channels) T. 35 N. R. 11 E., on left bank of main channel 125 ft downstream from bridge on State Highway 158 and on left bank of secondary channel 230 ft upstream from bridge, 1.0 mi upstream from mouth, and 2.1 mi north of Lasasues. Datum of gage on main channel is 7,495.02 ft and on secondary (south) channel is 7,496.89 ft above main sea level (levels by Bureau of Reclamation).

Drainage area. -- 887 sq mi.

Average discharge. -- 82 years (1922-2003), 177 ft/s (128 200 acre-ft per year).

Extremes. -- 1921-2003: Maximum discharge, 3,890 ft/s May 15, 1941; no flow at times in some years.

Remarks. -- Records good except those for winter months, which are fair. Diversions above station for irrigation of about 75,000 acres above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	800	34	16	25.8	1 590
February	610	37	9.5	21.8	1,210
March	238	15	0.8	7.7	471
April	131	18	0.4	4.4	260
May	412	83	2.7	13.3	817
June	156	23	0.6	5.2	310
July	3.5	0.5	0.0	0.1	7.0
August	0.0	0.0	0.0	0.0	0.0
September	39.1	38	0.0	1.3	78
October	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0
December	240	26	0.0	7.7	475
Calendar year 2003	2 629	83	0.0	7.2	5 220

RIO GRANDE COMPACT COMMISSION REPORT

Rio Grande near Lobatos, Colo.

Location. — Water-stage recorder, lat 37°04'42", long 105°45'22", in sec. 22, T. 33 N. R. 1 E. on right bank at highway bridge, 6 mi north of Colorado-New Mexico State line, 10 mi east of Lobatos, and 14 mi east of Antonito. Datum of gage is 7 427.63 ft above mean sea level, datum of 1929.

Drainage area. — 7,700 sq mi, approximately (includes 2 940 sq mi in closed basin in San Luis Valley).

Average discharge. — 31 years (1900-30), 846 ft³/s (612 900 acre-ft per year); 73 years (1931-2003) 439 ft³/s (318 100 acre-ft per year).

Extremes. — 1899-2003: Maximum discharge observed, 13,200 ft³/s June 8 1905 (gage height, 9.1 ft); from rating curve extended above 8,000 ft³/s; no flow a times in 1950-51-51, 1956.

Remarks. — Records good except those for winter months, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation and return flow from irrigated areas.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	4,945	205	105	160	9 810
February	5,480	240	120	196	10 870
March	4,870	230	60	157	9,660
April	1,769	86	35	59.0	3 510
May	3,617	218	56	117	7,170
June	5,114	279	94	170	10 140
July	1,394	93	20	45.0	2 760
August	405	25	5.8	13.1	803
September	473	31	9.8	15.8	940
October	555	30	11	17.9	1,100
November	3,148	230	26	105	6 240
December	5,445	230	125	176	10,800
Calendar year 2003	37,216	279	5.8	102	73,820

Willow Creek above Heron Reservoir, near Los Ojos, N. Mex.

Location. — Water-stage recorder, lat 36°44'33", long 106°37'34", in Tierra Amarilla Grant, on right bank 200 ft downstream from bridge, 0.2 mi downstream from Iron Spring Creek, 3.3 mi west of Los Ojos, and at mi 9.7. Datum of gage is 7,196.29 ft above mean sea level. Prior to Apr. 1, 1971, at site 900 ft downstream.

Drainage area. — 112 sq mi.

Average discharge. — 7 years (1963-69) 11.5 ft³/s (8 330 acre-ft per year) prior to completion of Azo ea tunnel; 34 years (1970-2003) 132 ft³/s (95 500 acre-ft per year) subsequent to completion of Azo ea tunnel.

Extremes. — 1962-2003: Maximum discharge 1,610 ft³/s Mar. 12, 1985 (gage height, 6.65 ft); no flow at times.

Remarks. — Records good except those for winter months, which are fair. Subsequent to Nov. 16, 1970, flow affected by transmountain diversions through Azo ea tunnel. Flow in Ru heron Drain included prior to Apr. 1, 1971.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0
March	1 579	195	0.0	50.9	3 132
April	6,400	444	25.7	213	12 694
May	13 216	872	55.5	426	26,213
June	9 504	731	53.4	317	18 851
July	325	70.1	0.0	10.5	644
August	236	52.9	0.0	7.6	469
September	1 729	624	0.0	57.6	3 429
October	113	43.4	0.0	3.6	223
November	0.2	0.2	0.0	0.0	0.5
December	0.0	0.0	0.0	0.0	0.0
Calendar year 2003	33 102	872	0.0	90.6	65 656

STREAMFLOW

Horse Lake Creek above Heron Reservoir, near Los Ojos, N. Mex.

Location. — Water-stage recorder, lat 36°42'24", long 106°44'42", in Tierra Amarilla Grant, on right bank 3.7 mi northwest of Heron Dam, 7.8 mi downstream from Horse Lake, and 9.9 mi west of Los Ojos. Datum of gage is 7,188.85 ft above National Geodetic Vertical Datum of 1929. Prior to July 1, 1971, at site 1,100 ft upstream.

Drainage area. — 45 sq mi, approximately.

Average discharge. — 12 years (1963-73, 1986), 1.17 ft³/s (848 acre-ft per year)

Extremes. — 1963-2002: Maximum discharge, 3,960 ft³/s July 30 1968 (gage height 4.9 ft); no flow most of time.

Remarks. — Records good. Diversions above station for irrigation of meadows and for off-channel stock tanks.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	—	—	—	—	—
February	—	—	—	—	—
March	—	—	—	—	—
April	—	—	—	—	—
May	5.7	5.3	0.0	0.2	11
June	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0
September	81.2	45	0.0	2.7	161
October	—	—	—	—	—
November	—	—	—	—	—
December	—	—	—	—	—
Calendar year 2003	—	—	—	—	—

Willow Creek below Heron Dam, N. Mex.

Location. — Totalizing flowmeters, lat 36°39'56", long 106°42'12", in Tierra Amarilla Grant, in outlet conduits at Heron Dam, 0.2 mi upstream from Rio Chama, 5.1 mi northeast of El Vado Dam, and 8.7 mi southwest of Los Ojos.

Drainage area. — 193 sq mi.

Average discharge. — 33 years (1971-2003), 128 ft³/s (92 370 acre-ft per year).

Extremes. — 1971-2003: Maximum daily discharge, 2,780 ft³/s Dec. 18, 19 1982; no flow at times each year.

Remarks. — Records excellent. Flow completely regulated by Heron Dam.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	465	15	15	15.0	922
February	420	15	15	15.0	833
March	3 575	200	0.0	115	7,090
April	3 998	251	0.0	133	7,930
May	1 540	400	0.0	49.7	3,055
June	5,319	520	0.0	177	10 550
July	16,120	520	520	520	31,974
August	9,851	520	0.0	318	19 539
September	2 336	250	0.0	77.9	4,633
October	2 050	80	0.0	66.1	4,066
November	3 350	150	0.0	112	6 645
December	2,425	178	0.0	78.2	4,810
Calendar year 2003	51 449	520	0.0	140	102,048

RIO GRANDE COMPACT COMMISSION REPORT

Rio Chama below El Vado Dam, N. Mex.

Location. — Water-stage recorder with satellite telemetry, lat 36°34'48", long 106°43'4" in Tierra Amarilla Grant, on left bank 1.5 mi downstream from El Vado Dam 2.8 mi upstream from Rio Nutrias, and 13 mi southwest of Tierra Amarilla.

Datum of gage is 6 696.12 ft above National Geodetic Vertical Datum of 1929. Prior to October 1935, at site 1.5 mi upstream and October 1935 to September 1938, at site 1.1 mi upstream at different datums.

Drainage area. — 877 sq mi, of which about 100 sq mi is probably noncontributing.

Average discharge. — 4 years (1914-1921-23), 444 ft³/s (321 700 acre-ft per year), prior to completion of El Vado Dam; 35 years (1936-70), 372 ft³/s (269 500 acre-ft per year), prior to release of transmountain water; 33 years (1971-2003), 470 ft³/s (340 800 acre-ft per year).

Extremes. — 1914-16, 1920-24, 1936-2003, Maximum discharge observed, 9,000 ft³/s May 22, 1920 (gage height, 12 ft); no flow Mar. 25-26-31 1955.

Remarks. — Records good. Diversions above station for irrigation of about 10,600 acres. Since 1935 flow regulated by El Vado Reservoir and since October 1970 flow partly regulated by Heron Reservoir. Subsequent to May 1971 flow affected by releases of transmountain water from Heron Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	1,068	49	14	34.5	2,120
February	552	23	16	19.7	1,090
March	4,307	267	22	139	8,540
April	10,968	479	128	366	21,760
May	8,747	512	105	282	17,350
June	12,928	881	107	431	25,640
July	33,843	1,290	836	1,092	67,130
August	22,612	1,340	105	729	44,850
September	5,927	340	103	198	11,760
October	5,327	268	102	173	10,660
November	4,879	207	148	163	9,680
December	6,227	281	148	201	12,350
Calendar year 2003	117,430	1,340	14	322	232,900

Rio Chama below Abiquiu Dam, N. Mex.

Location. — Water-stage recorder with satellite telemetry, lat 36°14'12", long 106°24'59", in SE1/4SE1/4 sec. 8, T. 23 N., R. 5 E., on right bank 0.8 mi downstream from Abiquiu Dam and 5.9 mi northwest of Abiquiu. Altitude of gage is 6,040 ft above National Geodetic Vertical Datum of 1929 (from river-profile map and topographic map).

Drainage area. — 2,147 sq mi, of which about 100 sq mi is probably noncontributing.

Average discharge. — 9 years (1962-70), 376 ft³/s (272 400 acre-ft per year), prior to release of transmountain water; 33 years (1971-2003), 525 ft³/s (380 300 acre-ft per year).

Extremes. — 1961-2003; Maximum discharge, 2,990 ft³/s July 1, 1965 (gage height, 6.69 ft); minimum, about 0.5 ft³/s Mar. 17, 1966, Jan. 28, 1972.

Remarks. — Records good. Flow regulated by Heron, El Vado, and Abiquiu Reservoirs. Diversions above station for irrigation of about 17,600 acres. Subsequent to May 1971 flow affected by the release of transmountain water from Heron Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	1,346	49	37	43.4	2,670
February	1,036	37	37	37.0	2,050
March	4,545	147	37	147	9,020
April	11,646	534	243	388	23,100
May	10,280	1,210	136	332	20,390
June	15,126	897	144	504	30,000
July	26,668	971	783	860	52,900
August	20,777	918	414	670	41,210
September	9,191	366	198	306	18,230
October	4,267	283	67	138	8,460
November	3,537	125	88	118	7,020
December	4,073	271	32	131	8,080
Calendar year 2003	112,492	1,210	32	308	223,100

STREAMFLOW

Rio Nambé below Nambé Falls Dam, near Nambé, N. Mex.

Location. — Water-stage recorder with satellite telemetry, lat 35°50'46" long 105°54'17", in NE1/4SW1/4 sec. 29, T. 19 N., R. 10 E., in Nambé Indian Reservation, in outlet conduits at Nambé Falls Dam, 300 ft upstream from Nambé Falls, 2.6 mi upstream from confluence of Rio Nambé and Rio En Medio, 4.4 mi southeast of Nambé Pueblo, and 5.4 mi southeast of Nambé.

Datum of gage is 6,840 ft above National Geodetic Vertical Datum of 1929 from topographic map.

Drainage area. — 34.1 sq mi.

Average discharge. — 25 years (1979-2003), 14.0 ft³/s (10,160 acre-ft per year).

Extremes. — 1979-2003, Maximum discharge, 312 ft³/s June 9, 1979 (gage height, 96 ft), at site 1,100 ft downstream; no flow December 31 1994.

Remarks. — Records good. Flow completely regulated by Nambé Falls Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	18.6	0.6	0.6	0.6	37
February	17.3	0.6	0.6	0.6	34
March	20.8	0.8	0.6	0.7	41
April	329	33	0.5	11.0	652
May	469	20	10	15.1	930
June	630	32	11	21.0	1,250
July	556	36	2.7	17.9	1,100
August	152	8.3	2.5	4.9	301
September	244	11	5.8	8.1	484
October	125	5.1	3.9	4.0	248
November	79.4	4.3	1.1	2.6	157
December	383	19	1.1	12.4	760
Calendar year 2003	3,023	36	0.5	8.3	6,000

Rio Grande at Otowi Bridge, near San Ildefonso, N. Mex.

Location. — Water-stage recorder with satellite telemetry, lat 35°52'29" long 106°08'30", in SW 1/4SW1/4 sec. 18, T. 19 N., R. 8 E., in San Ildefonso Pueblo Grant, 400 downstream from bridge on State Highway 502, 1.8 mi southwest of San Ildefonso Pueblo, 2.5 mi downstream from Pojoaque River, and 6.8 mi west of Pojoaque. Datum of gage is 5 488.48 ft above National Geodetic Vertical Datum of 1929. Prior to May 19, 1904, and July 25 to Oct 1 1904, staff gage at site 180 ft upstream at datum 2.02 ft lower.

Drainage area. — 14,300 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. — 104 years (1896-1905-1910-2003), 1 517 ft³/s (1 099,000 acre-ft per year).

Extremes. — 1895-1905-1910-2003; Maximum discharge, 24 400 ft³/s May 23 1920 (gage height, 14.1 ft); minimum daily, 60 ft³/s July 4-5, 1902.

Remarks. — Records good. Flow partly regulated by Heron, El Vado, and Abiquiu Reservoirs. Diversions above station for irrigation of about 620,000 acres in Colorado and 75 000 acres in New Mexico. Subsequent to May 1971 flow affected by releases of transmountain water from Heron Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	14,663	514	403	473	29 080
February	13,947	573	394	498	27 660
March	18,912	842	443	610	37 510
April	28,099	1,250	613	937	55,730
May	34,922	1 820	878	1,127	69 270
June	31,171	1 310	839	1 039	61 830
July	31,111	1 090	917	1 004	61 710
August	24 309	1 040	440	784	48,220
September	14,875	942	382	496	29 500
October	12,021	553	305	388	23,840
November	13 589	608	318	453	26,950
December	18,378	735	459	593	36 450
Calendar year 2003	255 997	1,820	305	701	507 800

RIO GRANDE COMPACT COMMISSION REPORT

San a Fe River near Santa Fe, N. Mex.

Location. -- Water-stage recorder with satellite telemetry and concrete control, lat 35°41'12" long 105°50'35", in NE1/4SE1/4 sec. 23, T. 17 N., R. 10 E. 0.4 mi downstream from McClure Dam, and 5.3 mi east of Santa Fe. Altitude of gage is 7 720 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Nov. 4 1930, at site 1.5 mi downstream, and Apr. 11 1931 to Sept. 30 1947, at site 0.3 mi upstream, each at different datum.

Drainage area. -- 18.2 sq mi.

Average discharge. -- 91 years (1913-2003), 8.03 ft/s (5 800 acre-feet per year).

Extremes. -- 1913-2003; Maximum discharge, 1,500 ft/s Aug. 14 1921 (gage height, 5.17 ft); from rating curve extended above 150 ft/s; minimum, no flow Aug. 2-10 2000.

Remarks. -- Records good. Flow regulated by McClure Reservoir, completed in 1926, raised in 1935 and again in 1947.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	1.1	0.1	0.0	0.0	2.2
February	1.2	0.1	0.0	0.0	2.5
March	2.6	0.4	0.0	0.1	5.3
April	3.4	0.2	0.0	0.1	6.8
May	71.5	14	0.1	2.3	142
June	256	17	3.7	8.5	508
July	219	12	3.4	7.1	434
August	336	12	4.6	10.8	665
September	132	4.7	4.1	4.4	262
October	132	4.4	4.1	4.2	261
November	21.0	4.2	0.0	0.7	42
December	1.9	0.5	0.0	0.1	3.7
Calendar year 2003	1,177	17	0.0	3.2	2 330

Rio Grande below Cochiti Dam, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°37'05", long 106°19'24", in SW1/4NE1/4 sec. 17, T. 16 N., R. 6 E., in Pueblo de Cochiti Grant, 320 ft upstream from bridge on State Highway 22, 700 ft downstream from Cochiti Dam and 1.4 mi northeast of Cochiti Pueblo. Datum of gage is 5 226.08 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 14, 1973, at site 2.4 mi downstream at altitude 5 210 ft, from topographic map. Nov. 14 1973 to Jan. 8 1976, at site 320 ft downstream at datum 1.79 ft lower.

Drainage area. -- 14,900 sq mi, approximately (includes 2 940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. -- 33 years (1971-2003) 1 357 ft/s (983 000 acre-feet per year).

Extremes. -- 1971-2003; Maximum discharge, 10,300 ft/s July 26, 1971 (gage height 7.90 ft) at site 2.4 mi downstream prior to closure of Cochiti Dam; from rating curve extended above 2,600 ft/s; minimum discharge 0.51 ft/s Aug. 3-5, 1977 Aug. 27-28 1978.

Remarks. -- Records good. Since Nov. 12, 1973 flow completely regulated by Cochiti Dam. Cochiti Eastside Main Canal on left bank and Sili Main Canal on right bank bypass station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	13 386	469	385	432	26 550
February	12,434	539	271	444	24,660
March	14,591	592	343	471	28 940
April	21 565	1 060	532	719	42 770
May	29,199	1 430	716	942	57 920
June	23,697	907	696	790	47 000
July	23,374	804	707	754	46 360
August	19 274	748	465	622	38 230
September	10 846	589	266	362	21 510
October	8 933	448	182	288	17,720
November	12 508	590	267	417	24 810
December	16,824	731	329	543	33 370
Calendar year 2003	206,631	1 430	182	566	409 900

STREAMFLOW

Galis eo Creek below Galisteo Dam N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°27'53" long 106°12'49", in NE1/4NE1/4 sec. 8, T. 14 N., R. 7 E., in Mesita de Juana Lopez Grant, on right bank 0.4 mi downstream from Galisteo Dam 5.3 mi northwest of Cerillos and at mile 11.4. Elevation of gage is 5 450 ft above National Geodetic Vertical Datum of 1929 from topographic map. Prior to Dec. 21 1981 at site 1 200 ft downstream at different datum.

Drainage area. -- 597 sq mi.

Average discharge. -- 33 years (1971-2003) 5.68 ft/s (4 114 acre-feet per year).

Extremes. -- 1970-2003; Maximum discharge, 3,460 ft/s Aug. 24 1997 (gage height, 5.57 ft); no flow many days each year.

Remarks. -- Records poor. Flow partly regulated by uncontrolled outlet in Galisteo Dam. Capacity of outlet, 5,000 ft³/s when reservoir is full. Diversions for irrigation of about 50 acres above reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0
May	12.0	11	0.0	0.4	24
June	65.6	24	0.0	2.2	130
July	17.0	17	0.0	0.6	34
August	51.8	43	0.0	1.7	103
September	22.2	14	0.0	0.7	44
October	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0
Calendar year 2003	168.6	43	0.0	0.5	334

Jemez River below Jemez Canyon Dam, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°23'24", long 106°32'03", in NE1/4 sec. 5, T. 13 N., R. 4 E., 0.8 mi downstream from Jemez Canyon Dam 2.0 mi upstream from mouth, and 6 mi north of Bernalillo. Datum of gage is 5,095.60 ft above National Geodetic Vertical Datum of 1929. Prior to April 24, 1951, at site three-quarters mi upstream at datum 24.51 ft higher. April 24, 1951 to June 25 1958, at site 37 ft upstream at datum 4.40 ft higher.

Drainage area. -- 1,038 sq mi.

Average discharge. -- 61 years (1937 1944-2003), 61.7 ft/s (44,670 acre-feet per year).

Extremes. -- 1937, 1944-2003; Maximum discharge, 16 300 ft/s Aug. 29, 1943 (gage height 5.62 ft); no flow at times.

Remarks. -- Records good. Flow regulated by Jemez Canyon Dam since October 1953. Diversions for irrigation of about 3,000 acres above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	923	62	21	29.8	1,830
February	698	58	9.0	24.9	1,380
March	1 810	200	24	58.4	3,590
April	4,737	435	36	158	9,400
May	2,670	155	49	86.1	5,300
June	283	50	0.8	9.4	560
July	9.6	1.0	0.1	0.3	19
August	453	450	0.0	14.6	898
September	885	350	0.1	29.5	1 750
October	4 641	2 000	0.0	150	9,210
November	190	10	2.5	6.3	377
December	404	18	4.5	13.0	800
Calendar year 2003	17 702	2 000	0.0	48.5	35 110

RIO GRANDE COMPACT COMMISSION REPORT

Rio Grande below Elephant Butte Dam, N. Mex.

Location. — Water-stage recorder with satellite telemetry, lat 33°08'54" long 107°12'22", in SW1/4 sec. 25, T. 13 S., R. 4 W. (projected), in Pedro Armendariz Grant, 1.0 mi downstream from dam and 1.5 mi upstream from Cuchillo Negro River. Datum of gage is 4,241.09 ft above national Geodetic Vertical Datum of 1929. Prior to April 23, 1942, at several different sites and datums.

Drainage area. — 29,450 sq mi approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. — 89 years (1915-2003), 1,007 ft³/s (729,600 acre-feet per year).

Extremes. — 1915-2003; Maximum daily discharge, 8,220 ft³/s May 22, 1942; no flow at times prior to 1929 and March 2-4, 1979.

Remarks. — Records good. Flow regulated by Elephant Butte Reservoir. Diversions for irrigation of about 800,000 acres above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	210	9.9	2.5	6.8	416
February	6,404	597	5.7	229	12,700
March	17,762	683	4.17	573	35,230
April	21,183	736	669	706	42,020
May	21,949	1,360	230	708	43,540
June	44,260	1,610	1,370	1,475	87,790
July	29,063	1,620	546	938	57,650
August	32,178	1,400	645	1,038	63,830
September	8,170	799	13	272	16,210
October	406	15	10	13.1	805
November	263	10	7.6	8.8	522
December	245	8.7	5.1	7.9	486
Calendar year 2003	182,093	1,620	2.5	499	361,200

Rio Grande below Caballo Dam, N. Mex.

Location. — Water-stage recorder, lat 32°53'05" long 107°17'31", in NE1/4SW1/4 sec. 30, T. 16 S., R. 4 W., 2,000 ft upstream from Interstate Highway 25, 4,200 ft downstream from Caballo Dam, 1.3 mi upstream from Percha diversion dam, and 3 mi northeast of Arroyo. Datum of gage is 4,140.90 ft above National Geodetic Vertical Datum of 1929.

October 13, 1938 to December 31, 1945, at datum 5.0 ft higher.

Drainage area. — 30,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. — 66 years (1938-2003), 937 ft³/s (678,500 acre-feet per year).

Extremes. — 1938-2003; Maximum daily discharge, 7,650 ft³/s May 20, 1942; minimum daily, 0.1 ft³/s Oct. 31 to Nov. 14, 1954; Nov. 7 to Dec. 31, 1955; Feb. 15-29, 1972.

Remarks. — Records good. Flow regulated by Elephant Butte Reservoir and Caballo Reservoirs. Diversions for irrigation of about 800,000 acres above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	154	5.6	2.9	5.0	305
February	99.2	4.2	2.6	3.5	197
March	11,823	1,270	2.6	381	23,450
April	17,353	1,300	12.0	578	34,420
May	19,038	1,380	12.0	614	37,760
June	42,340	1,880	1,060	1,411	83,980
July	29,349	1,850	429	947	58,210
August	51,000	1,810	1,350	1,645	101,200
September	12,382	1,260	1.5	413	24,560
October	70.0	2.5	1.3	2.3	139
November	39.6	2.5	1.0	1.3	79
December	45.0	2.3	1.0	1.4	89
Calendar year 2003	183,692	1,880	1.0	503	364,400

STREAMFLOW

Bonito Ditch below Caballo Dam, N. Mex.

Records available. — January 1938 to December 1996. Published as supplementary data with Rio Grande below Caballo Dam in U.S.G.S. Water-Supply Papers and Water-Data Reports beginning with October 1947.

Remarks. — Ditch diverts directly from Caballo Reservoir for irrigation of lands on right bank of river. The total release from Project Storage, as used in computations of Compact Commission, is the combined flow of this ditch and Rio Grande below Caballo Dam.

Diversion, in acre-ft

January	0.0
February	95.0
March	152.0
April	139.0
May	245.6
June	137.4
July	153.8
August	151.5
September	135.3
October	88.8
November	0.0
December	0.0
Calendar year 2003	1,298.5

RIO GRANDE COMPACT COMMISSION REPORT

STORAGE IN RESERVOIRS

**Reservoirs in Rio Grande Basin in Colorado
(constructed or enlarged since 1937)**

Squaw Lake. - Staff gage in sec. 12, T. 39 N., R. 4 W on tributary to Squaw Creek. Completed in 1938; capacity, 162 acre-ft by 1953 survey. Water is used for irrigation below gaging station on Rio Grande near Del Norte.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

Rito Hondo Reservoir. - Staff gage in sec. 22, T. 42 N. R. 3 W., on Rito Hondo (Deep Creek) tributary to Clear Creek. Completed in 1957; capacity, 561 acre-ft. Originally filled during May and June 1958 with transmountain water; storage is not in debit status. Water is used for fish culture.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

Hermit Lakes Reservoir No. 3. - In sec. 25, T. 41 N., R. 4 W., on South Clear Creek. Completed prior to 1960; capacity, 192 acre-ft. Capacity table based on elevation above bottom of outlet. Water is used for fish culture. Includes 169 acre-feet of transmountain water by exchange in 1984 and 23 acre-ft of transmountain water by exchange in 1985.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

Troutvale No. 2 Reservoir. - Staff gage in E 1/2 sec. 10, T. 41 N., R. 3 W. on South Clear Creek. Completed in 1940; capacity, 435 acre-ft. Condition of spillway limited storage to 168 acre-ft after May 1942. Repairs to spillway in 1947 increased capacity to 257 acre-ft. Water is used for fish culture with only occasional sale for irrigation. Storage omitted from accounting by action of Commission on Feb. 15, 1962.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in Colorado (constructed or enlarged since 1937)

Jumper Creek Reservoir. - In sec. 5, T. 39 N. R. 2 W. on Jumper Creek, tributary to Trout Creek. Completed in 1951; capacity, 38 acre-ft. Capacity table based on elevation above bottom of outlet. Storage omitted from accounting by action of Commission on Feb. 15, 1962.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

Big Meadows Reservoir. - In NW1/4 sec. 17, T. 38 N. R. 2 E. on South Fork about 0.9 mi upstream from Hope Creek. Completed in 1967; capacity, 2,437 acre-ft. Capacity table based on elevation above outlet. Water is used for fish culture. Includes 140 acre-ft of transmountain water, by exchange, in 1967; 838 acre-ft. by exchange, in 1968; 347 acre-ft, by exchange, in 1969; and 1,112 acre-ft, by exchange, in 1983, for a total of 2,437 acre-ft.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

Alberta Park Reservoir. - In sec. 34, T. 38 N., R. 2 E. on Pass Creek. Completed in 1953; capacity, 598 acre-ft. Capacity table based on elevation above bottom of outlet. Storage prior to June 30, 1983 included 244 acre-ft of transmountain water imported in 1963. By a 1983 resolution of the Rio Grande Compact Commission, the reservoir was drained for repairs in July 1983; recovery was completed in 1984. The reservoir also contains 100 acre-ft of transmountain water stored by exchange in 1983 and 254 acre-ft of transmountain water stored in 1984.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

Shaw Lake Enlargement. - sec. 5, T. 38 N. R. 2 E on tributary to Lake Creek. Capacity, 638 acre-ft by 1916 decree; enlarged in 1955 to 681 acre-ft. Only the storage in excess of 638 acre-ft is subject to terms of Rio Grande Compact. Includes 42 acre-ft of transmountain water imported in 1965.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

[illegible]

RIO GRANDE COMPACT COMMISSION REPORT

Reservoirs in Rio Grande Basin in Colorado
(constructed or enlarged since 1937)

Mill Creek Reservoir. - In sec. 16, T. 39 N., R. 3 E., on Mill Creek. Completed in 1953; capacity, 43 acre-ft. Capacity based on elevation above bottom of outlet. Includes 43 acre-ft of transmountain water, by exchange, in 1976.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Contents	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

Fuchs Reservoir. - Staff gage in sec. 2, T. 37 N., R. 4 E. on East Pinos Creek. Completed in 1939; capacity, 237 acre-ft with 2 ft of flash boards in spillway. Prior to calendar year 1999, contents reported as 238 acre-ft were actually 237 acre-ft. Pinos Creek enters Rio Grande below station near Del Norte.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	8.9	10.0	10.9	10.9	7.4	2.1	0.0	0.0	0.0	0.0	4.1	6.2	-
Contents	77	93	109	109	56	5	0.0	0.0	0.0	0.0	20	42	-
Change	+16	+16	+16	0	-53	-51	-5	0	0	0	+20	+22	-35

Platoro Reservoir. - Water-stage recorder in NW1/4 sec. 22, T. 36 N., R. 4 E., on Conejos River. Completed in 1951; capacity, 59,570 acre-ft at crest of spillway. Reservoir is used for irrigation and flood control. Storage affects Conejos Index Supply. Contents include 3,000 acre-ft of transmountain water stored by exchange in April 1985 on behalf of the Colorado Division of Wildlife.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents
December 31, 2002	9,964.73	10,800	-
January 31, 2003	9,964.67	10,772	-28
February 28	9,964.83	10,845	+73
March 31	9,964.73	10,793	-52
April 30	9,964.35	10,628	-165
May 31	9,966.81	11,737	+1,109
June 30	9,970.51	13,473	+1,736
July 31	9,961.90	9,565	-3,908
August 31	9,957.92	7,928	-1,637
September 30	9,957.63	7,811	-117
October 31	9,956.41	7,333	-478
November 30	9,957.22	7,651	+318
December 31, 2003	9,957.86	7,902	+251
Calendar year 2003	-	-	-2,898

Trujillo Meadows Reservoir. - In sec. 5, T. 32 N., R. 5 E. on Los Pinos River. Completed in 1957; capacity, 869 acre-ft. effective Jan. 1, 1999. Water is used for fish culture. Storage is transmountain water, by exchange, in 1959.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2003

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	-
Contents	869	869	869	869	869	869	869	869	869	869	869	869	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Heron Reservoir. - Water-stage recorder with satellite telemetry, lat 36°39'56", long 106°42'13", on Willow Creek. Storage began in October 1970. Capacity, 401,300 acre-ft at elevation 7,186.1 ft (low point on crest of spillway); dead storage, 1,340 acre-ft at elevation 7,003.0 ft. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Used for storage of transmountain water.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents
December 31, 2002	7,134.54	160,759	-
January 31, 2003	7,134.25	159,769	-990
February 28	7,134.25	159,769	0
March 31	7,133.61	157,600	-2,169
April 30	7,134.68	161,238	+3,638
May 31	7,140.94	183,706	+22,468
June 30	7,142.78	190,685	+6,979
July 31	7,133.53	157,331	-33,354
August 31	7,127.49	137,922	-19,409
September 30	7,127.39	137,616	-306
October 31	7,125.92	133,170	-4,446
November 30	7,123.86	127,114	-6,056
December 31, 2003	7,122.50	123,228	-3,886
Calendar year 2003	-	-	-37,531

El Vado Reservoir. - Water-stage recorder and surface follower, lat 36°35'39", long 106°44'00", on Rio Chama. Storage began in January 1935. Capacity, 186,250 acre-ft at gage height 6,902.0 ft (crest of spillway); dead storage, 480 acre-ft below gage height 6,775.0 ft (invert of outlet works), as determined by survey in 1984. Datum of gage is 8.21 ft above National Geodetic Vertical Datum of 1929. Storage includes both Rio Grande and transmountain water.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage Height	Contents	Change in contents	Transmountain water
December 31, 2002	6,802.18	11,195	-	6,071
January 31, 2003	6,804.34	12,646	+1,451	5,552
February 28	6,808.54	15,697	+3,051	5,569
March 31	6,816.50	22,335	+6,638	5,546
April 30	6,835.65	43,223	+20,888	5,515
May 31	6,870.21	100,470	+57,247	4,229
June 30	6,868.88	97,682	-2,788	4,191
July 31	6,849.22	62,502	-35,180	12,347
August 31	6,831.70	38,341	-24,161	4,089
September 30	6,831.99	38,690	+349	5,787
October 31	6,829.09	35,273	-3,417	6,862
November 30	6,829.34	35,561	+288	7,914
December 31, 2003	6,824.57	30,266	-5,295	5,893
Calendar year 2003	-	-	+19,071	-

RIO GRANDE COMPACT COMMISSION REPORT

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Abiquiu Reservoir. -- Water-stage recorder, lat 36°4'24", long 106°25'44", on Rio Chama. Completed in February 1963; capacity, 1,192,800 acre-ft at elevation 6,350 feet (crest of spillway) by 1998 survey. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Reservoir operated by Corps of Engineers for flood control and sediment storage. A resolution granting permission to store transmountain waters was approved by Rio Grande Compact Commission on May 3, 1974. Storage includes both Rio Grande and transmountain water.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents	Transmountain water
December 31, 2002	6,172.74	43,745	-	42,962
January 31, 2003	6,172.82	43,876	+131	43,092
February 28	6,172.45	43,273	-603	42,496
March 31	6,172.37	43,143	-130	42,359
April 30	6,174.18	46,175	+3,032	44,438
May 31	6,174.65	46,996	+821	46,036
June 30	6,172.45	43,273	-3,723	42,452
July 31	6,180.53	58,350	+15,077	57,456
August 31	6,184.14	66,610	+8,260	65,666
September 30	6,183.49	65,040	-1,570	64,089
October 31	6,184.15	66,634	+1,594	65,684
November 30	6,184.95	68,613	+1,979	67,654
December 31, 2003	6,186.65	72,934	+4,321	71,971
Calendar year 2003			+29,189	

Nambe Falls Reservoir. -- Water-stage recorder, lat 35°50'46", long 105°54'17", in NE1/4SW1/4 sec. 29, T. 19 N., R. 10 E., in Nambe Indian Reservation, on Rio Nambe. Completed in 1976; capacity 2,023 acre-ft at elevation 6,826.6 feet (crest of spillway), dead storage 121 acre-ft at elevation 6,760.9 ft. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Storage is transmountain water by exchange (see resolution adopted March 27, 1975).

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents
December 31, 2002	6,799.10	810	
January 31, 2003	6,802.56	922	+112
February 28	6,805.36	1,019	+97
March 31	6,811.68	1,273	+254
April 30	6,810.54	1,224	-49
May 31	6,822.87	1,812	+588
June 30	6,820.63	1,693	-119
July 31	6,800.28	847	-846
August 31	6,803.86	966	+119
September 30	6,802.80	929	-37
October 31	6,803.51	953	+24
November 30	6,805.42	1,021	+68
December 31, 2003	6,786.58	487	-534
Calendar year 2003			-323

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

McClure (Granite Point) Reservoir. -- Water-stage recorder, lat 35°41'18", long 105°50'06", in NE1/4SW1/4 sec. 24, T. 17 N., R. 10 E., on Santa Fe River. Original reservoir completed in 1926, capacity, 561 acre-ft; in 1935, permanent flash boards were installed in spillway increasing capacity to 650 acre-ft; in 1947 both dam and spillway were reconstructed increasing capacity to 2,615 acre-ft (gage height, 96.6 ft, crest of spillway). In 1953 spillway was equipped with radial gates that opened automatically, increasing capacity to over 3,000 acre-ft. In 1972 radial gates were removed decreasing capacity to 2,615 acre-ft. In 1989, modifications to the dam and spillway increased capacity to 2,813 acre-ft. In 1995, modification to the dam and spillway increased capacity to 3,257 acre-ft. No dead storage. Elevation of gage is 7,790 ft above National Geodetic Vertical Datum of 1929, from topographic map. Water is for municipal use in Santa Fe. Storage includes both Rio Grande water and transmountain water by exchange. Capacity includes 561 acre-ft for pre-Compact storage and additional capacity as may be available to accommodate up to a total of 1,061 acre-feet of pre-Compact storage in McClure and Nichols Reservoirs combined.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage height	Contents	Change in contents	Pre-Compact water	Transmountain water
December 31, 2002	7,843.33	757	-	380	377
January 31, 2003	7,844.68	806	+49	342	464
February 28	7,846.29	866	+60	402	464
March 31	7,853.96	1,190	+324	726	464
April 30	7,863.19	1,690	+500	761	464
May 31	7,878.40	2,700	+1,010	888	414
June 30	7,879.30	2,770	+70	734	776
July 31	7,873.32	2,340	-430	304	776
August 31	7,864.32	1,760	-580	0	776
September 30	7,862.65	1,660	-100	0	776
October 31	7,859.20	1,460	-200	0	776
November 30	7,859.45	1,470	+10	0	776
December 31, 2003	7,860.54	1,540	+70	0	776
Calendar year 2003			+783		

Nichols Reservoir. -- Water-stage recorder, lat 35°41'24", long 105°52'46", in SE1/4NE1/4 sec. 21, T. 17 N., R. 10 E., on Santa Fe River. Completed in 1942; capacity, 685 acre-ft at gage height 167.0 feet (crest of spillway), dead storage, 14 acre-ft at gage height 121.1 feet. Datum of gage is 7,313.2 feet above National Geodetic Vertical Datum of 1929. Water is for municipal use in Santa Fe. Storage includes both Rio Grande water and transmountain water by exchange. Capacity may include pre-Compact storage such that total pre-Compact storage in McClure and Nichols Reservoirs combined does not exceed 1,061 acre-ft.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage height	Contents	Change in contents	Pre-Compact water	Transmountain water
December 31, 2002	151.32	304	-	117	187
January 31, 2003	151.35	305	+1	205	100
February 28	151.57	309	+4	209	100
March 31	148.33	373	+64	273	100
April 30	156.07	400	+27	300	100
May 31	149.60	273	-127	173	100
June 30	153.08	338	+65	238	100
July 31	152.43	326	-12	226	100
August 31	161.32	526	+200	150	100
September 30	156.38	407	-119	0	100
October 31	158.60	459	+52	6	100
November 30	160.47	504	+45	61	100
December 31, 2003	160.68	509	+5	136	100
Calendar year 2003			+205		

RIO GRANDE COMPACT COMMISSION REPORT

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Cochiti Lake. – Water-stage recorder with satellite telemetry, lat 35°37'01", long 106°18'58", in NW1/4SW1/4 sec. 16, T. 14 N., R. 6 E. in Pueblo de Cochiti Grant, on Rio Grande. Completed in 1975; capacity 491,259 acre-ft at elevation 5,450.0 ft (crest of service spillway); zero storage at elevation 5,255.0 from 1998 survey. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by the U.S. Army Corps of Engineers). A 50,000 acre-foot permanent pool was authorized by Public Law 88-293, 88th Congress, March 26, 1964. Reservoir is operated by Corps of Engineers for flood control, sediment storage, and recreation. Storage began Nov. 12, 1973.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents	Transmountain water
December 31, 2002	5,339.71	48,805	-	47,710
January 31, 2003	5,340.81	50,120	+1,315	48,586
February 28	5,341.42	50,876	+756	49,750
March 31	5,341.42	50,876	0	50,412
April 30	5,342.03	51,656	+780	49,899
May 31	5,341.08	50,453	-1,203	49,296
June 30	5,340.54	49,791	-662	48,532
July 31	5,340.10	49,264	-527	47,729
August 31	5,339.95	49,086	-178	47,135
September 30	5,339.23	48,255	-831	46,672
October 31	5,339.19	48,210	-45	46,387
November 30	5,338.87	47,852	-358	46,265
December 31, 2003	5,338.77	47,741	-111	46,363
Calendar year 2003	-	-	-1,064	-

Galisteo Reservoir. – Water-stage recorder above elevation 5,500.3 ft, nonrecording below lat 35°27'41" long 106°12'30", in NW1/4 sec. 9, T. 14 N., R. 7 E. on Galisteo Creek. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Storage records begin in October 1970. Capacity 88,990 acre-ft at elevation 5,608.0 ft (crest of spillway). No dead storage. Reservoir is operated by Corps of Engineers for flood control and sediment storage.

Month-end contents, in acre-feet

Calendar Year 2003

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Contents	0	0	0	0	0	0	0	0	0	0	0	0	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Jemez Canyon Reservoir. – Water-stage recorder, lat 35°23'40", long 106°32'50", in SW1/4SW1/4 sec. 32, T. 14 N., R. 4 E., on Jemez River. Completed in 1953; capacity, 259,423 acre-ft at elevation 5,271.20 ft. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Maximum controlled capacity at elevation 5,232.0 ft (floor of spillway) is 97,425 acre-ft by 1998 survey. Reservoir is operated by Corps of Engineers for flood control and sediment storage. A sediment pool of about 2,000 acre-ft of transmountain water has been maintained since August 1979.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents	Transmountain water
December 31, 2002	5,155.00	0	-	0
January 31, 2003	5,155.00	0	0	0
February 28	5,155.00	0	0	0
March 31	5,155.00	0	0	0
April 30	5,155.00	0	0	0
May 31	5,155.00	0	0	0
June 30	5,155.00	0	0	0
July 31	5,155.00	0	0	0
August 31	5,155.00	0	0	0
September 30	5,155.00	0	0	0
October 31	5,155.00	0	0	0
November 30	5,155.00	0	0	0
December 31, 2003	5,155.00	0	0	0
Calendar year 2003	-	-	0	-

Acoma Reservoir. – Staff gage in SE1/4 sec. 29, T. 10 N., R. 7 W., on San Fidel Arroyo; water for reservoir is diverted from Rio San Jose. Completed in 1938; original capacity, 850 acre-ft; present capacity 650 acre-ft on basis of 1956 sediment survey. Water is used for irrigation on Acoma Indian Reservation. Storage omitted from accounting by action of Commission on March 23, 2000.

Month-end contents, in acre-feet

Calendar Year 2003

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Contents	-	-	-	-	-	-	-	-	-	-	-	-	-
Change	-	-	-	-	-	-	-	-	-	-	-	-	-

Seama Reservoir. – In sec. 36, T. 10 N., R. 7 W., off channel from Rio San Jose. Completed in October 1980; capacity approximately 400 acre-ft. Water is used for irrigation on Laguna Indian Reservation.

No storage during 2003.

RIO GRANDE COMPACT COMMISSION REPORT

Reservoirs in Rio Grande Basin in New Mexico
(project storage)

Elephant Butte Reservoir. - Water-stage recorder, lat 33°09'15", long 107°11'28" in NW 1/4 sec. 30, T. 13 S., R. 3 W., on Rio Grande. Storage began Jan. 6, 1915; capacity, 2,023,400 acre-ft at gage height 4,407.0 ft (crest of spillway), by survey of 1999 with flood control storage reservation of 50,000 acre-ft from April through September and 25,000 acre-ft from October through March in accordance with Sept. 9, 1998 resolution of the Rio Grande Compact Commission. Datum of gage is 43.3 ft above National Geodetic Vertical Datum of 1929. Water is used for power development and irrigation in New Mexico and Texas. Records furnished by Bureau of Reclamation. Delivery of transmountain water for minimum recreation pool was initiated in December 1975. Beginning Jan. 1, 1977 gage readings are midnight readings.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage Height	Contents	Change in contents	Transmountain water
December 31, 2002	4,326.94	350,090	-	8,210
January 31, 2003	4,330.06	384,190	+34,100	8,170
February 28	4,331.90	405,080	+20,890	8,140
March 31	4,331.08	395,690	-9,390	8,060
April 30	4,328.72	369,350	-26,340	7,960
May 31	4,326.06	340,760	-28,590	7,830
June 30	4,318.84	268,910	-71,850	7,680
July 31	4,312.95	217,730	-51,180	7,490
August 31	4,304.88	158,610	-59,120	7,370
September 30	4,304.24	154,330	-4,280	7,140
October 31	4,305.54	163,080	+8,750	7,060
November 30	4,307.82	178,990	+15,910	7,020
December 31, 2003	4,312.04	210,480	+31,490	6,980
Calendar year 2003	-	-	-139,610	-

Caballo Reservoir. - Water-stage recorder, lat 32°53'47", long 107°17'30", in SE 1/4 SW 1/4 sec. 19 T. 16 S. R. 4 W. on Rio Grande. Storage began Feb. 8, 1938; capacity, 326,700 acre-ft (by 1999 resurvey), at gage height 4,182.0 ft (above which spillway gates open automatically). Datum of gage is 43.3 ft above National Geodetic Vertical Datum of 1929.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage height	Contents	Change in contents
December 31, 2002	4,142.64	37,450	-
January 31, 2003	4,143.18	39,240	+1,790
February 28	4,146.38	51,070	+11,830
March 31	4,148.02	58,000	+6,930
April 30	4,148.36	59,510	+1,510
May 31	4,148.18	58,710	800
June 30	4,146.62	52,040	6,670
July 31	4,145.18	46,380	5,660
August 31	4,132.78	13,400	32,980
September 30	4,127.58	5,380	8,020
October 31	4,129.12	7,410	+2,030
November 30	4,130.40	9,340	+1,930
December 31, 2003	4,131.52	11,180	+1,840
Calendar year 2003	-	-	26,270

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(project storage)

Project storage. - The combined total storage in Elephant Butte and Caballo Reservoirs.

Month-end contents, in acre-feet

Date	Contents	Change in contents
December 31, 2002	387,540	-
January 31, 2003	423,430	+35,890
February 28	456,150	+32,720
March 31	453,690	-2,460
April 30	428,860	-24,830
May 31	399,470	-29,390
June 30	320,950	-78,520
July 31	264,110	-56,840
August 31	172,010	-92,100
September 30	159,710	-12,300
October 31	170,490	+10,780
November 30	188,330	+17,840
December 31, 2003	221,660	+33,330
Calendar year 2003	-	-165,880

NOTE.-- Values of combined contents may not agree with sum of individual values because of rounding.

RIO GRANDE COMPACT COMMISSION REPORT

TRANSMOUNTAIN DIVERSIONS

Pine River - Weminuche Pass ditch (Fuchs ditch).— Water-stage recorder and 3-ft Parshall flume in sec. 33 T. 40 N., R. 4 W., at Weminuche Pass in Colorado. Diversion is from North Fork Los Pinos River in San Juan River Basin into Weminuche Creek in Rio Grande Basin. Second enlargement was completed in 1936. Diversion for irrigation is from Rio Grande above the Del Norte gaging station.

Weminuche Pass ditch (Taber-Lehr ditch).— Water-stage recorder and 4-ft rectangular flume in sec. 33 T. 40 N., R. 4 W., at Weminuche Pass in Colorado. Diversion is from Rincon la Vaca Creek in San Juan River Basin into Weminuche Creek in Rio Grande Basin. Second enlargement was completed in 1936. Diversion for irrigation is from Rio Grande above the Del Norte gaging station.

Williams Creek - Squaw Pass ditch.— Water-stage recorder and 2-ft Parshall flume in sec. 21, T. 39 N., R. 3 W., at Squaw Pass in Colorado. Diversion is from Williams Creek in San Juan River Basin into Squaw Creek in Rio Grande Basin. Constructed in 1938. Diversion for irrigation is from Rio Grande below Del Norte gaging station.

Tabor ditch.— Water-stage recorder and 3-ft Parshall flume in sec. 35, T. 43 N., R. 3 W., at Spring Creek Pass in Colorado. Diversion is from Cebolla Creek in Gunnison River Basin into tributary of Clear Creek in Rio Grande Basin. Completed in 1910 or 1911. Diversion for irrigation is from Rio Grande below Del Norte gaging station.

Don La Fon No. 1 & 2 ditches (Piedra Pass ditch).— Water-stage recorder and 2-ft Parshall flume in sec. 4, T. 38 N., R. 1 W., at Piedra Pass in Colorado. Diversion is from tributaries of Piedra River in San Juan River Basin to South River in Rio Grande Basin. Original ditch completed in 1938, first enlargement completed in 1940. Water is imported by Colorado Game and Fish Department, beginning in 1959 to offset losses from fish culture reservoirs.

Treasure Pass diversion ditch.— Water-stage recorder and 2-ft Parshall flume in sec. 31, T. 38 N., R. 2 E., at Wolf Creek Pass in Colorado. Diversion is from Wolf Creek in San Juan River Basin to a tributary of South Fork Rio Grande. Completed in 1923 or 1924. Water is diverted for irrigation from Rio Grande above the Del Norte gaging station beginning in 1959. Prior to 1959 it was diverted below gaging station.

Azotea tunnel.— Water-stage recorder and 10-ft Parshall flume, lat 36°51'12" long 106°40'18", at south portal of Azotea tunnel, San Juan-Chama Project. Diversion is from Rio Blanco, Little Navajo River, and Navajo River in Colorado and discharge is into Azotea in New Mexico. Construction completed in 1970.

Imported quantities, in acre-feet, 2003

Month	Pine River- Weminuche Pass ditch	Weminuche Pass ditch	Williams Creek- Squaw Pass ditch	Tabor ditch	Don La Fon No. 1 & 2 ditches	Treasure Pass diversion ditch	Azotea tunnel
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0
March	0	0	0	0	0	0	1,170
April	0	0	0	0	0	0	11,360
May	5	0	4	153	0	21	26,610
June	80	64	166	120	0	164	18,320
July	0	0	27	11	0	0	673
August	0	0	13	0	0	0	487
September	18	0	16	21	0	0	3,340
October	0	0	0	18	0	0	247
November	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0
Calendar year	103	64	226	323	0	185	62,707

EVAPORATION AND PRECIPITATION

The last paragraph of Article VI of the Compact states, in part, --- "such credits and debits shall be reduced annually to compensate for evaporation losses in the proportion that such credits or debits bear to the total amount of water in such reservoirs during the year."

To provide the data needed for the computation of such evaporation losses, the Commission has encouraged the establishment and operation of evaporation stations near each major reservoir in the basin and at other selected locations.

Evaporation and other climatological data collected at the several stations in Colorado and New Mexico are tabulated on the next page. At some of the stations, it was not possible to obtain evaporation records throughout the winter period.

The measurements of evaporation were made in accordance with standard practice for the type of pan in use. Measurements of precipitation were made in standard 8-inch rain gages, which were supplemented at some of the stations by recording rain gages.

Records for the evaporation stations at the State University, Elephant Butte Dam, and El Vado Dam antedated the creation of the Commission; the stations at Abiquiu Dam, Cochiti Dam, and Jemez Canyon Dam were established by the Corps of Engineers. All others were established at the request of the Commission.

The Rio Grande Compact Commission gratefully acknowledges the cooperation of the National Oceanic and Atmospheric Administration, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation for furnishing the climatological records contained in this report.

Alamosa Airport.—Lat 37°27', long 105°52' in Alamosa County at airport near Alamosa, Colo. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 7,536 ft.

Platoro Dam.—Lat 37°21', long 106°30' in Conejos County near Platoro, Colo. Standard class A pan, anemometer, maximum and minimum thermometers, fan type psychrometer, standard 8-inch and recording rain gages at elevation 9,826 ft.

Heron Dam.—Lat 36°40', long 106°42', in Rio Arriba County about 4 mi. northeast of Heron Dam near Tierra Amarilla, N. Mex. Standard class A pan, maximum and minimum thermometers, and standard 8-inch rain gage at elevation 7,310 ft.

El Vado Dam.—Lat 36°36', long 106°44', in Rio Arriba County at El Vado Dam near Tierra Amarilla, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 6,750 ft.

Abiquiu Dam.—Lat 36°14', long 106°26', in Rio Arriba County at Abiquiu Dam near Abiquiu, N. Mex. Standard class A pan, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 6,380 ft.

Narbe Falls Dam.—Lat 35°51', long 105°54', in Santa Fe County at Narbe Falls Dam, N. Mex. Standard class A pan, maximum and minimum thermometers, recording thermograph, standard 8-inch and recording rain gages at elevation 6,840 ft.

Cochiti Dam.—Lat 35°38', long 106°19', in Sandoval County at operations building, at Cochiti Dam, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 5,560 ft.

Jemez Canyon Dam.—Lat 35°23', long 106°32', in Sandoval County at Jemez Canyon Dam, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 5,388 ft.

Elephant Butte Dam.—Lat 33°09', long 107°11', in Sierra County at Elephant Butte Dam, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, and standard 8-inch rain gage at elevation 4,576 ft.

Caballo Dam.—Lat 32°54', long 107°18', in Sierra County at Caballo Dam, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 4,190 ft.

New Mexico State University.—Lat 32°17', long 106°45', in Dona Ana County at University Park, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 3,881 ft.

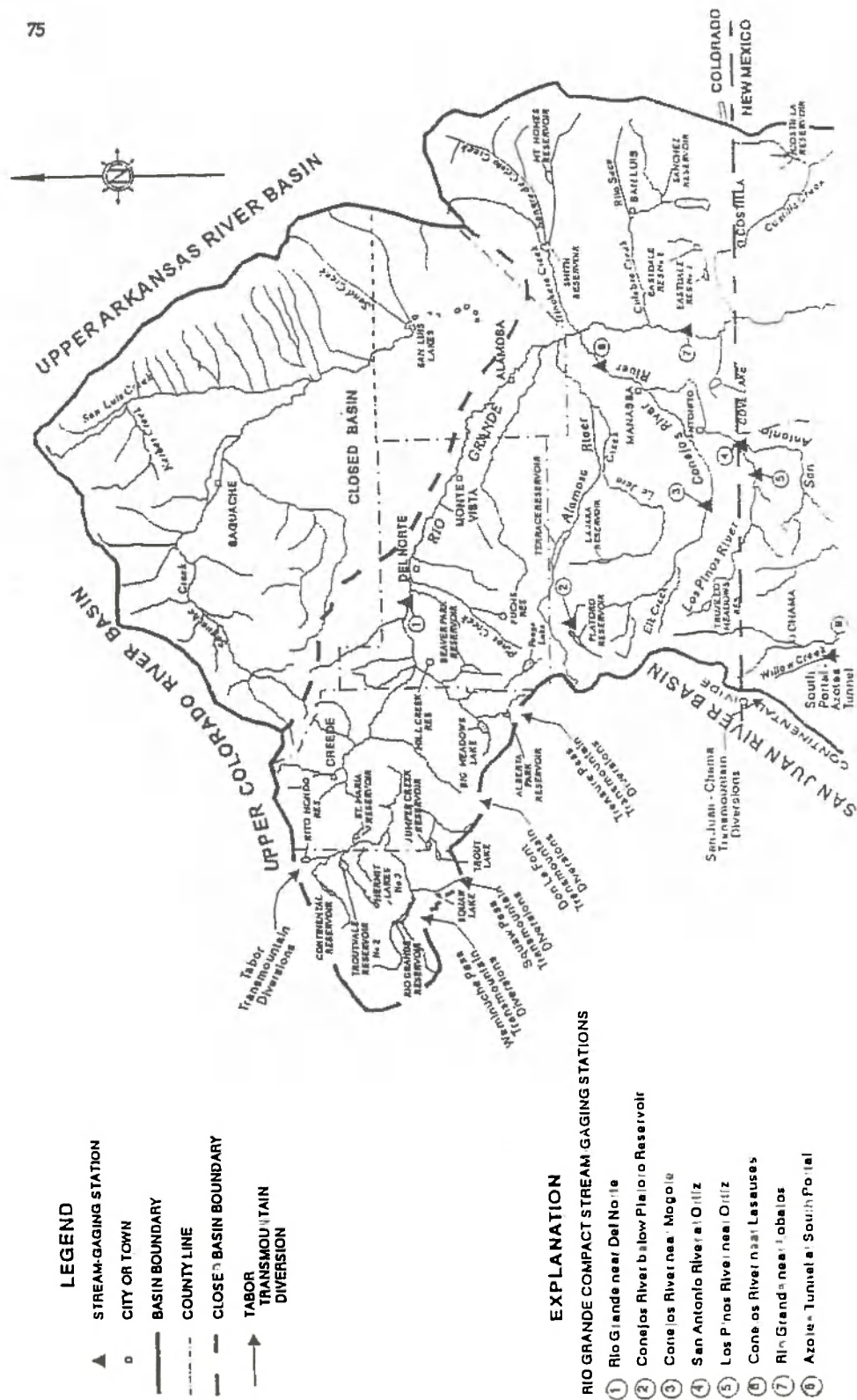
RIO GRANDE COMPACT COMMISSION REPORT

EVAPORATION AND PRECIPITATION

Evaporation and precipitation in inches
2003

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Alamosa Airport	Evap.	-	-	-	-	-	-	-	-	-	-	-	-	-
	Precip.	0.01	0.28	0.51	0.24	0.11	0.60	0.94	1.26	1.29	0.38	0.58	0.30	6.50
Platoro Dam	Evap.	-	-	-	-	3.56	7.57	7.52	4.10	4.59	2.78	-	-	-
	Precip.	-	-	-	-	0.73	1.09	4.40	1.84	3.66	1.36	-	-	-
Heron Dam	Evap.	-	-	-	5.85	7.74	10.14	10.94	7.69	6.01	4.23	-	-	52.60
	Precip.	0.07	2.22	0.84	0.82	0.78	0.35	1.03	2.92	2.63	0.98	1.83	0.48	14.95
El Vado Dam	Evap.	-	-	-	5.92	7.78	9.87	10.55	7.46	6.24	4.16	-	-	51.98
	Precip.	0.02	2.08	0.47	0.56	0.28	0.31	0.48	1.55	2.57	0.88	1.52	0.33	11.05
Abiquiu Dam	Evap.	-	-	-	8.22	10.49	12.48	12.85	10.14	8.21	6.16	-	-	68.55
	Precip.	0.00	0.80	0.69	0.05	0.07	0.26	0.88	1.00	1.59	0.85	0.41	0.19	6.79
Nambe Canyon Dam	Evap.	-	-	-	6.37	7.72	10.21	11.75	7.95	6.76	5.16	-	-	55.92
	Precip.	0.00	0.00	0.95	0.34	0.00	0.00	0.42	2.21	1.27	1.11	0.91	0.20	7.41
Cochiti Dam	Evap.	-	-	-	8.62	12.51	13.27	14.41	11.98	10.10	7.03	-	-	77.92
	Precip.	0.00	0.64	0.85	0.20	1.67	0.07	0.19	0.73	0.94	1.05	0.80	0.18	7.32
Jemez Canyon Dam	Evap.	-	-	-	10.80	12.91	15.37	17.13	12.39	10.48	7.61	-	-	86.69
	Precip.	0.00	0.50	1.05	0.08	0.10	0.41	0.00	0.23	0.50	1.02	0.70	0.01	4.60
Elephant Butte Dam	Evap.	4.81	5.97	9.72	15.09	18.61	18.50	20.08	14.55	12.60	9.56	6.55	4.48	140.52
	Precip.	0.03	0.98	0.02	0.00	0.00	0.09	1.55	1.88	0.65	0.46	0.81	0.00	6.47
Caballo Dam	Evap.	4.27	5.12	8.20	11.88	15.68	15.86	15.82	13.73	11.90	8.36	6.05	4.03	120.90
	Precip.	0.02	1.56	0.00	0.00	0.00	0.61	0.61	1.68	0.21	0.46	0.76	0.02	5.93
State University	Evap.	0.0	1.68	0.08	0.0	0.0	1.15	0.65	0.79	0.23	0.23	0.70	-	-
	Precip.	-	4.25	7.16	10.66	11.89	12.85	12.13	11.25	9.76	7.20	4.62	-	-

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- 9 Willow Creek above Heron Reservoir
- 10 Horse Lake Creek above Heron Reservoir
- 11 Willow Creek below Heron Reservoir, near Parkview
- 12 Rio Chama below El Vado Dam
- 13 Rio Chama below Abiquiu Dam
- 14 Rio Grande at Otowi Bridge
- 15 Santa Fe River near Santa Fe
- 16 Rio Grande below Cochiti Dam
- 17 Galisteo Creek below Galisteo Dam
- 18 Jemez River below Jemez Canyon Dam

NOTE Screened areas denote reservoirs, whose capacity is all or in part subject to provisions of the Rio Grande Compact

Revised March 1989

RIO GRANDE BASIN ABOVE BERNALILLO, NEW MEXICO

