RGC 1.1/2005 C.2



of the

RIO GRANDE COMPACT

COMMISSION

2005

6

TO THE GOVERNORS OF Colorado, New Mexico and Texas



REPORT of the **RIO GRANDE COMPACT** COMMISSION 2005 6 TO THE GOVERNORS OF Colorado, New Mexico and Texas



CONTENTS

1
3
12
15
20
43
44
45
47
61-70
71
72-73

ILLUSTRATIONS

Map, Rio Grande	Basin above Ft. Quitman,	Texas	Frontspiece
Map, Rio Grande	Basin above Bernalillo, Ne	ew Mexico	75-76

Page

RIO GRANDE COMPACT COMMISSIONCOLORADOTEXASNEW MEXICO

March 23, 2006

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 67th Annual Meeting of the Rio Grande Compact Commission was held in El Paso, Texas on March 23, 2006.

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 2005. The Commission found that:

- (a) Deliveries of water at the Colorado-New Mexico state line by Colorado amounted to 458.000 acre-feet in 2005 and the scheduled delivery for the year was 455.400 acre-feet. Note: 102 acre-feet of non-creditable Closed Basin delivery were deducted from gaged delivery to the state line.
- (b) Deliveries of water into Elephant Butte Reservoir by New Mexico, as measured by the Elephant Butte Effective Supply, amounted to 957,100 acre-feet in 2005 and the scheduled delivery for the year was 949,500 acre-feet.
- (c) The actual release of usable water from Project Storage was 677,100 acre-feet.
- (d) Colorado relinquished 2,000 acre-feet of credit water to Texas on March 31, 2005.

The Commission agreed to the accounting of accrued credits for 2005, as follows:

- (1) The Commissioners found that the accrued credit for deliveries by Colorado at the Colorado-New Mexico State Line was 4.600 acre-feet on January 1, 2006.
- (2) The Commissioners found that the accrued credit for deliveries by New Mexico at Elephant Butte Dam was 37,100 acre-feet on January 1, 2006.
- (3) The Commissioners found that the accrued departure from normal release from Project Storage as of January 1, 2006 was a credit of 478,400 acre-feet.

ANNUAL REPORT TO THE GOVERNORS

The Commission reviewed the cost of operation and found that the expenses of the administration of the Rio Grande Compact were \$173,989 in the fiscal year ending June 30, 2005. The United States bore \$55,286 of this total; the balance of \$118,703 was borne equally by the three States party to the Compact.

Respectfully,

n R. D'Antonio Jr., Commissioner for

Patrick R. Gordon, Commissioner for Texas

Harold D. Simpson, Commissioner for Colorado

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

(I) "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;

(I) 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.

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:

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.

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 thriteth, 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.

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

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:

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 ildefonso (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").

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 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 Cabalio 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 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 15

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.
- 12 Adopted at Fourth Annual Meeting, February 24, 1943.
- 13 Amended September 9, 1998.
- /4 Amended March 22, 2001; made effective January 1, 2001.
- 15 Adopted June 2, 1959; made effective January 1, 1952.

17

RIO GRANDE COMPACT COMMISSION REPORT

EVAPORATION LOSSES 16, 17, 18

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.

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

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

18 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 18

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 adviser 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.

<u>/8</u> 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.

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, /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.

> 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

(Signed) M. C. HINDERLIDER

Adopted December 19, 1939.

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

110 Amended at Thirteenth Annual Meeting, February 25, 1952.

REPORT OF THE ENGINEER ADVISERS TO THE RIO GRANDE COMPACT COMMISSIONERS

March 3, 2006

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 2005. As determined by the Engineer Advisers, scheduled and actual deliveries, release of Usable Water for the year 2005, and balances as of January 1, 2006 are as follows:

(a) Deliveries by Colorado at the Stateline:

	Balance as of January 1, 2005	4,400 acre-feet
	Scheduled delivery	455,400 acre-feet
	Actual delivery at Lobatos plus 10,000 acre-feet	458,000 acre-feet
	Reduction of credit on account of evaporation	400 acre-feet
	Accrued credits relinquishment to Project Storage	
	on March 31, 2005	2,000 acre-feet
	Accrued credit January 1, 2006	4,600 acre-feet
(b)	Deliveries by New Mexico at Elephant Butte Dam:	
	Balance as of January 1, 2005	35,600 acre-feet
	Scheduled delivery	949,500 acre-feet
	Actual delivery	957,100 acre-feet
	Reduction of credit on account of evaporation	6,100 acre-feet
	Accrued credit January 1, 2006	37,100 acre-feet
(c)	Project Storage and Releases:	
	Accrued departure (credit) as of January 1, 2005	365,500 acre-feet
	Actual release of Usable Water	677,100 acre-feet
	Normal release for year	790,000 acre-feet
	Accrued departure (credit) as of January 1, 2006	478,400 acre-feet

There was significant improvement to streamflow levels in 2005 due to above average precipitation in parts of the basin in Colorado and New Mexico. San Juan-Chama Project diversions into Heron Reservoir totaled 155,195 acre-feet. Usable Water in Project Storage rose above the 400,000 acre-feet Compact Article VII trigger level on May 20 at the height of the snowmelt runoff and fell back below that level on August 26. It rose above 400,000 acre-feet again in late December 2005. Consequently, the upstream storage restrictions of Article VII of the Compact were in effect for most of the

year.

21

Well above-average winter snowpack throughout the basin resulted in one of the best spring runoffs in the last ten years. Flood issues arose in a number of areas. No serious flooding occurred due to favorable weather conditions and intensive management by those agencies with flood control responsibilities.

The Engineers Advisers met in Santa Fe and Albuquerque from February 27 through March 3, 2006 to prepare the 2005 Compact water accounting and to discuss continuing and new issues in preparation for the 2006 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), the U.S. Bureau of Indian Affairs (BIA) and the U.S. Fish and Wildlife Service (Service) to discuss in detail their specific water-related activities in the basin. Bill Ruth, the Federal Chairman of the Commission attended the federal agency presentation portion of the meeting.

The Engineer Advisers expressed concern with the apparent discrepancy in the mass balance of Caballo Reservoir in 2005 and with the accuracy of stream gages below Elephant Butte Dam. In accordance with the Rules and Regulations for Administration of the Rio Grande Compact, the Engineer Advisers recommend that the Commission direct the Secretary to inspect those stream gaging stations required for administration of the Compact and provide recommendations to the Engineer Advisers at their 2007 meeting for any changes or improvements in methods of measurement or location of equipment that may be needed to insure that reliable records are obtained. The Engineer Advisers recommend that the Commission request the USGS and Reclamation cooperatively evaluate the procedures for measuring and quantifying streamflow at the gaging stations below Elephant Butte and Caballo Reservoirs.

The Engineer Advisers corrected an error in the last three months of Column 11 of New Mexico's 2004 Compact accounting sheet. Those errors result from the inadvertent use of provisional and extrapolated storage data for the Compact accounting of the various pools in the City of Santa Fe's McClure and Nichols Reservoirs for those months. The error did not change New Mexico's 2004 end-of-year accrued credit balance. See the attached memo for additional details.

The Engineer Advisers have reviewed the issue of credit water evaporation from Elephant Butte Reservoir. They have prepared and presented a memorandum and recommendation to the Commission for their action. The New Mexico Engineer Adviser signed the 2005 Compact accounting sheets based upon the recommended resolution.

New Mexico - Texas Relinquishment Agreement

In 2003 New Mexico offered and Texas accepted a phased relinquishment of a portion of New Mexico's accrued credits then held in Project Storage in Elephant Butte Reservoir. The relinquishment totaled 175,500 acre-feet. The relinquishment allowed the storage of a like amount of water in post-1929 reservoirs in New Mexico upstream of Elephant Butte Reservoir over as many years as necessary when the storage prohibition of Article VII is in effect.

A total of 146,143 acre-feet of relinquished water was stored in 2003 and 2004 (88,270 acre-feet in 2003; 57,873 acre-feet in 2004), leaving a balance of 29,357 acre-feet to be captured in future years. No relinquished water was stored in 2005. At the end of 2005, 19,054 acre-feet of relinquished water remained in storage, all in El Vado Reservoir.

Colorado - Texas Relinquishment Agreement

Colorado began 2005 with 4,400 acre-feet of accrued credit. Because the release from Platore Reservoir was reduced for normal winter operations, native water was unavoidably stored in the post-Compact reservoir, despite the storage prohibition of Article VII of the Compact. This storage occurred during the period November 2004 through March 2005. The maximum release possible through the bypass valves under the reservoir head conditions at that time was approximately eight cubic feet per second (cfs). The inflow to the reservoir exceeded this release resulting in a gain of approximately 2,000 acre-feet before the gates were opened in March. Colorado relinquished 2,000 acre-feet to Project Storage on March 31, 2005 making a like amount of water in Platoro Reservoir available to meet irrigation demand on the Conejos River.

CONTINUING ISSUES

This section of the report summarizes issues previously addressed by the Engineer Advisers or the Commission. It reflects information obtained by the Engineer Advisers subsequent to the 2005 Commission meeting, including information obtained in the reports of federal agencies at the 2006 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 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 met regarding this issue in early 2006. The services of a technical writer have been procured by New Mexico to facilitate completion of this project. Previously prepared drafts of portions of the report are being reviewed and updated as necessary and data gaps identified for further work. The Engineer Advisers anticipate completion and circulation of a revised draft document for review.

Closed Basin Project

The total production of the Closed Basin Project in 2005 was 14,666 acre-feet with 10,822 acrefeet of that amount being delivered to the Rio Grande. Of the delivery to the Rio Grande, 10,720 acre-feet was creditable under the Compact and 102 acre-feet was non-creditable due to exceedence of Compact water quality provisions. Biofouling problems continue to plague the production wells of the Closed Basin Project. Reclamation replaced six wells in 2005 that were most affected by the iron bacteria and altered operational procedures to minimize bacterial growth. To date, 30 of 150 wells have been replaced. The new well design and operations show promise to restore the production of the project. Wells will continue to be replaced as budgetary constraints allow. The Closed Basin operating committee continues to monitor groundwater levels and groundwater production and adjust project operations pursuant to the enabling legislation.

URGWOM Accounting Model (Nambe Fails)

Reclamation continued to use the Nambe Falls accounting model during 2005. Partial draft documentation of that model was delivered during the 2005 meeting of the Engineer Advisers. Reclamation is planning to merge the Nambe Falls model into Upper Rio Grande Water Operations Model (URGWOM) and finalize its documentation. Reclamation is planning to complete the documentation prior to the 2007 meeting of the Engineer Advisers.

URGWOM Accounting Module and Hydrologic Data-Base

The Corps presented the latest developments and updates to URGWOM, including updates to the physical model, which have resulted in significant improvement of model performance. In addition, the URGWOM team is developing a new approach for modeling surface water / groundwater interaction using RiverWare. These changes do not impact the URGWOM accounting module.

Reclamation reported that they continued the process of implementing a generalized relational database management system (Hydrologic Database, or HDB) during 2005. Water accounting data output from URGWOM will eventually be ported directly into HDB using an automated data loader. Reclamation is also planning on using Excel and Crystal Reports to automatically generate reports.

The Engineer Advisers continue to be concerned with the potential for Compact accounting changes to occur from the transition to new databases and report generators. The Engineer Advisers encourage Reclamation and the Corps to coordinate so that all Compact accounting is conducted using one database.

Compliance by Federal and State Agencies with State Water Law and Regulations

The Commission approved resolutions in 2001 and 2002 that requested the Corps, Reclamation and Service comply with state law by obtaining permits from the appropriate state agencies for any water related actions, including habitat restoration, that result in new or additional river depletions. Federal agency representatives continue to acknowledge the need to comply with applicable state laws regarding these projects.

The Corps of Engineers indicated they are designing habitat restoration projects such as the Ecosystem Revitalization at Route 66 Project and the Rio Grande Nature Center Habitat Restoration Project so as not to increase river depletions. New Mexico reports that the Corps has not yet submitted permit applications or met with the Office of the State Engineer on these projects.

The U.S. Section of the IBWC indicated they recognize water rights need to be secured for habitat restoration projects. They are coordinating with the Elephant Butte Irrigation District (EBID) and non-governmental organizations on proposed habitat restoration projects within the Canalization Project to ensure compliance with New Mexico law.

New Mexico reported that the New Mexico Interstate Stream Commission (NMISC) submitted a plan for Phase I of its Albuquerque Reach Habitat Restoration project to the Office of the State Engineer for review of permit requirements or depletion offsets. Neither a permit nor offset of depletions were required because the project is located within the active channel of the Rio Grande where no additional water depletions are expected to occur.

Water Resource Development Act Section 729 Comprehensive Planning Study

The Corps and NMISC provided an update of Water Resources Development Act (WRDA) Section 729 water resources investigations in the Upper Rio Grande Basin. The Corps began a feasibility study, with the Texas Commission on Environmental Quality as the local sponsor, in the Forgotten River Reach from Fort Quitman to Presidio, Texas in 2005. The study, which is scheduled for completion in 2007, is investigating invasive species removal and ecosystem restoration alternatives.

New Mexico reported on the WRDA study between San Acacia and Elephant Butte Reservoir to characterize the interaction of surface water and shallow groundwater. Collection of surface water stage and groundwater levels as well as water quality monitoring, which began in 2003, continues at multiple sites. The data is being used to update the linked surface water/groundwater model for the reach and for the ongoing URGWOM revision.

The Engineer Advisers participated in a meeting in February 2006 hosted by the Corps, the World Wildlife Fund and the National Audubon Society regarding proposed WRDA legislation that would provide \$25 million annually for restoration activities within the Rio Grande basin. As currently proposed, the legislation would limit the work to New Mexico, however, proposals exist to amend that legislation to the entire Rio Grande basin, including Colorado and Texas. The Engineer Advisers suggest that the legislation include provisions requiring compliance with state water law, the Rio Grande Compact and treaties with Mexico.

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 from San Marcial. Reclamation indicated that the project is on hold due to lack of funding. Environmental issues, the results of the Upper Rio Grande Water Operations Review (URGWOPS) and EIS process, and of New Mexico's modeling of the reach will be critical in determining whether the project will move forward.

Elephant Butte Pilot Channel Project

NMISC reported that its contractor and Reclamation maintained the constructed pilot channel from San Marcial through the sediment delta to the active reservoir pool in Elephant Butte Reservoir during 2005. The active pool of the reservoir has receded more than 20 miles and remains below the reservoir Narrows. Without construction of the pilot channel little or no defined river channel would exist.

Reclamation and New Mexico have independently estimated that between 8,000 and 17,000 acrefeet of water is saved annually when the pilot channel is open. Additionally, New Mexico reported that the open pilot channel and Reclamation's maintenance of levees in the San Marcial area have been instrumental in delivering water to the reservoir in recent years. The improved delivery efficiency into the reservoir enabled the Article VII restriction to be lifted earlier than otherwise would have occurred so that significant amounts of native water could be stored in upstream reservoirs. The New Mexico Engineer Adviser indicated New Mexico has spent nearly \$8 million since 2000 to construct and maintain the channel.

YEAR 2005 OPERATIONS

Flood Operations

The 2004-2005 snowpack was well above average throughout the basin resulting in very high streamflows. Peak flows in some areas stressed the existing levee systems above Elephant Butte Reservoir.

In Colorado, the Colorado Division of Water Resources engaged the Corps and Reclamation prior to and during the runoff over concerns on the Conejos River below Platoro Reservoir and the Rio Grande through the Alamosa area. Flows approached bank-full stage in several areas in the basin in Colorado, but no significant damage was sustained. It was not necessary to initiate flood control operations at Platoro Reservoir.

In New Mexico, the NMISC, the New Mexico Office of Emergency Management, the Middle Rio Grande Conservancy District (MRGCD), the Corps and Reclamation coordinated on water operations and flood-fighting efforts throughout the runoff period. It was necessary for the Corps to conduct flood-control operations at Abiquiu Reservoir on the Rio Chama from approximately mid-April through mid-June and at Cochiti Reservoir on the Rio Grande from roughly mid-May through the end of June. Releases from Abiquiu Reservoir reached the maximum safe channel capacity of 1,800 cfs from April 20 through mid-June. The Corps reported that the Rio Chama channel carried the flow without significant damage. Inflow into the reservoir peaked at about 4,800 cfs. Peak storage at Abiquiu Reservoir reached 193,000 acrefeet, with about 80,000 acre-feet of that being flood control storage. Releases from Cochiti Reservoir peaked at about 6,850 cfs, which was less than the 7,800 cfs maximum that would result in maximum channel capacity flows at Albuquerque of 7,000 cfs. Peak storage at Cochiti Reservoir reached 95,000 acre-feet, with about 46,000 acre-feet of that being flood control storage. Inflow into the reservoir peaked at about 6,850 cfs. There was no flood carryover storage in either Abiquiu or Cochiti Reservoir from 2005 into 2006.

Two reaches of the spoilbank levee system in the middle valley experienced significant stress during the runoff, the reach below the Isleta Diversion Dam on the east side of the river and the San Marcial reach on the west side of the river. Portions of the spoilbank levee system are deteriorated and at risk of failure due to lack of maintenance. The Corps reported that they have received funding commencing in 2005 to perform a comprehensive evaluation of the levee system in the Albuquerque reach of the Rio Grande, including formulation of a plan on which sections of the system require reconstruction and which sections simply require maintenance.

The Engineer Advisers are concerned with the ongoing lack of maintenance of the spoil bank levees in the middle Rio Grande. New Mexico intends to work with the MRGCD, the Corps and Reclamation to address these concerns.

The Engineer Advisers would like to commend the flood-fighting efforts by Reclamation and the Corps during the runoff including Reclamation's emergency levee maintenance activities.

Platoro Reservoir Operations for 2005

Platoro Reservoir, located near the headwaters of the Conejos River in Southern Colorado, is a post-Compact reservoir subject to the storage prohibition of Article VII. Platoro Reservoir was operated under the restrictions of Article VII during portions of 2005. Article VII restrictions were lifted on May 20, re-imposed on August 26 and lifted again in late December. Colorado reported that, for two distinct reasons, Colorado increased storage in Platoro Reservoir during 2005.

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 and risk damage if they are operated during the winter. The bypass valve passes water around the main slidegate for winter operation. Because of heavy fall precipitation in 2004, the bypass valve was again unable to pass all the inflow to the reservoir. Therefore, approximately 900 acre-feet was stored in November and December of 2004 and an additional 1,100 acre-feet by the end of March 2005 for a total of 2,000 acre-feet. This water accumulated because of the difference in the outlet capacity at the existing low reservoir head and the inflow.

At the request of the Colorado Commissioner, Texas accepted the relinquishment of 2,000 acrefeet of credit water in Elephant Butte Reservoir on March 31, 2005 in return for the water stored in Platoro Reservoir while under Article VII restrictions.

During May and June of 2005, when no restrictions were in place, the Conejos Water Conservancy District stored and re-regulated pre-Compact water rights in Platoro Reservoir.

Releases from Platoro Reservoir were limited to flows through the bypass valves in November

2005 when freezing conditions dictated. During late November and December approximately 400 acrefeet of water was stored in Platoro Reservoir before Usable Water in Project Storage reached 400,000 acre-feet and the Article VII restriction on storage in post-Compact reservoirs was lifted. This water will either be released as soon as the river and weather conditions allow and delivered to the state line or it will be retained pursuant to relinquishment of credit water in Elephant Butte Reservoir.

Emergency Drought Water Agreement (EDWA) Operations

No EDWA operations occurred in 2005. A balance of 29,357 acre-feet of the original 175,500 acre-feet of relinquishment remains to be captured in future years.

Supplemental Water Program Operations

Reclamation's supplemental water program is intended to provide additional water, primarily through the voluntary leasing of San Juan-Chama (SJC) Project water, for endangered species needs and compliance with the 2003 Biological Opinion (BO). In 2005, Reclamation released a total of 7,780 acrefeet (all leased SJC Project water) for its supplemental water program. Supplemental water was released solely to conduct river recession operations after June 15.

SJC 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. Reclamation continued to operate portable diesel driven pumps at four locations in the San Acacia reach during 2005 to pump an estimated (by Reclamation) 4,761 acre-feet of water from the LFCC to the Rio Grande under a permit issued by the New Mexico Office of the State Engineer. Reclamation reported that they were in compliance with the BO during 2005.

REPORTS OF THE FEDERAL AGENCIES

Representatives of Reclamation, the Corps, the Service, the BIA and IBWC presented reports to the Engineer Advisers on February 28 and March 1, 2006.

El Vado Reservoir Safety of Dams Operations Restriction

Reclamation reported that due to concern over structural conditions, releases through the El Vado Reservoir spillway will be limited to 2,500 cfs. Reclamation is assessing whether there should be a storage restriction on reservoir operations.

Cochiti Reservoir Baseline Study

The Corps reported on an ongoing study of Cochiti Reservoir operations. Potential changes to current operations management include options ranging from increasing conservation storage to completely draining the reservoir. Study areas include surface and subsurface hydrological analysis, water and sediment quality and hazardous risk assessment and biological, cultural and economic resource evaluations. Activities completed to date include data collection, analyses and interpretive framework for each of the study areas and mapping of the dam, lake and surrounding area, including detailed mapping of the lake bottom. The completion of the study is contingent upon available funding. The Corps reported that the study would not be completed before 2009. The Engineer Advisers continue to be concerned with the delays in completing this study.

Rio Grande Cutthroat Trout

In February 1998 the Service received a petition to list the Rio Grande cutthroat trout as an endangered species. The Service completed a candidate status review in June 2002 Indicating that listing of the species was not warranted. A lawsuit was filed in 2003 in federal District Court for the District of New Mexico seeking to overturn the Service's decision not to list the Rio Grande cutthroat trout as endangered. On December 19, 2005 the Court ruled in favor the Service.

Upper Rio Grande Basin Water Operations Review and EIS

Reclamation, the Corps, and NMISC signed a Memorandum of Agreement in January 2000 to conduct a review and EIS of water operations in the upper Rio Grande basin. This project is a multi-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 possible alternatives for analysis and implementation of decisions about coordinated water operations in the upper Rio Grande that seek to promote positive benefits, consistent with their individual missions and operating rules and guidelines. Each joint lead agency was originally scheduled to formulate and issue a separate Record of Decision (ROD) in 2006, however Reclamation reported that they did not anticipate issuing a ROD for the project. The draft programmatic EIS was released for public comment in January 2006. Reclamation reported that they planned to conduct a second phase of the project that would review additional potential reservoir operations not currently authorized by Congress.

Storage for the Six Middle Rio Grande Pueblos' Prior and Paramount Lands

Reclamation provided details on 2005 Prior and Paramount storage and release activities. Reclamation reported they stored 12,000 acre-feet in El Vado Reservoir for delivery of irrigation water to the Prior and Paramount lands of the six Middle Rio Grande Pueblos in 2005 in the event that natural flows were insufficient. These are lands recognized as being prior and paramount to other lands of the MRGCD. Of that amount, 7,000 acre-feet was stored while the storage restrictions of Article VII were in effect and the remaining 5,000 acre-feet was stored after the restriction was lifted.

It was not necessary to release any of that water to meet irrigation demand during 2005. The 7,000 acre-feet stored while Article VII was in effect was released in November and December for delivery to Elephant Butte Reservoir before the end of the calendar year. The 5,000 acre-feet stored after May 20, 2005 remained in storage and was reallocated as normal Rio Grande storage available for release to satisfy future MRGCD irrigation demand.

An independent team from within the Department of Interior is expected to finalize their investigation and issue a final report providing recommended procedures for computing the storage and release of water to satisfy the prior and paramount demand. The team consists of three representatives, one each from Reclamation, BIA and the USGS. The Engineer Advisers are concerned with Prior and Paramount water supply and demand issues as well as the related conflict between Reclamation and BIA.

The Texas Engineer Adviser remains concerned about the storage of native Rio Grande water in El Vado Reservoir by Reclamation when the Article VII storage prohibition is in effect.

March 17, 2003 Middle Rio Grande Programmatic Biological Opinion

The Service provided updates on compliance activities with the March 17, 2003 BO regarding the actions of the Corps and Reclamation in regards to the Rio Grande silvery minnow and Southwestern willow flycatcher. Water operations during year 2005 were consistent with the BO.

Rio Grande Silvery Minnow

Rio Grande silvery minnow salvage operations were conducted from July through September with a total salvage in 2005 of over 600,000 minnows. The 2005 salvage far exceeded the combined salvage of the previous five years. Incidental take as a result of the water operations in the Middle Rio Grande numbered 5,640, which was within the take limit. Approximately 35 miles of the Rio Grande went dry in 2005 south of Isleta diversion dam with the primary drying occurring within the San Acacia reach.

The Service continues to propagate silvery minnow at the Dexter National Fish Hatchery and the City of Albuquerque Biopark to augment the population. During 2005 over 250,000 minnows were released in the Rio Grande. The majority were released in the Albuqueque reach with approximately 50,000 released each near Bernardo and Lemitar. To date over 500,000 minnow have been released to the Rio Grande since augmentation activities began.

During 2005, catch rates for the silvery minnow increased substantially from the 2000 through 2004 time-period. The Service indicated the 2005 catch rate was equivalent to catch rates experienced at the time the silvery minnow was listed as endangered in 1994. The Engineer Advisers note that the silvery minnow was not listed due to a lack of fish in the middle Rio Grande, rather because of the reduction of occupied habitat within the entire Rio Grande basin. In 2005 the area of highest minnow concentration was in the Isleta reach with substantial numbers of minnow observed throughout the middle Rio Grande. The Engineer Advisers are encouraged that the minnow augmentation activities are proving successful.

The Service reported on sampling activities for silvery minnow within Elephant Butte Reservoir and the pilot channel. Both of these areas are located outside of the designated critical habitat for the species.

The Service discussed reintroduction of the silvery minnow in the Big Bend region of the Rio Grande in Texas. The Service plans to reintroduce the silvery minnow in the Big Bend area in late 2007 or 2008 as an ESA Section 10(j) experimental, non-essential population. If these segments are designated per Section 10(j), they cannot be designated as critical habitat for the minnow. The Service held scoping meetings with local stakeholders regarding the reintroduction and is preparing the draft Environmental Assessment.

The 2005 activities of the silvery minnow recovery team, of which the Engineer Advisers are active members, were discussed. The team was directed in December 2002 by the Service Regional Director to update the current Recovery Plan and revise recovery criteria to address needed actions for downlisting and delisting. The Recovery Team met approximately every six weeks during the summer of 2005 to

develop a revised draft plan. The revised Recovery Plan was submitted to the Fish and Wildlife Service Regional Office in October 2005. The Regional Office is currently reviewing the draft.

Middle Rio Grande Project Channel Maintenance

Reclamation personnel provided a presentation regarding the status of Reclamation's Middle Rio Grande river channel maintenance program. In summary, Reclamation representatives said that work was performed on eight primary sites, six of which consisted of locations where the river was encroaching upon the levees. Additional work was done to repair areas along the river that were damaged during the high spring runoff. A post-runoff review conducted by Reclamation identified six new sites where high flows created new river channel maintenance needs. Reclamation reported they had not received additional funds for this work.

Tiffany Sediment Plug

A sediment plug formed in the river in the Tiffany area during the snowmelt runoff that completely blocked the main channel of the river and which resulted in overbank flow and impacts to the spoilbank levees in that reach. The plug formed 1.5 miles upstream of the San Marcial railroad bridge and reached a total length of about three miles. Excavation of a pilot channel through the plug began in October and was completed in December 2005 by crews from Reclamation and a contractor of the NMISC.

San Acacia Levee Project

The San Acacia Levee project would rehabilitate 45 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 includes raising or relocating the railroad bridge at San Marcial. The Corps initiated a Limited Reevaluation study in 2005 which is expected to be completed in 2008. The study team's goal is to comply with the 2003 Biological Opinion and initiate construction for the new bridge by 2008. The Corps indicated that they have relied on Congressional add-ins to conduct this work and that there are currently no funds for this project in the FY 2007 executive budget.

Southwestern Willow Flycatcher

In October 2005 the Service designated critical habitat for the flycatcher. Critical habitat in the Rio Grande basin includes areas in the Espanola and middle Rio Grande valleys in New Mexico. It does not include areas within the Elephant Butte Reservoir pool.

Reclamation and the Fish and Wildlife Service indicated the number of Southwestern willow

At the 2004 meeting of the Engineer Advisers it was recognized that an issue may exist related to the filling of the Elephant Butte Reservoir pool and the effect of such filling on the flycatchers in the pool area. The Engineer Advisers have met with Reclamation and the Fish and Wildlife Service periodically to assess the issue. In 2005, all known flycatcher territories in the Elephant Butte Reservoir delta were located within the top seven feet of the reservoir pool.

Rio Grande Project Operations and Storage Projections

Reclamation reported delivery of a final allotment of a full supply for all three Rio Grande Project water users EBID, El Paso County Water Improvement District No. 1 (EP No. 1), and Mexico. EBID requested and diverted 356,690 acre-feet (138,300 acre-feet less than their full allotment). EP No. 1 requested and diverted 247,610 acre-feet (129,260 acre-feet less than their full allotment). Mexico requested their full allotment of 60,000 acre-feet, and diverted 58,600 acre-feet. City of El Paso diversions for 2005 were 50,720 acre-feet. Reclamation reported the capacity at Elephant Butte Reservoir rose above the 400,000 acre-feet Article VII storage restriction value on May 20. According to Reclamation, storage at Elephant Butte Reservoir dropped below 400,000 acre-feet again on August 26, 2005, and due to late year inflows, storage at Elephant Butte Reservoir peaked at 560,920 acre-feet on June 26, 2005 and storage at Caballo Reservoir peaked at 51,390 acre-feet on June 2, 2005. End-of-Year storage at Elephant Butte Reservoir and End-of-Year storage at Caballo Reservoir was 428,000 acre-feet, and End-of-Year storage at Caballo Reservoir was 15,570 acre-feet.

Reclamation discussed their Rio Grande Project water allocations for 2006. At the time of the Engineer Advisers meeting, Reclamation indicated that the current allocation is 46 percent of a full allotment. Reclamation forecasts call for considerably lower than normal inflows. They currently estimate that Elephant Butte Reservoir could reach a low storage level near 54,000 acre-feet in September 2006. Reclamation expects to begin Project releases for the 2006 irrigation season March 6, 2006, with releases from Caballo to begin March 10, 2006, and Mexico diversions beginning March 22.

Vegetation Management at Elephant Butte and Caballo Reservoirs

Salt cedar and other phreatophytes continue to grow within the exposed reservoir areas.

Reclamation continued vegetation management efforts in 2005 through a Cooperative Agreement funded by the NMISC. A total of 5,636 acres were treated in 2005 at both reservoirs under the program. A total of 4,880 acres were treated by mowing and 756 acres were treated with herbicides.

IBWC Operations

IBWC discussed their Flood Control Projects Programmatic Environmental Impact Statement (PEIS). On December 2004 the IBWC issued a notice of intent to prepare a PEIS on management of the IBWC Rio Grande and Tijuana River Flood Control Projects. Scoping comments were received through February 7, 2005. In June 2005, former Commissioner Duran cancelled the PEIS contract. The current IBWC management team will re-initiate the PEIS in the spring of 2006.

During the 2005-2006 non-irrigation season, the IBWC initiated a five-year channel maintenance plan along the Canalization Project. The purpose of the channel maintenance is to maintain efficient water deliveries to the U.S. irrigation districts, the City of El Paso, and Mexico, and improve operations at Mesilla and American Dam. The types of maintenance activities include bank stabilization, arroyo sediment removal and re-alignment, and in-channel sediment removal.

The IBWC received the final levee assessment report in June 2004. A cooperative agreement provides for the Corps of Engineers to conduct ground-truth sampling, seismic investigations, and trenching for selected sites in the Canalization reach. This work is expected to commence this summer, if funds are available. Finally, a test pond was constructed in the lower Mesilta Valley to monitor actual seepage through the in-situ levees under simulated flood conditions, to help determine necessary remediation measures for the levees when they are raised.

IBWC presented information regarding the Canalization EIS. The final EIS was released in June 2004 and the Record of Decision is still on hold.

Paso del Norte Watershed Study

The Corps reported they continue development of a coordinated database and GIS for water related resources in the Rio Grande watershed between Elephant Butte Reservoir and Ft. Quitman using a RiverWare conceptual model.

BUDGET

The Engineer Advisers reviewed the Cost of Operation for the year ending June 30, 2005 and the Budget for Fiscal Year ending June 30, 2007. The Engineer Advisers found that the expenses for gaging stations and administration of the Rio Grande Compact for the year ending June 30, 2005 were \$173,989.

The United States bore \$55,286 of this total, with the balance of \$118,703 borne equally by the three states. The proposed budget for the fiscal year ending June 30, 2007 indicates a total of \$186,788 will be spent for gaging stations and administration. The proposed contribution by the United States for fiscal year 2007 is \$62,305.

Michael J. Sullivan

Engineer Adviser for Colorado

Estevan R. Lopez Engineer Adviser for New Ma

Herman R Settemeyer

Engineer Adviser for Texas

ENGINEER ADVISERS CREDIT WATER MEMO

RIO GRANDE COMPACT COMMISSION COLORADO TEXAS NEW MEXICO

To:	Rio Grande Compact Commissioners
From:	Engineer Advisers to the Rio Grande Compact Commission
Subject:	Accounting of Accrued Rio Grande Compact Credit Water in Project Storage

The Issue

In late 2002, the U.S. Bureau of Reclamation (Reclamation) indicated, as part of its planning for Rio Grande Project Storage releases in 2003, that it's methodology included reducing New Mexico's and Colorado's accrued Credit Water in Project Storage monthly to account for evaporation losses as shown on the annual accounting of Rio Grande Compact water deliveries each year since 1990. New Mexico raised the question as to whether or not the Reclamation had discretion to release water accounted under the Rio Grande Compact as accrued Credit Water. Reclamation indicated its belief that the change in the Compact accounting tabulation in 1990 gave them that discretion. New Mexico disagreed, indicating that Article I and VI precluded such operation and that no Article XIII request had been made or consented to by the Compact Commission to allow for releases of accrued Credit Water.

The New Mexico Engineer Adviser declined to sign the 2003 and 2004 Compact accounting sheets because of the disagreement. This memorandum further describes the issue, provides relevant background information, describes historic and current Credit Water accounting history, outlines implications of Reclamation's current methodology, outlines conclusions, and provides recommendations to resolve the issue.

Relevant Background

The Rio Grande Compact

The states of Colorado, New Mexico and Texas signed the Rio Grande Compact in 1938. It was subsequently ratified by the respective legislatures of the three signatory states and enacted as Public Law 76-96 by the U.S. Congress in 1939.

Under Article I of the Compact, "Credit Water" is defined as:

"that amount of water in Project Storage which is equal to the accrued credit of Colorado, or New Mexico or both," and

N

"Usable Water" is defined as:

"all water, exclusive of Credit Water, which is in Project Storage ...". (By Resolution of May 3, 1974, this definition was amended to exclude any San Juan-Chama Project water stored in Elephant Butte Reservoir.)

Article VI of the Compact states:

"... that accrued credits ... shall be reduced annually to compensate for evaporation losses...".

Article VII of the Compact states:

"...Colorado, or New Mexico, or both, may relinquish accrued credits at any time, and Texas may accept such relinquished water, and in such events the state, or states, so relinquishing shall be entitled to store water in the amount of the water so relinquished."

Article XIII of the Compact reads as follows:

"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 considerations 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 Congress, in the same manner as this Compact is required to be ratified to become effective."

Reclamation's Current Annual Allocation Procedures for the Rio Grande Project

In the fall of every year, Reclamation conducts an assessment to determine the allocation of water to downstream water users (the Elephant Butte Irrigation District, the El Paso Irrigation District No.1, and the Republic of Mexico) in the following year. The allocation process begins in November with Reclamation producing an allocation forecast. This allocation forecast is updated monthly as necessary until the end of the irrigation season. In most of the last 25 years, Elephant Butte Reservoir contained sufficient water to provide a full release to Project users. Commencing in 2002, however, the amount of Usable Water in Project Storage at the beginning of the year was insufficient to provide a full release. 38

Reclamation presented its plan for allocation of Project water in 2003 to the Engineer Advisers in early spring of that year. The plan included reducing Colorado and New Mexico accrued Credit Water on a monthly basis whereas in years prior to 1990 Credit Water was held constant throughout the year. Upon questioning by New Mexico, Reclamation indicated they incorporated the change after the Compact Commission approved the 1990 Compact accounting. The accounting sheets included a change in the manner accrued Credit Water was tabulated. However, the Commission did not take explicit action regarding this issue as provided under Article XIII of the Compact.

2002 Resolution of the Commission

On March 21, 2002 the Rio Grande Compact Commission passed a resolution that

"...hereby requests that the Bureau of Reclamation work cooperatively with the Engineer Advisers to develop procedures for determining the annual allotments of water supply in accordance with the Rio Grande Compact."

Historical Accounting of Credit Water

Figure 1 provides a graphical representation of total Credit Water and total Rio Grande Project Storage, as compiled from the annual "Project Storage" accounting sheets for the history of the Compact. The difference in Credit Water accounting methodology is illustrated by two curves: The first curve is the sum of the accrued credits tabulated on the Colorado and New Mexico accounting sheets (lines C1 and NM1) held constant throughout the year. The second curve, from Column 9 of the "Project Storage" accounting sheets shows monthly Credit Water status including monthly reductions for evaporation after 1990. Several observations can be made from examination of this data:

- There are essentially three periods when Colorado and New Mexico accrued significant amounts of credit storage – in the 1940s and early 1950s; in the mid to late 1970s, and from 1990 through 2003.
- For the first two of these periods, the Credit Water accounting curves defined above are generally identical. Credit Water was accounted on all three Compact accounting sheets as being held constant throughout the year. There are a few exceptions to this observation:
 - In 1942 Actual Spill in an amount sufficient to spill all accrued Credit Water commenced in May.
 - In 1950, Colorado relinquished a portion of it accrued credit in increments: 25,000 acre-feet (AF) on July 31; 20,000 AF on August 31; and 15,000 AF on September 30.

 In 1951, the Rio Grande Compact Commission, by unanimous action at its Twelfth Annual Meeting passed the following motion:

"... that the release of Credit Water from Project Storage during the year 1951 be authorized, provided that such water is replaced at the first opportunity thereafter, and provided further that, in application of the provisions of the last paragraph of Article VI, it shall be assumed that the proportions of Credit Water and usable water released from time to time are the same as the proportions of Credit Water and usable water then in Project Storage."

- 3. Commencing in 1990, the accounting of Credit Water as shown on the Project Storage accounting sheets (see Figure 1) incorporated monthly evaporation losses. It is not clear why this change in Compact accounting reporting occurred. It is not discussed in either the transcripts of the meetings of the Commission or in the annual reports of the Engineer Advisers for this time period. It is possible the change occurred with the advent of the use of electronic spreadsheets by Reclamation and the USGS.
- 4. In the fall of 2003 (Figure 2), the Rio Grande Project Storage curve dipped below the sum of the accrued credits for Colorado and New Mexico in 2003.
- Prior to the fall of 2003 (Figure 1), the Rio Grande Project Storage curve never dipped below either of the two Credit Water curves – in other words, "monthly evaporated Credit Water" had never been released prior to that time and consequently this issue had never come up.

Implications of Credit Water Accounting

Reclamation's methodology for forecasting and managing annual irrigation season allocations for the Rio Grande Project has the potential to affect the benefits that accrue to each state. The methodology could affect the timing of Article VII and hence the amount of water that can be stored in upstream reservoirs constructed after 1929; relinquishment of accrued Credit Water by New Mexico or Colorado; as well as debit water accounting.

Conclusions

- Prior to 1990, Credit Water was held constant through the year on the Release and Spill from Project Storage accounting sheet with evaporative losses charged at the end of the year.
- Commencing in 1990, Credit Water was reduced on a monthly basis on the Release and Spill from Project Storage accounting sheet.

40

ENGINEER ADVISERS CREDIT WATER MEMO

- Except as described above, Credit Water has not been released from Rio Grande Project Storage.
- The Compact Commission, by unanimous action, may take extraordinary measures to affect the release of Credit Water if they so desire, as was done in 1951. The motion passed by the Commission at that meeting provides one possible means of doing so.
- The relinquishment clause of Article VII of the Compact provides the legal means for release of Credit Water, at the discretion of Colorado or New Mexico and upon acceptance by Texas.

Recommendation

After review of the available information the Engineer Advisers recommend that:

- The Commission direct that accrued Credit Water be held constant during the year.
- The Commission direct the Engineer Advisers to meet if the total combined accrued Credit Water exceeds 150,000 acre-feet and Usable Water is less than a full allocation or if the combined accrued Credit Water exceeds 50 percent of Project Storage and make a recommendation to the Commission regarding optimum use of water in Project Storage for Commission approval.
- The Commission direct Reclamation to allocate or release Credit Water only as directed by the Commission.

5

¹ Excerpted from the Minutes of the Tweifth Annual (Twenty-Second) Meeting of the Rio Grande Compact Commission, Santa Fe, New Mexico, February 23 & 24, 1951









42

RECORDS OF DELIVERIES AND RELEASES

At the annual meeting of the Compact Commission on March 23, 2006, the records of deliveries and releases and computations of debits and credits for calendar year 2004 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 March 1, 2005 New Mexico relinquished a total of 2,000 acre-feet of accrued credits. During 2005 the Commissioners found that the actual release of usable water was 677,100 acre-feet. This resulted in an accrued credit of 478,400 acre-feet as of January 1, 2006.

				CONE	UNI SOLE	EX SUPP	17						RIOG	RANDE I	VDEX SU	PPLY		Γ		DELIN	2016S	
		MEASURE	ED FLOW			ADJUSTN	(ENTS		SUPP	· \1	-		AD.	RISTMENT			S1 ID	> 10			-	
HUNOW	TA BOLEJOG AT ETODOM	RASH NUOR NEAR ORTIZ	TA OINOTHA NAB SITRO	TOTAL	GNE TA BRAROTE HTNOM RO	storage in	RENTO STNEWITEULOA	TEN STN3MTCULOA	HTHOM IN YIPPUR	ACCUMULATED TOTAL	NEAR DEL NORTE	ONE TA EDAROTE HTNOM FO	CHANGE IN	DIVERSIONS SNOISKEVIC	ADULISTIMENTS ETHEMERITS	TEN RENTRATES	HENOW MI ATIGE	ACCUMULATED SALES	LABAUCES	SSEI SUNARO RENDE RIVER	TA BOHARD OR BOTABOJ	ACCUMULATED TOTAL AT EDTABOJ
-	~		•	20	9	7		0	10	1	12	13	1.	ä	å	1	99	9	R	R R	8	Ŗ
					8.8	1	I	I		00	1	0.0	I	1	1	1	1	6		•		2
NY	32	1	1	32	6.7	0.8		0.6	96	38	12.5	0.21	00			00	125	12.6	4 0	13.6	187	187
FEB	29	1		28	0.0	02		0.2	3.1	6.9	10.9	0.2	00			0.0	10.0	84	10	150	202	38.0
MAR	4.1	1		4.1	7.1	02		0.2	43	11.2	15.7	0.2	00			00	15.7	1.98	6.9	18.5	24.8	1 28
APR	27.4	15.9	89	\$2.2	4.4	-2.7		-2.7	49.5	50.7	58.7	0.2	0.0			0.0	2.02	8 98	32.6	10.0	52.4	116.1
MAY	817	58.5	11.4	149.8	20 0	156	1	15.6	165.2	229	239.7	0.2	0.0			00	7.802	336.5	58.5	57.1	115.6	231.7
NIN	8.96	217	07	109.3	20 5	85	02	8.7	118.0	343.0	2432	0.2	00			00	243 2	501.7	40.3	8	118.6	360.3
In	31.0	3.5	0.0	34.5	211	-7.4	02	-72	27.3	371.2	6 08	0.2	00	-0.6 ^b	0.3	50-	60.4	671.1	121	28.2	41.3	301.6
AUG	13.5	1.8	00	153	18.0	-3.1	0.0	-3.1	12.2	363.4	20.7	0.2	0.0			0.0	30.7	701.8	27	99	6.9	300.5
SEPT	11.1	0	0.1	12.1	14.3	3.7	0.1	36	8.5	di 100	19.4	0.2	0.0			0.0	10.4	721.2	0.1	1.5	1.6	401.5
OCT	19.9	1.8	0.2	21.7	7.8	9	0.1	64	15.3	407.2	44.1	02	0.0			0.0	44.1	705 3	0.1	20	6.1	408.6
NON	92	1	1	83	42	9.0		3.6	5.6	412.8	16.1	02	0.0			00	10.1	781.4	8	12.1	220	431.6
DEC	30	1		30	45	0.3		03	3.3	418.1	11.0	0.2	00			00	11.0	E 08/	3.7	12.7	16.4	448 0
YEAR	253.9	101.9	213	417.1		-1.6	90	-1.0	418.1	1	783.8		00	-0.6	03	99	780.3	1	191.4	256.7	448.0 ^d	
	Long, a strid	13 00 101 1	NONCO TIME	TIDUTION WE	h											13 S	MMARY OI	- DEBITS A	ND CREDIT	19		
Evaporati	on loss post	-compact ru	Paervoirs; rej	port of the E	ngineer Adv.	her for Colo	rado.									IE	3		-	DEBIT C	REDIT 0	ALANCE
057 ac-	ft minus 245	3 ac-ft pre-c	ompact rap	ort of the En	gineer Advis	ver for Colori	ado.							5	Salance at B	ediming of	Year				1	Cr 4.4
^c See Engl	teer Achiser	report in re	gards to chi	more of store	.00									8	Scheduled D	Mary from	Consides R.	Mer		202.2	-	Dr 197.8
d Garred Bo	W minere 10.	Change Change	ad Bach day			a bunch the			discontration of the					3	Scheduled D	helivery from	Rio Grande			202	-	Dr 451.0
	All south and so the					dei 'eine A		areau or year	UCONTRACT.					3	Ictual Delive	my at Lobek	te plue 10,0	00 Aone Fee			458.0	0.7.0
														3	Teduction of	Debits of	Evaporation					
														8	Reduction of	Credits of	Evaporation	n and Split		0.4		Cr 8.8
													-	5	loound and	R refinguation	d to project a	Numbe on Ma	reh 31, 20	20		Cr 40
										0				3	MARINA IN E				1	1		Cr 4:0
APPROVEL Engineer Ac): Iviser for Co	Norado /	when	- Date:	13/06		Engineer A	Intear for N	ew Mexico	12.	Dalk	in in	3/06	Enain	ieer Advise	r for Texas	Y	- C	5/6 .	1 min		

GRANDE COMPACT - DELIVERIES BY COLORADO AT STATE LINE YEAR 2005

RIO

	terror of the local division of the local di	_			_	_	-	_	_	_			_	-	-	_	_	-	_	_	-	_	_	-	_	-	and the second	-
		Supply		Accumulated Folal	91	-	49.0	105.7	167 6	268.4	514 8	746.4	792.3	623.3	847.0	877 5	914 2	957 1			BALANCE	Cr 35.6	Dr 913 8	Cr 43.2		Cr 37 1		
	IVE SUPPLY	Effective		Aumg Aumg	15		48.0	· 50.7	619	100.8	246.5	231.5	45.9	31.0	23.7	30.5	36.7	42.9	957 1		REDIT	İ		1 1 28		1		
	TTE EFFECT			tecorded Flow Bedow Elephant B	14	I	0.5	0.7	40.3	92.7	111 9	125.6	7 761	24.5	84 2	C.C2	0.2	0.1	721 0		DEBIT		949.5			6.1		
	LEPHANT BU	ELEPHANT	ERVOIR	hange iain (+) 8 bas (-) 8	13		48.5	58.0	12.6	0.1	1346	105.0	-81.8	8.63.8	-60.5	7.2	38.5	42.8	238.1	CREDITS							T	-
	Ű	STORAGE IN	BUTTE RES	Admits "	12	187.4	235.9	291.9	304.5	312.61	447.2	553.1	C.101	397.5	337 0	344.2	380.7	423 5		DF DEBITS AND								
	Γ			Total Weter Stored In New Maxico Above E San Mercial at End of Month ^{e. b}	11	22.1 ^c	21.2	24.4	28.3	614	214.3	154 0	151	132.6	110 0	107 1	104.0	101 2		SUMMARY (M		tio	Add	-	on and Spill		
t hundred		UPPLY		Accumulated	10		42.6	84 5	155.1	370.5	601.6	1110.4	1178.5	1211 3	1233 2	1269.0	1314 8	1363 0			ITE	ning of Year	ry at Elephant Bu	lutte Effective Su	its of Eveponetio	dills old Eveponetic		
2002 Streen of test arc		INDEX S		Durting		1	42.8	51.8	80.6	215 4	481 1	248 8	68.1	32.8	21.9	35.8	45.6	36.4	1353.0			Belance at Begin	Scheduled Delive	Actual Elephant B	Reduction of Deb	Reduction of Crec		
YEAK n thousands of a				Vet Adjustmenta	8	1	11-	20	4.6	24.1	118.2	-14 B	82.	-22 8	-271	-2.4	.31	-5.7:	63.0			NM1	NM2	EMN	NMM	SMN	OWN	NM7
Ouentities i	PLY			Trans-mountain Divensiona	7		-0.5	-12	0 1	1.1-	0.2	00	6.4	10	8 E.	-10	-0.2	-29	-21.7		and ha			There for	d credit to			
	WI INDEX SUI	MENTS		Other Adjustments	9																w Abiquuu. Cochill			23 2003 avreat	age of relinquiahe	1	planation.	
	010	AD JUST	ra otom	Reservoir Evaporation	2		0.2	0.2	0.1	0.3	13	4	11	0.5	0.5	0.2	0.2	0.1	6.1		capacity tables it	8		rs under the Ann	eet in 2005. Stor	is 29,357 acre-fe	riser report for ex	
			IRS. LOBATOS	Changa in Slorage	4		90.	30	44	24.9	116.7	-16.2	-26	-18 5	-23.8	-18	1.6	-2.9	79 5	chuded.	of revised area	ve January 1, 19	I waker.	Nichola Rearvol	egelled 0.0 acre-f	slance remaining	See Engineer Adv	
			RESERVO	Storage End of Month ^{e b}	9	21.4	20.6	23.6	28.0	52 B	169 6	153.4	150.8	132 3	106.5	106.0	103 8	100 9		reservoirs not in	ct implementation	seevoirs, effecti	de transmountair	do McChva and	rued credita aggr	.143 acre-feet; b	r value of 22.2.	
				Recorded Flow at Otow Bridge	2	-	43.7	49.9	58.0	C 181	372 8	263 6	76.0	557	49.0	38.2	48.7	44.1	1288.1	nge in recreationer	cis. 3 and 11 refla	Jernez Canyon F	nd 12 do not inclu	In Abbruit El Va	vousihment of acc	a appragated 146	1 2005 and-of-yea	
				MONTH	-		NAL	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NON	DEC	YEAR	Remarks: Store	Ū		Cola. 3, 11, au	b Mote: Storege	rahar	dah	^c Corrected from	

RIO GRANDE COMPACT - DELIVERIES BY NEW MEXICO AT ELEPHANT BUTTE

RIO GRANDE COMPACT - RELEASE AND SPILL FROM PROJECT STORAGE YEAR 2005

ida of acre feel

		USABLE V	VATER IN S.	TORAGE		CREDIT V	VATER IN S	TORAGE					RIO GR	ANDE BELC	W CABALL	O DAM		
														SPRL	FROM STOR	AGE	USABLE R	ELEASE
MONTH	^a Total Project Storage Capacity Available at End of Month	Elaphant Butta Reservoir	Cabaito Raservotr	Total at End of Montin	UnMad Capacity of Project Storage at End of Month	Colorado Cradit Welar	New Mastico Cradit Weter	Total at End of Month	Flood Weter In Storage in Cabaito Reservoir at End of Month	Total Weter In Project Storage st End of Month	Measured Flow at Cashello Gaging Station	Intervening Diversions to Canata	Total Reineeue and Spill	Cabasilio Flood	Credit	Usable Water	Net Dumg Month	Locumulated. Total
-	2	•	4	5	9	7	8	0	10	11	12	5	14	ä	9	17	=	10
	2.225 0	B 147 4	23.4	170 B	2,064 2	P4 4	b36.6	P40 D		210.8		1		1		1	1	0.0
NAL	2 225 0	196.1	28.6	222.6	2,002 4	44	36.4	38.8		282.4	0.1	0.0	0.1				01	10
FEB	2,225.0	252.2	10 00	285 5	1,939.5	4.4	26.3	38.7		325.2	0.1	00	0.1				01	02
MAR	2,225.0	C.702	314	298.7	1,926.3	2.3	34.9	37.2		335.8	48.2	0.1	40.3				40.3	49.6
APR	2,200 0	2782	32.8	309.0	1,881.0	2.2	1.46	30.4		345.4	6.99	0.1	88.0				0.00	135.6
MAY	2,200 0	4116	503	461.9	1,738.1	22	33.4	38.6		487.5	64.7	0.2	04.0				64.0	220.4
NUL	2,200.0	518.3	48.1	500.4	1,633 6	2.2	32.6	34.8		601.2	119.3	0.2	119 5				119 6	330.8
101	2,200 0	427.6	34.8	462.4	1,737.6	2.1	31.6	7.66		490.1	137.0	0.2	137.2				137 2	477 5
DUR	2,200 0	C 190	20.1	14.ABC	1,815.6	2.1	31.1	33.2		417.6	100.2	0.1	100.3				100 3	577.4
SEPT	2,200.0	304.5	11.2	315.7	1,884 3	20	30.5	32.5		348.2	77.3	0.1	74				77.4	854 8
001	2,225.0	312.1	12.6	324.7	1,900 3	2.0	30.1	32.1		350.6	22.3	0.0	22.3				22.3	677.1
NON	2,225.0	348.0	14 2	1.695	1,601 9	2.0	20.8	31.0		394.9	0.0	0.0					00	677.1
DEC	2,225.0	302.0	15.6	407 8	1,817.4	20	29.5	31.6		438.1	00	0.0					00	877.1
YEAR				1	1				-		070.1	10	677.1	0.0	0.0	0.0	077 1	1
												ACCR	UED DEPART	TURE FROM N	ORMAL RELE	ASE		
Bruinert Stree	rana Canacity is	2 200 010 more	A not land / Annual In St	instantiation and	TO 200 DED 200 BOD	and and a second second	a for Manchi and					ine,	3	2		DEBIT	CREDIT	BALANCE
by the Service	amber 9, 1996	Resolution of the	in Rio Granda C	amond Comm	ninain with Boo	of control along	collection and	of Flootune		14	Accrued Deper	ture at Beginnin	o of Year					Cr 366.6
Butte Reser	TVOIR OF 50,000 8	Icre-feet from A	prit through Say	plember and 21	5,000 acre-leel	from October	through Merch.	underso to		P2 1	Actual Release	during Year				677.1		Dr 3116
d manual d	Interes of Basic	The of Veel IT	To and Albitit							Ed	Normal Release	e for Year				-	790.0	Cr 478.4
		the seat on fund	fatoni nem i						_	P4								
										PG								
									_	6d								
									_	P7 1	Accred Depart	ture at End of Y	est.			1	1	Cr 478.4
									1			THE PARTY	E OF HYPOT	HETICAL SPIL	L Did not peo			
APPROVED:			, ,	1.101				10-	0	5/10			140	5	1.1.			

RIO GRANDE COMPACT COMMISSION REPORT

RECORDS OF DELIVERIES AND RELEASES

COST OF OPERATION AND BUDGET

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2005

			Borne bu			
	item	Total Cost	Lipited States	0-1	Borne by	
	GAGING STATIONS		Critted States	Colorado	New Mexico	Texas
	In Colorado In New Mexico, above Caballo	\$60,902	\$7,474	\$53,428		
	Reservoir In New Mexico, Caballo	\$54,970	\$34,415		\$20,555	
	Reservoir and below	\$24,140	\$6,390		\$2,250	\$15.500
	Subtotal	\$140,012	\$48,279	\$53,428	\$22.805	\$15,500
1	ADMINISTRATION				¥22,005	\$15,500
	U.S.G.S. Contract	\$30,902	\$7,007	\$7.965	\$7 965	67.005
ľ	Other expenses	\$3,075		\$1 025	¢1,000	\$7,965
I	Subtotal	\$33,977	\$7.007	\$9,000		\$1,025
L	GRAND TOTAL	\$172.090			\$8,990	\$8,990
L	EQUAL SHARES	- wiro, 909		\$62,418	\$31,795	\$24,490
				\$39,568	\$39,568	\$39,568

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2007

	ltem		Borne by		Borne by	
		Total Cost	United States	Colorado	New Maxing	T
1	GAGING STATIONS				THOW MANA	lexas
	In Colorado In New Mexico, above Caballo	\$65,588	\$8,240	\$57,348		
	Reservoir	\$60,470	\$39.575			
	In New Mexico, Caballo		400,070		\$20,895	
1	Reservoir and below	\$25,060	\$6,380		£2.000	
	Subtotal	\$151 140	054.405		\$2,280	\$16,400
I		\$101,110	354,195	\$57,348	\$23,175	\$16 400
ł	ADMINISTRATION			T		
μ	J.S.G.S. Contract	\$32.440			1	
1	Ther expenses	\$52,440	\$8,110	\$8,110	\$8,110	\$8,110
ľ	oulei expenses	\$3,230		\$1 077	81 077	
L	Subtotal	\$35,670	\$8,110	\$9 187	\$1,077	\$1,077
	GRAND TOTAL	\$186,788	\$62 305	\$66 525	\$9,187	\$9,187
L	EQUAL SHARES			\$41,404	\$32,362	\$25,587
				PH1,494	541,494	\$41,494

ACKNOWLEDGMENTS

This report was prepared by the U.S. Geological Survey, secretary to the Rio Grande Compact Commission. The watersupply 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 Reservoi

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

Rio Grande near Del Norte, Colo. Conejos River below Platoro Reservoir, Colo. Conejos River near Mogote, Colo San Antonio River at Ortiz, Colo Los Pinos River near Ortiz, Colo Conejos River near Lasauses, Colo Rio Grande near Lobatos, 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.
 Storage in Nichols 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. Galisteo Creek below Galisteo Dam, N. Mex. Jemez River below Jemez Caryon Dam, N. Mex.

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

Abiquiu Reservoir. Galisteo 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 Arrey, N. Mex. Rio Grande below Caballo Dam, N. Mex. Bonito ditch below Caballo Dam, N. Mex.

The 2005 report was compiled by Robert Gold (U.S. Geological Survey), Secretary to Rio Grande Compact Commission.

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

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.

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. -- 116 years (1890-2005), 894 ft³/s (648,000 acre-ft per year).

Extremes. - 1889-2005: 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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	6,320	240	170	204	12,540
February	5,505	213	180	197	10,920
March	7,925	350	189	256	15,720
April	30,098	1,970	235	1,003	59,700
May	120,830	7,200	1,240	3,898	239,700
June	122,610	5,570	3,250	4,087	243,200
July	45,319	3,220	499	1,462	89,890
August	15,460	734	292	499	30,660
September	9,792	671	214	326	19,420
October	22,240	1,050	486	717	44,110
November	8,098	462	122	270	16,060
December	5,980	220	160	193	11,860
Calendar year 2005	400,177	7,200	122	1,096	793,800

Conejos 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. - 53 years (1890-2005), 92.2 ft³/s (66,780 acre-ft per year).

Extremes. -- 1952-2005: Maximum discharge, 1,160 ft³/s Nov. 1, 1957; maximum gage height, 4.29 ft June 15, 1958; no flow Oct. 16-20, 1955.

<u>Remarks</u>. - 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).

	Second-	Maximum	Minimum		Runoff in	
Month	foot-days	daily	daily	Mean	acre-feet	
January	265	8.6	8.5	8.6	526	
February	236	8.5	8.3	8.4	468	
March	256	8,3	8.2	8.3	508	
April	3,771	387	8.2	126	7,480	
May	4,800	439	36	155	9,520	
June	14,079	701	284	469	27,930	
July	9,262	396	183	299	18,370	
August	3,595	150	80	116	7,130	
September	3,384	263	55	113	6,710	
October	6,008	360	64	194	11,920	
November	2,525	263	8.0	84.2	5,010	
December	246	8.0	7.3	7.9	487	
Calendar year 2005	48,427	701	7.3	133	96,050	

49

ea

G

5

C

0

r

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.

51

Average discharge. - 95 years (1904, 1912-2005), 323 ft³/s (234,000 acre-ft per year).

Extremes. -- 1903-05, 1911-2005: Maximum discharge, 9,000 ft³/s Oct 5, 1911 (gage height, 8.50 ft), from rating curve extended above 3,100 ft³/s; minimum daily determined, 10 ft³/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

	Second-	Maximum	Minimum		Dun of the
Month	foot-days	daily	daily	Mean	Rubon In
January	1,598	58	40	SI 6	acit-itet
February	1,458	56	40	51.5	3,170
March	2,083	88	5.1	32.1	2.890
April	13,806	1 060	50	67.2	4,130
May	41.171	2 430	257	460	27,380
June	43.816	1,990	337	1,328	81,660
July	15 647	790	882	1,461	86,910
August	6815	207	281	505	31,040
September	5 583	29/	150	220	13,520
October	10.026	389	120	186	11,070
November	10,030	445	213	324	19,910
December	4,037	388	33	155	9,240
Colondon	1,315	60	38	48.9	3,010
Calendar year 2005	148,185	2,430	33	406	203 000

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. - 65 years (1941-2005), 25.1 ft³/s (18,160 acre-ft per year).

Extremes. - 1920, 1925-2005: Maximum discharge, 1,750 ft³/s Apr. 15, 1937 (gage height, 5.38 ft), from rating curve extended above 1,100 ft³/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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	Rent fast
January	115	5.4	22	2.7	220
February	186	12	4.2	5.7	229
March	238	11	5.4	0.0	309
April	4,486	304	73	150	4/3
May	5,753	355	48.0	150	8,900
June	342	41.0	1.6	180	11,410
July	4.9	1.5	0.0	11.4	679
August	28.2	3.9	0.0	0.2	9.7
September	30.3	4.8	0.0	0.9	56
October	94.9	5.6	3.0	1.0	60
November	66.2	3.0	2.0	3.1	188
December	33.8	17	1.4	2.2	131
Calendar year 2005	11 380	265	0.5	1.1	67
year 2005	11,500	333	0.0	31.2	22,570

Los Pinos River near Ortiz, Colo

Location. -- Water-stage recorder, lat 36°58'56", long 106°04'23", in New Mexico on line between secs. 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. -- 87 years (1915-20, 1925-2005), 118 ft³/s (85,370 acre-ft per year).

Extremes. -- 1915-20, 1925-2005: Maximum discharge, 3,160 ft³/s May 12, 1941 (gage height, 5.77 ft, site and datum then in use), from rating curve extended above 1,600 ft³/s; minimum observed, 4.0 ft³/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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
Internet /	674	29	14	21.7	1,340
February	716	31	18	25.6	1,420
reoruary March	743	34	18	24.0	1,470
March	8 029	675	25	268	15,930
Арги	28.461	1 560	244	918	56,450
May	10 937	705	141	365	21,690
June	1 743	143	28	56.2	3,460
July	070	66	14	29.7	1,820
August	440	22	10	14.7	873
September	934	\$3	14	26.9	1,650
October	614	20	13	17.1	1,020
November	214	10	11	14.6	901
December Calendar year 2005	4 <i>3</i> 4 54,465	1,560	10	149	108,000

Conejos River near Lasauses, Colo

Location. -- Water-stage recorder, lat 37°18'01", long 105°44'47", in secs. 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 Lasauses. 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. - 84 years (1922-2005), 176 ft³/s (128,300 acre-ft per year).

Extremes. - 1921-2005: Maximum discharge, 3,890 ft³/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.

	Second-	Maximum	Minimum	Mean	Runoff in acre-feet
Month	100t-days	109	61	79.4	4,880
January	2,460	108	01	04.7	5 240
February	2,640	121	68	94.5	5,240
March	3,195	148	73	103	6,340
Anril	16.456	1,210	91	549	32,640
May	29 511	1.850	268	952	58,540
lune	74 870	1.270	465	829	49,330
Julic	6.073	383	73	196	12,050
July	1 272	105	6.2	44.3	2,720
August	1,373	50	0.0	0.7	44
Septemoer	2 050	185	0.7	98.4	6,050
Uctober	3,030	202	45	166	9 890
November	4,987	324	45	100	2,660
December	1,842	80	46	59.4	3,030
Calendar year 2005	96,479	1,850	0.0	264	91,400

Rio Grande near Lobatos, Colo

Location. -- Water-stage recorder, lat 37°04'42", long 105°45'22", in sec. 22, T. 33 N., R. 11 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); 75 years (1931-2005) 440 ft³/s (318,400 acre-ft per year).
- Extremes. 1899-2005: 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 at 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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	9,450	350	230	305	18,740
February	10,171	439	290	363	20,170
March	12,479	535	338	403	24,750
April	26,429	1,570	367	881	52,420
May	58,306	3,950	678	1,881	115,600
June	59,820	2,580	1,520	1,994	118,700
July	20,801	1,470	301	671	41,260
August	4,181	263	39	135	8,290
September	821	39	20	27.4	1,630
October	4,104	309	28	132	8,140
November	11,077	541	180	369	21,970
December	8,265	320	210	267	16,390
Calendar year 2005	225,904	3,950	20	619	448,100

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 downsteam.

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 Azotea tunnel; 35 years (1970-2005) 134 ft³/s (97,120 acre-ft per year) subsequent to completion of Azotea tunnel.

Extremes. -- 1962-2005: 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 Azotea tunnel. Flow in Rutheron Drain included prior to Apr. 1, 1971.

Monthly and yearly discharge, in cubic feet per second

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	0.0	0.0	0.0	0.0	0.0
February	128	27	0.0	4.6	253
March	1,637	123	2.5	52.8	3,250
April	18,216	1,030	49	607	36,130
May	23,485	968	405	758	46,580
June	24,183	916	558	806	47,970
July	6,912	530	20	223	13,710
August	2,500	323	5.0	80.6	4,960
September	1,634	358	1.5	54.5	3,240
October	2,426	202	31	78.3	4,810
November	325	44	0.0	10.8	645
December	0.0	0.0	0.0	0.0	0.0
Calendar year 2005	81,444	1,030	0.0	223	161,500

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 vear).

Extremes. -- 1963-2005: 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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	-	<i>d</i> -0	-	**	-
February	-		-	-	-
March	-			-	-
April	****		-		-
May	253	44.0	0.0	8.2	502
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	0.0	0.0	0.0	0.0	0.0
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 2005					

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. -- 35 years (1971-2005), 127 ft³/s (91,980 acre-ft per year).

Extremes. - 1971-2005: 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.

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	763	30	0.0	24.6	1,510
February	3,979	270	29	142	7,890
March	1,385	120	0.0	44.7	2,750
April	4,929	200	120	164	9,780
May	2,742	200	0.0	88.5	5,440
une	0.0	0.0	0.0	0.0	0.0
uly	3,917	400	0.0	126	7,770
August	3,900	400	0.0	126	7,740
September	783	300	0.0	26.1	1,550
October	906	250	0.0	29.2	1,800
November	7,500	250	250	250	14,880
December	7,750	250	250	250	15,370
Calendar year 2005	38,554	400	0.0	106	76,470

Rio Chama below El Vado Dam, N. Mex

Location. -- Water-stage recorder with satellite telemetry, lat 36°34'48", long 106°43'24", 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-feet per year), prior to release of transmountain water; 35 years (1971-2005) 468 ft³/s (338,800 acre-feet per year).
- Extremes. 1914-16, 1920-24, 1936-2005; 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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	2,407	104	57	77.6	4 770
February	5,247	400	82	187	10,410
March	3,488	235	98	113	6 970
April	43,029	3,080	101	1.434	85 350
May	60,153	4,290	99	1.940	119 300
June	3,094	106	100	103	6 140
July	8,324	682	81	269	16 510
August	14,395	762	88	464	28 550
September	15,428	762	119	514	30,600
October	3,707	274	42	120.0	7 350
November	9,482	357	262	316	18 810
December	10,452	365	257	337	20 730
Calendar year 2005	179,206	4,290	42	491	355 500

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, 35 years (1971-2005), 518 ft³/s (375,300 acre-feet per year).

Extremes. -- 1961-2005; Maximum discharge, 2,990 ft³/s July I, 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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	3,348	185	77	108	6 640
February	5,674	618	72	203	11.250
March	4,011	338	79	129	7 960
April	33,404	1,910	115	1.113	66 260
May	50,820	1,720	1,320	1.639	100 800
June	36,971	1,700	185	1.232	73 330
July	7,594	471	89	245	15 060
August	15,116	789	111	488	29.980
September	15,947	717	83	532	31,630
October	3,940	306	74	127	7 810
November	3,056	138	70	107	6.060
December	4.132	189	07	133	0.000
Calendar year 2005	184,013	1,910	70	504	365,000

STREAMFLOW

Rio Nambe below Nambe Falls Dam, near Nambe, 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 Nambe Indian Reservation, in outlet conduits at Nambe Falls Dam, 300 ft upstream from Nambe Falls, 2.6 mi upstream from confluence of Rio Nambe and Rio En Medio, 4.4 mi southeast of Nambe Pueblo, and 5.4 mi southeast of Nambe. 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. --- 27 years (1979-2005), 13.8 ft3/s (10,010 acre-feet per year).

Extremes. - 1979-2004; Maximum discharge, 312 ft³/s June 9, 1979 (gage height, 1.96 ft), at site 1,100 ft downstream; no flow December 31, 1994.

Remarks. -- Records good. Flow completely regulated by Nambe Falls Reservoir.

Monthly and yearly discharge, in cubic feet per second

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	22.5	0.8	0.6	0.7	45
February	16.6	0.9	0.5	0.6	33
March	167	8.0	0.6	5.4	331
Anril	823	46	8.0	27.4	1,630
May	1.748	98	29	56.4	3,470
lune	1,172	61	22	39.1	2,320
luly	657	32	9.3	21.2	1,300
August	312	29	4.0	10.1	618
Sentember	333	17	4.4	11.1	660
October	231	9.9	2.9	7.4	458
November	51.1	2.9	1.1	1.7	101
December	145	4.9	3,4	4.7	288
Calendar year 2005	5,677	98	0.5	15.6	11,260

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 SW1/4SW1/4 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. -- 106 years (1896-1905, 1910-2005), 1,514 ft³/s (1,097,000 acre-feet per year).

Extremes. -- 1895-1905, 1910-2005; Maximum discharge, 24,400 ft³/s May 23, 1920 (gage height, 14.1 ft); minimum daily 60 ft³/s July 4, 5, 1902.

<u>Remarks</u>. -- 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.

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	22,041	797	613	711	43,720
February	25,162	1,340	652	899	49,910
March	28,232	1,070	749	911	56,000
April	96,441	5,480	926	3,215	191,300
May	188,000	8,970	3,450	6,065	372,900
June	132,890	6,980	2,850	4,430	263,600
July	38,318	2,480	826	1,236	76,000
August	28,065	1,590	619	905	55,670
Sentember	24,681	1,290	629	823	48,950
October	19,286	740	478	622	38,250
November	24,561	952	706	819	48,720
December	22,246	835	584	718	44,120
Calendar year 2005	649,923	8,970	478	1,781	1,289,000

Santa 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. -- 93 years (1913-2005), 8.04 ft³/s (5,800 acre-feet per year).

Extremes. - 1913-2005; Maximum discharge, 1,500 ft³/s Aug. 14, 1921 (gage height, 5.17 ft); from rating curve extended above 150 ft³/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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Меал	acre-feet
January	53.9	2.0	1.7	1.7	107
February	154	8.2	1.4	5.5	305
March	500	23	7.5	16.1	992
April	895	46	21	29.8	1,780
May	1,158	66	17	37.4	2,300
June	639	42	8.8	21.3	1,270
July	321	19	8.7	10.4	637
August	337	17	6.0	10.9	668
September	255	12	6.2	8.5	506
October	172	6.5	3.1	5.6	341
November	52.8	3.7	0.1	1.8	105
December	3.0	0.2	0.0	0.1	5.9
Calendar year 2005	4,541	66	0.0	12.4	9,010

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. -- 35 years (1971-2005), 1,352 ft³/s (980,000 acre-feet per year).

Extremes. -- 1971-2005; Maximum discharge, 10,300 ft³/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 ft³/s; minimum discharge 0.51 ft³/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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	23,438	860	591	756	46,490
February	27,662	1,490	736	988	54,870
March	29,422	1,490	728	949	58,360
April	90,047	4,980	859	3,002	178,600
May	163,560	6,270	4,010	5,276	324,400
June	151,420	6,670	2,530	5,047	300,300
July	33,440	2,350	716	1,079	66,330
August	22,737	822	630	733	45,100
September	19,711	892	552	657	39,100
October	16,370	718	413	528	32,470
November	21,911	992	534	730	43,460
December	21,573	889	392	696	42,790
Calendar year 2005	621,291	6,670	392	1,702	1,232,000

STREAMFLOW

Galisteo 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

Cerrillos, 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. -- 35 years (1971-2005), 5.55 ft³/s (4,017 acre-feet per year).

Extremes. - 1970-2005; Maximum discharge, 3,460 R³/s Aug. 24, 1997 (gage height, 5.57 ft); no flow many days each year.

<u>Remarks.</u> - 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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	54.0	27.0	0.0	1.7	107
February	410	85.0	0.0	14.6	813
March	343	50.0	0.0	11.1	681
April	82.5	6.6	0.0	2.8	164
May	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0
August	0.8	0.4	0.0	0.0	1.6
September	1.9	1.9	0.0	0.1	3.8
October	1.8	1.1	0.0	0.1	3.6
November	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0
Calendar year 2005	894	85.0	0.0	2.4	1,770

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. -- 63 years (1937, 1944-2005), 61.6 ft³/s (44,620 acre-feet per year).

Extremes. ~ 1937, 1944-2005; Maximum discharge, 16,300 ft³/s Aug. 29, 1943 (gage height, 5.62 ft); no flow at times. <u>Remarks.</u> ~ Records good. Flow regulated by Jemez Canyon Dam since October 1953. Diversions for irrigation of about 3,000 acres above station.

	Second-	Maximum	Minimum		Runoff i	n
Month	foot-days	daily	daily	Mean	acre-fee	t
January	593	35	10	19.1	1,180	
February	2,012	194	15	71.9	3,990	
March	2,804	127	71	90.5	5,560	
April	7,166	649	51	239	14,210	
May	10,158	569	81	328	20,150	
June	1,831	209	0.0	61.0	3,630	
July	0.7	0.6	0.0	0.0	1.3	
August	10.0	6.6	0.0	0.3	20	
September	792	664	0.0	26.4	1,570	
October	283	170	0.0	9.1	561	
November	174	13	2.5	5.8	345	
December	425	80	1.8	13.7	843	
Calendar year 2005	26,248	664	0.0	71.9	52,060	

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. - 91 years (1915-2005), 1,002 ft³/s (726,100 acre-feet per year).

Extremes. -- 1915-2005; 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

	Second-	Maximum	Minimum		Runoff in
Month	foot-days	daily	daily	Mean	acre-feet
January	242	12.0	4.7	7.8	480
February	356	16.0	8.8	12.7	706
March	24,854	1,610	14	802	49,300
April	46,726	1,930	966	1,558	92,680
May	56,440	2,340	1,440	1,821	111,900
June	63,300	2,820	1,580	2,110	125,600
July	69,420	2,360	1,970	2,239	137,700
August	47,814	2,460	614	1,542	94,840
September	42,440	1,850	1,010	1,415	84,180
October	11,734	1,330	4.6	378	23,270
November	95	19.0	1.2	3.2	188
December	59	2.2	1.6	1.9	117
Calendar year 2005	363,479	2,820	1.2	996	721,000

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 Arrey. Datum of gage is 4,140.90 ft above National Geodetic Vertical Dam 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. -- 68 years (1938-2005), 931 ft³/s (674,400 acre-feet per year).

Extremes. -- 1938-2005; 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-	Maximum	Minimum	Maan	Runoff in
Wonu	Tool-days	dany	uany	(vican	acre-icei
January	53.8	1.8	1.6	1.7	107
February	33.6	1.8	1.1	1.2	67
March	24,791	1,780	1.1	800	49,170
April	43,290	1,720	1,120	1,443	85,870
May	42,690	1,940	1,130	1,377	84,680
June	60,150	2,440	1,300	2,005	119,300
July	69,070	2,370	1,930	2,228	137,000
August	50,500	2,060	1,170	1,629	100,200
September	38,960	1,900	1,050	1,299	77,280
October	11,258	1,330	1.0	363	22,330
November	30.0	1.0	1.0	1.0	60
December	31.0	1.0	1.0	1.0	61
Calendar year 2005	340,857	2,440	1.0	934	676,100

STREAMFLOW

Bonito Ditch below Caballo Dam, N. Mex.

Records available. -- January 1938 to current year. 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.

<u>Remarks</u>. - 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	40.3
March	69.0
April	133.3
May	159.1
June	189.7
July	168.6
August	130.7
September	77.4
October	0.0
November	0,0
December	0.0
Calendar year 2005	968.1

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 2005

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec	Cal Vr
Gage height	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	91	91	91	
Contents	162	162	162	162	162	162	162	162	162	162	162	162	
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

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 2005

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal Yr
Gage height	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Contents	561	561	561	561	561	561	561	561	561	561	561	561	
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

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 2005

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov	Dec	Cal Vr
Gage height	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	80	8.0	8.0	80	Cai. 11.
Contents	192	192	192	192	192	192	192	192	192	192	192	192	_
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

Troutvale No. 2 Reservoir. - Staff gage in E1/2 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 2005

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal Yr
Gage height	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	69	6.9	
Contents	213	213	213	213	213	213	213	213	213	213	213	713	
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

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-fl. 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 2005

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	-
Contents	38	38	38	38	38	38	38	38	38	38	38	38	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

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 acreft, 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 2005

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	-
Contents	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

<u>Alberta Park Reservoir</u>. – 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 2005

Month	Јап.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	-
Contents	598	598	598	598	598	598	598	598	598	598	598	598	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

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 2005

the state of the s													
Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	-	-	-	-	-	-	-	-	-	-	-	-	-
Contents	42	42	42	42	42	42	42	42	42	42	42	42	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

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-fl. Capacity based on elevation above bottom of outlet. Includes 43 acre-fl of transmountain water, by exchange, in 1976.

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

Calendar Year 2005

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 2005

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	15.4	16.1	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	-
Contents	197	213	237	237	237	237	237	237	237	237	237	237	-
Change	+12	+16	+24	0	0	0	0	0	0	0	0	0	+40

<u>Platoro Reservoir</u>, - 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, 2004	9,960.92	9,152	•
January 31, 2005	9,962.17	9,683	+531
February 28	9,962.70	9,908	+225
March 31	9,963.30	10,166	+258
April 30	9,956.71	7,449	-2,717
May 31	9,988.10	23,068	+15,619
June 30	10,000.80	31,533	+8,465
July 31	9,989.74	24,094	-7,439
August 31	9,934.67	21,006	-3,088
September 30	9,978.13	17,332	-3,674
October 31	9,964.68	10,776	-6,556
November 30	9,956.16	7,326	-3,450
December 31, 2005	9,956.85	7,504	+178
Calendar year 2005	-	-	-1.648

Truiillo 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 2005

Month	Jan.	Feb.	Mar.	Арг.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	30.0	30.0	30.0	31.0	31.0	30.8	29.6	29.7	29.9	29,5	29.5	29.5	-
Contents	803	803	803	869	869	856	777	783	796	770	770	770	
Change	0	0	0	+66	0	-13	-79	+6	+13	-26	0	0	-33

STORAGE IN RESERVOIRS

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

<u>Heron Reservoir.</u> – 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, 2004	7,118.00	111,005	-
January 31, 2005	7,118.08	111,213	+208
February 28	7,116.59	107,381	-3,832
March 31	7,117.38	109,399	+2,018
April 30	7,127.14	136,852	+27,453
May 31	7,139.88	179,761	+42,909
une 30	7,152.15	228,731	+48,970
uly 31	7,153.06	232,650	+3,919
August 31	7,151.94	227,832	-4,818
September 30	7,152.05	228,303	+471
October 31	7,152.75	231,310	+3,007
November 30	7,148.97	215,348	-15,962
December 31, 2005	7,144.85	198,729	-16,619
Calendar year 2005	-	-	+87,724

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 acreft, 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

			Change in	Transmountain
Date	Gage Height	Contents	contents	water
December 31, 2004	6,820.21	25,823	~	5,244
anuary 31, 2005	6,820.63	26,234	+411	5,537
cbruary 28	6,823.47	29,108	+2,874	5,556
Aarch 31	6,827.50	33,467	+4,359	5,545
pril 30	6,826.75	32,632	-835	5,526
fay 31	6,876.80	115,241	+82,609	3,471
une 30	6,892.48	156,841	+41,600	3,448
aly 31	6,891.25	153,252	-3,589	2,914
ugust 31	6,885.38	136,899	-16,353	4,585
eptember 30	6,874.60	110,129	-26,770	2,053
ctober 31	6,874.18	109,174	-955	2,249
ovember 30	6,873.88	108,496	-678	4,536
ecember 31, 2005	6,872.96	106,437	-2,059	6,196
alendar year 2005	-	-	+80,614	

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

Abiquiu Reservoir. -- Water-stage recorder, lat 36°14'24", 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 is 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

			Change in	Transmountain
Date	Elevation	Contents	contents	water
December 31, 2004	6,200.15	112,234	-	110,277
January 31, 2005	6,200.02	111,821	-413	110,746
February 28	6,200.24	112,523	+702	111,394
March 31	6,200.12	112,140	-383	110,921
April 30	6,209.01	142,349	+30,209	115,264
May 31	6,218.00	175,936	+33,587	116,460
June 30	6,201.46	116,436	-59,500	114,718
July 31	6,201.12	115,339	-1,097	113,205
August 31	6,200.63	113,766	-1,573	112,061
September 30	6,200.17	112,298	-1,468	110,175
October 31	6,199.92	111,503	-795	109,777
November 30	6,203.43	122,933	+11,430	121,367
December 31, 2005	6,206.68	134,119	+11,186	131,732
Calendar year 2005	-	-	+21,885	-

<u>Nambe Falls Reservoir</u>, - 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 1,920 acre-ft at elevation 6,826.6 feet (crest of spillway) by 2004 survey, 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, 2004	6,801.17	876	-
January 31, 2005	6,808.75	1,067	+191
February 28	6,821.02	1,617	+550
March 31	6,826.70	1,925	+308
April 30	6,826.81	1,932	+7
May 31	6,826.81	1,932	+0
June 30	6,825.01	1,829	-103
July 31	6,812.86	1,234	-595
August 31	6,813.49	1,261	+27
September 30	6,810.98	1,155	-106
October 31	6,820.82	1,606	+451
November 30	6,825.25	1,843	+237
December 31, 2005	6,825.79	1,873	+30
Calendar year 2005	-	-	+997

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 l05°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 accomodate up to a total of 1,061 acre-ft et of pre-Compact storage in McClure and Nichols Reservoirs combined.

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

			Change	Pre-Compact	Transmountain
Date	Gage height	Contents	in contents	water	water
December 31, 2004	7,863.20	1,690	-	0	1,690
January 31, 2005	7,886.43	1,890	+200	28	1,691
February 28	7,893.97	2,380	+490	476	1,733
March 31		2,070	-310	146	1,753
April 30		2,490	+420	476	1,843
May 31		3,260	+770	503	2,543
June 30	7,905.60	3,240	-20	489	2,543
July 31	7,900.32	2,850	-390	118	2,543
August 31		2,270	-580	0	2,270
September 30		1,880	-390	0	1,880
October 31	7,886.12	1,850	-30	0	1,850
November 30	7,887.02	1,910	+60	0	1,910
December 31, 2005	7,888.35	1,990	+80	0	1,990
Calendar year 2005			+300		

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

			Change	Pre-Compact	Transmountain	
Date	Gage height	Contents	in contents	water	water	
December 31, 2004	150.03	279	•	7	101	
January 31, 2005	148.65	258	-21	158	100	
February 28	167.12	685	+427	585	100	
March 31	167.21	685	0	585	100	
April 30	167.23	685	0	585	100	
May 31	167.30	685	0	551	100	
June 30	166.37	667	-18	529	100	
July 31	162.49	557	-110	400	100	
August 31	161.45	530	-27	0	373	
September 30	161.24	524	-6	9	515	
October 31	158,93	466	-58	0	466	
November 30	153.68	349	-117	5	344	
December 31, 2005	145.09	202	-147	4	198	
Calendar year 2005	•		-77			

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. 16

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

			Change in	Transmountain
Date	Elevation	Contents	contents	water
December 31, 2004	5,340.35	49,562	-	47,401
January 31, 2005	5,340.78	50,083	+521	48.017
February 28	5,340.98	50,329	+246	47.955
March 31	5,340.95	50,293	-36	48.526
April 30	5,346.72	58,470	+8,177	48,188
May 31	5,364.30	94,531	+36,061	47.597
June 30	5,340.50	49,743	-44.788	46,780
July 31	5,339.66	48,747	-996	46.011
August 31	5,339.32	48,357	-390	45.575
September 30	5,340.52	49,767	+1,410	45.581
October 31	5,339.43	48,483	-1.284	45 571
November 30	5,339.59	48,666	+183	45 761
December 31, 2005	5,339.58	48.655	-11	45 660
Calendar year 2005	-	-	-907	-

Galisteo Reservoir, - Water-stage recorder above elevation 5,500.3 ft, nonrecording below, lat 35°27'44", 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 2005

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

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

			Change in	Transmountain
Date	Elevation	Contents	contents	water
December 31, 2004	5,155.00	0		0
January 31, 2005	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, 2005	5,155.00	0	0	0
Calendar year 2005	•	-	0	-

Acomita 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 2005

				and the second se	and the second se	and the second s							and the party of the local division of the l
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 2005.

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 NW1/4 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

			Change in	Transmountain
Date	Gage Height	Contents	contents	water
December 31, 2004	4,309.78	193,240	-	5,890
January 31, 2005	4,315.82	241,740	+48,500	5,860
February 28	4,321.84	297,720	+55,980	5,850
March 31	4,323.10	310,270	+12,550	5,820
April 30	4,323.90	318,370	+8,100	5,750
May 31	4,335.92	452,920	+134,550	5,680
June 30	4,344.04	558,720	+105,800	5,600
July 31	4,337.04	466,800	-91,920	5,520
August 31	4,331.72	403,000	-63,800	5,470
September 30	4,326.22	342,440	-60,560	5,420
October 31	4,326.88	349,450	+7,010	5,280
November 30	4,330.22	385,980	+36,530	5,250
December 31, 2005	4,333.92	428,740	+42,760	5,220
Calendar year 2005	-	-	+235,500	-

Caballo Reservoir, - Water-stage recorder, lat 32°53'47", long 107°17'30", in SE1/4SW1/4 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, 2004	4,137.58	23,390			
January 31, 2005	4,138.84	26,510	+3,120		
February 28	4,141.30	33,280	+6,770		
March 31	4,140.66	31,410	-1870		
April 30	4,141.14	32,800	+1,390		
May 31	4,146.20	50,340	+17,540		
June 30	4,145.62	48,060	-2,280		
July 31	4,141.80	34,790	-13,270		
August 31	4,136.14	20,090	-14,700		
September 30	4,131.50	11,150	-8,940		
October 31	4,132.34	12,610	+1,460		
November 30	4,133.20	14,170	+1,560		
December 31, 2005	4,133.94	15,570	+1,400		
Calendar year 2005	-	-	-7,820		

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, 2004	216,630	-	
January 31, 2005	268,250	+51,620	
February 28	331,000	+62,750	
March 31	341,680	+10,680	
Anril 30	351,170	+9,490	
May 31	503,260	+152,090	
hune 30	606,780	+103,520	
July 31	501,590	-105,190	
August 3]	423,090	~78,500	
Sentember 30	353,590	-69,500	
October 31	362,060	+8,470	
November 30	400,150	+38,090	
December 31 2005	444,310	+44,160	
Calendar year 2005		+227,680	

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

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 (Raber-Lohr 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 Font 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 the San Juan River Basin in Colorado and discharge is through the Azotea tunnel into a tributary of the Rio Chama in the Rio Grande Basin in New Mexico. Construction completed in 1970.

Imported quantities, in acre-feet, 2005

	Pine River-		Williams			Treasure	
	Weminuche	Weminuche	Creek-			Pass	
	Pass	Pass	Squaw Pass	Tabor	Don La Font	diversion	Azotea
Month	ditch	ditch	ditch	ditch	ditches	ditch	tunnel
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	93
March	0	0	0	0	0	0	1930
April	0	0	0	0	0	ő	31 720
May	0	0	0	291	0	0	45 140
June	261	1221	225	481	0	235	50 710
July	169	929	273	149	53	102	12 250
August	0	481	107	75	0	0	3 780
September	25	75	27	44	0	0	3 420
October	19	0	0	33	0	0	4 870
November	0	0	0	0	0	0	7,870
December	0	0	0	0	0	0	0
Calendar year	474	2706	632	1073	53	337	155.249

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.

<u>Alamosa Airport</u> --Lai 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.

<u>Platoro Dam</u> --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.

<u>Nambe Falls Dam.</u>—Lat 35°51', long 105°54', in Santa Fe County at Nambe 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.

<u>Jemez Canyon Dam</u>, -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 fl.

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 Doña 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.

EVAPORATION AND PRECIPITATION

Evaporation and precipitation, in inches 2005

Station		Jan.	Feb	Mar	Apr	May	June	July	Aug	Sept.	Oct.	Nov	Dec	Annual
Alamosa	Evap.		-	-	-	-		-		-			-	-
Airport	Precip.	1.09	0.38	0.79	0.78	0.38	0.36	0.17	1.59	1.12	1.18	0.08	0.04	7,96
Platoro	Evap.	-	-		-		9.44	9.13	4.77	5.45	3.20	-	-	-
Dam	Precip.	-	-	•		-	1.09	0.69	3.38	3 26	3.99	-	-	-
Heron	Evap.		-	-	5.28	7 47	8.77	10.98	8.27	6.42	3.46		-	-
Dam	Precip.	2.87	3.15	1.49	1.93	1.26	0.32	0.51	1.63	1.20	2.50	0.06	0.31	17.23
El Vado	Evap.	-	-	-	5 65	7,78	8.76	10.18	7.40	6.26	3.32	-	-	-
Dam	Ртесір	2.17	2.22	0,98	1.65	0.84	0.21	0.33	2.25	1.18	2.12	0.16	0.25	14.36
Abiquiu	Evap.	-	-	-	7.03	9.88	12.23	13 40	9.45	7.97	4,53	-		-
Dam	Precip	1.47	0.62	1.09	1.05	0.43	0.28	0.11	1.28	2.16	0.70	0.05	0 11	9 35
Nambe	Evap	-	-	-	7.46	9.47	11 47	11.77	8.11	7.38	3.45	-	-	-
Canyon Dam	Precip.	2.33	2.17	0.41	1.50	0.74	0.87	0.64	2.54	3.77	1.69	0.12	0.01	16.79
Cochiti	Evap		-	-	8.07	10.76	12 60	14 17	10 67	8.84	4 70			
Dam	Precip	2.06	1.56	1.86	1.59	0 73	0.13	0.06	1.83	3 23	1 23	0.0	0.0	14.28
Jemez	Evap.		-	-	8 23	15.27	15.27	15.55	11,27	10.70	5.77	-	-	-
Canyon Dam	Precip	1.31	1.49	1.26	0.96	0.21	0.67	0,12	1.28	1.94	1.33	0.0	0.0	10.57
Elephant	Evap	3 83	331	7.96	12.05	15 19	18 41	18,28	10.89	11.29	7.29	6.59	5 32	120.41
Butte Dam	Precip	0.93	1.34	0.71	0.50	0,38	0.0	0.01	1,81	0.52	0.34	0.0	0.0	6 54
Caballo	Evap.	3_44	3 35	7.12	10.03	13.50	16.44	16,73	10.84	10 72	6.84	5,70	4 46	109.17
Dam	Precip.	1.23	1.54	0_48	.33	1.30	.02	0.30	2.12	0.31	1.52	0.0	0.0	9.15
State	Evap.	3.73	3.74	9.05	11.62	12 17	14 69	13 98	10.11	9.34	-	5 26	-	-
University	Precip	0 90	2.55	0.15	0 23	0.52	0.0	0.45	1.38	3.11	1.57	0.0	00	10.86

THIS PAGE BLANK





σ Ξ

ABOVE

RIO

THIS PAGE BLANK

RECEIVED SEP 2 3 1116 STATE PUBLICATIONS Colorado State Library