

FORTY-FIFTH ANNUAL REPORT OF THE ARKANSAS RIVER COMPACT ADMINISTRATION

**1993 Compact Year
November 1, 1992 to October 31, 1993**

THE ADMINISTRATION

FRANK G. COOLEY
Chairman and Representative of the United States

DARIES C. LILE,
CARL G. GENOVA, and JAMES G. ROGERS
for Colorado

DAVID L. POPE,
LOLA FOX, and RANDY HAYZLETT
for Kansas

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**TO THE PRESIDENT OF THE UNITED STATES,
THE GOVERNOR OF THE STATE OF KANSAS, AND
THE GOVERNOR OF THE STATE OF COLORADO,**

SIRS:

Pursuant to Article VIII of the Arkansas River Compact, the Arkansas River Compact Administration submits its Forty-Fifth Annual Report covering Compact Year 1993, November 1, 1992 through October 31, 1993, as follows.

1. MEMBERS of the ADMINISTRATION

- **Representative of the United States:**
Frank G. Cooley; Meeker, Colorado
- **Colorado Representatives:**
Daries C. Lile; Denver, Colorado
Carl G. Genova; Pueblo, Colorado
James G. Rogers; Lamar, Colorado
- **Kansas Representatives:**
David L. Pope; Topeka, Kansas
Lola Fox; Syracuse, Kansas
Randy Hayzlett; Lakin, Kansas

2. OFFICERS of the ADMINISTRATION (as elected Dec. 8, 1992)

- Chairman: Frank G. Cooley
- Vice Chairman: Carl G. Genova
- Treasurer: James G. Rogers
- Recording Secretary: Bernice Carr
- Operations Secretary: Steven J. Witte

3. STANDING COMMITTEES (as appointed Dec. 8, 1992)

- Administrative and Legal Committee:
Lola Fox (Chair), Daries C. Lile
- Engineering Committee:
David L. Pope (Chair), Carl G. Genova
- Operations Committee:
James G. Rogers (Chair), Randy Hayzlett
- The Representative of the United States, Frank G. Cooley, is an ex-officio member of all standing committees.

4. MEETINGS

- Annual Meetings: Lamar, Dec. 8, 1992 and Dec. 14, 1993.
- Special Meeting: Telephonic, May 12, 1993
- Engineering Committee: Lamar, Dec. 7, 1992 and Dec. 13, 1993
- Operations Committee: Lamar, Dec. 7, 1992 and Dec. 13, 1993
- Administrative and Legal Committee: Lamar, Dec. 13, 1993

Minutes of the Annual Meetings are not included in this annual report. Minutes (transcripts) were provided to the Administration and to each state previously. Copies of the minutes are also available upon request from the Administration office in Lamar.

The minutes of the Annual Meetings also contain summaries of the Engineering and Operations Committee meetings. In general, the Engineering Committee heard and considered, but took no action, on several proposals relating to amended operations of Trinidad Reservoir and John Martin Reservoir, as well as requests from Kansas for additional hydrologic data collection in the Arkansas Basin.

Mr. Daries C. Lile was appointed as the new Director of the Colorado Water Conservation Board, effective August 15, 1992, replacing David W. Walker. At the December 8, 1992 Annual Meeting Mr. Lile was introduced and welcomed to the Administration, and a brief resolution acknowledging Mr. Walker's service was adopted and included in the 1992 Annual Report.

At the December 8, 1992 Annual Meeting the Administration agreed to retain outside counsel, Mr. William Hillhouse of Denver, Colorado, to represent it in pending litigation. Case No. 92-1151 was filed in U.S. District Court, District of Colorado, by two Purgatoire River ditch companies (the Highland and the Nine Mile) against the Administration and other parties. At the May 12, 1993 Special Meeting the details of Mr. Hillhouse's employment contract were finalized.

At its December 13, 1993 meeting the Operations Committee reviewed the "Annual Report of the Operations Secretary Concerning the Operation of John Martin, 1993" (hereinafter "Oper. Sec. 93 Report") and recommended its acceptance and approval which was given by the full Administration at the December 14, 1993 Annual Meeting. Much of the data contained in this annual report is derived from that report.

5. FISCAL

Article VIII E.(1) of the Compact provides that expenses incident to the administration of the Compact not paid by the United States shall be borne by the states on the basis of 60% to Colorado and 40% to Kansas. Budgets for such expenses are prepared annually, and the states are assessed their proportionate share of the budgeted expenses at the beginning of each Fiscal Year (FY). The Administration's FY runs from July 1 to June 30. The fiscal affairs of the Administration for Compact Year 1993 involve portions of the Administration's FY 1992-93 (11/1/92 to 6/30/93) and FY 1993-94 (7/1/93 to 10/31/93). The Treasurer reported on the financial status of the Administration for the relevant periods of those fiscal years at the Annual Meetings held on December 8, 1992 and December 14, 1993.

At the December 8, 1992 Annual Meeting the following budget actions were taken:

- FY 1992-93 budget previously adopted was revised (2nd revision) with anticipated expenses of \$47,625;
 - FY 1993-94 budget previously adopted was revised (1st revision) to reflect anticipated expenses of \$53,200 and including a special assessment of \$13,000 for litigation purposes;
 - FY 1994-95 budget was adopted with anticipated expenses of \$52,050 and including a special assessment of \$10,000 for litigation purposes.
- Copies of these budgets are included in this report as Appendix A-1.

At the close of the fiscal year on June 30, 1993 the Administration had a cash balance of \$34,983 as shown in the FY 1992-93 Auditor's Report, which was accepted at the December 14, 1993 Annual Meeting and is included herein as Appendix A-2. The Administration had a cash balance of \$48,336 on December 10, 1993, as reported by the Treasurer at the Annual Meeting and shown on Appendix A-3.

6. FACTS ABOUT THE JOHN MARTIN RESERVOIR PROJECT

The John Martin Reservoir ("JMR") Project was built by the United States Army Corps of Engineers ("Corps of Engineers"). The project was authorized by Congress in the Flood Control Act of June 22, 1936 when the federal responsibility for flood control throughout the country was assigned to the Corps of Engineers. It is located on the Arkansas River, 58 miles upstream from the Colorado-Kansas Stateline and 18 miles upstream from the City of Lamar, Colorado. Construction of the project began in the fall of 1939, but work was suspended due to World War II from the spring of 1943 to the spring of 1946. The project was completed in October, 1948, at a cost of about \$15 million. The War Department Civil Appropriation Act of June 24, 1940 changed the name of the project from Caddoa Reservoir Project to John Martin Reservoir Project, in honor of the late Congressman John A. Martin of Colorado. It is operated by the United States Army Corps of Engineers, Albuquerque (New Mexico) District. The Corps stations a resident reservoir manager at Hasty, Colorado, adjacent to the project.

The JMR Project is a part of the comprehensive plan for the control of floods and the development of water resources in the Arkansas River Basin. A 1986 resurvey of the reservoir, in official use since February 1, 1988, shows 259,562 acre-feet of storage capacity above elevation 3851.87 for flood control protection of the fertile Arkansas River Valley downstream of the dam. The release of stored flood waters is planned so that, when combined with flows originating downstream from the dam, the capacity of the river channel will not be exceeded. Downstream flood damages prevented by JMR already exceed the cost of the project, and total project benefits to date have surpassed the \$117 million mark.

The reservoir also provides 348,683 acre-feet of storage space for conservation and recreation purposes below elevation 3851.87. JMR supplies water to irrigated lands as far downstream as Garden City, Kansas. The conservation pool can store up to 338,639 acre-feet of water for irrigation. Upon request of the Arkansas River Compact Administration, irrigation water for downstream water users is released by the Corps of Engineers through outlet works in the base of the dam.

Recreation and favorable fish and wildlife habitats are also provided by the project. In 1965 Congress authorized a permanent pool to improve habitat and recreation values at JMR. The Administration subsequently approved the use of up to 15,000 acre-feet of storage space at JMR for these purposes. Colorado provides water to the permanent pool pursuant to procedures adopted by the Administration. Reservoir lands are open to public use for outdoor recreation, water sports, fishing, boating, and

camping. During construction some embankment material was obtained from a 75-acre tract of land immediately downstream of the dam. This excavated area, averaging 12 feet deep, filled with water and formed Lake Hasty, now used for year-round recreation. North of the reservoir, a half-mile segment of the historic Santa Fe Trail has been enclosed by a fence and marked with an appropriate sign.

John Martin Dam consists of a concrete gravity structure 1,644 feet long and 120 feet high, and an earthfill structure 2,600 feet long. The concrete gravity structure contains a spillway controlled by sixteen 30 foot by 64 foot tainter gates and their operating machinery. There are earthen wing dams on either side of the main dam. The north wing dam is 3,880 feet long, connecting to the earthfill structure of the main dam at the north abutment. The south wing dam is 5,807 feet long and connects to the south end of the concrete structure of the main dam. A bituminous-surfaced roadway, 21 feet wide, extends along the crest of the north wing dam, main dam, and south wing dam. The overall length of the structure is 2.6 miles. Detailed project data, based on the 1986 resurvey, is shown below.

DAM

Total length, feet	13,945
Maximum height above streambed, feet	118
Width of roadway on dam, feet	21

SPILLWAY

Total length, including piers, feet	1,174
Crest gates, 30' x 64', each	16
Discharge capacity, cfs	639,200

OUTLET WORKS

Sluicing conduits, 6' x 7.5', each	4
Regulating conduits, 4' x 4', each	2
Total outlet capacity at elevation 3,851, cfs	14,700

RESERVOIR

Capacity at elevation 3,870, acre-feet	608,245
Flood control storage, acre-feet	259,562
Conservation and recreation storage, acre-feet	348,683
Water surface at spillway crest, acres	8,975
Water surface at top of conservation pool, acres	11,645
Water surface at top of flood control pool, acres	17,151
Drainage areas, square miles	18,915

7. COOPERATIVE STUDIES and ACTIVITIES

Article VIII.G.(1) of Arkansas River Compact requires the Administration to cooperate with the chief official of each of the states of Colorado and Kansas charged with the administration of water rights in their respective states, and with the Federal agencies in systematically determining and correlating the facts pertaining to the flow and diversion of the water of the Arkansas River and to the operation and siltation of John Martin Reservoir and other related structures. Article VIII.G.(2) requests the Director of the United States Geological Survey ("USGS"), the Commissioner of the United States Bureau of Reclamation, and the Chief of Engineers, United States Army, to cooperate and collaborate with the Administration and with the appropriate state officials in such determinations and correlations of stream flow and related data. Under the By-Laws of the Administration, these cooperative studies and activities are assigned to the Engineering Committee of the Administration.

During the year covered by this report the Administration has received excellent cooperation from all agencies referred to in the foregoing provisions of the Compact. The USGS has continued the operation of the compact gaging stations and the analysis of and compilation of the hydrologic data presented in this report and used in the administration of the Compact. The USGS briefed the Administration and, where appropriate, sought its input on a variety of water resource studies it was conducting in the Arkansas River basin. The USGS developed a proposal to conduct a cooperative study of transit losses and travel times along the Purgatoire River for the Administration's consideration. The Corps of Engineers continued to operate the conservation pool of John Martin Reservoir in accordance with the terms of the Compact and the resolutions and orders of the Administration. The Corps conducted new capacity surveys at John Martin and Trinidad Reservoirs during 1993. The Corps reported on continued efforts to reallocate excess space at Trinidad Reservoir, on the process for addressing channel capacity problems along the Purgatoire River downstream of the City of Trinidad, and on tentative plans to improve aquatic conditions at Lake Hasty.

8. WATER SUPPLY and RESERVOIR OPERATION

John Martin Reservoir ("JMR") is operated pursuant to the "Resolution Concerning an Operating Plan for John Martin Reservoir" ("Operating Plan" or "Operation Plan") adopted by the Compact Administration on April 24, 1980 and most recently revised on December 11, 1984. The Operating Plan establishes a system of water storage accounts at JMR into which reservoir inflows are distributed for physical release at a later date. These accounts are referred to as "Section II" and "Section III" accounts based on the section of the Operating Plan under which they were created.

More specifically, the Operating Plan created the following account system at JMR. Accounts established pursuant to Section II: Kansas account, Colorado Irrigation District 67 ditch accounts (Fort Bent Canal, Keesee Canal, Amity Canal, Lamar Canal, Hyde Canal, Marvel Ditch, X-Y/Graham Ditch, Buffalo Canal, Sisson-Stubbs Ditch), and Kansas transit loss account. Accounts established pursuant to Section III: Amity Great Plains Reservoir account, Fort Lyon Canal account, Las Animas Consolidated Ditch account. In addition to these accounts, water is also accounted for at JMR as conservation storage and in the permanent and the flood control pools.

An overview of general reservoir operations during Compact Year 1993 is summarized in Table 1. This table reflects actual reservoir operations showing the volumes of water physically stored, released, and evaporated at JMR between November 1, 1992 and October 31, 1993. During the year 129,863.33 acre-feet of water was stored in JMR, 17,895 acre-feet evaporated, and 83,978.20 acre-feet was released to downstream users. This operation resulted in an increase in contents for the year of almost 28,000 acre-feet. The remainder of this section provides a detailed description of reservoir operations.

The 1993 Arkansas River Compact Year and the winter season for JMR began at 0001 hours November 1, 1992 with 13,284.87 acre-feet in the reservoir distributed as shown in Table 2. Winter storage officially ended at 2400 hours on March 31, 1993 with a total inflow to the reservoir of 65,180.13 acre-feet. Conservation storage received 36,390.18 acre-feet of water which was held for subsequent release to the various Section II accounts after March 31, pursuant to the Operating Plan. An additional, 28,789.95 acre-feet was stored at JMR during the period November 15, 1992 to March 15, 1993 pursuant to Section III of the 1980 Operating Plan and the Pueblo Winter Water Storage Program ("WWSP"), as shown on Table 3.

TABLE 1 JOHN MARTIN RESERVOIR ANNUAL OPERATION [AF] COMPACT YEAR 1993					
Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov. '92	13,284.87	10,786.13	267.00	0.00	23,804.00
Dec.	23,804.00	16,078.00	3.00	0.00	39,879.00
Jan. '93	39,879.00	11,287.00	0.00	0.00	51,166.00
Feb.	51,166.00	11,752.00	62.00	0.00	62,856.00
Mar.	62,856.00	15,277.00	1,319.00	0.00	76,814.00
Winter Subtotal		65,180.13	1,651.00	0.00	
Apr.	76,814.00	18,649.26	2,071.00	13,193.37	80,198.89
May	80,198.89	8,989.25	2,183.00	8,152.14	78,853.00
June	78,853.00	27,742.63	3,797.00	11,631.86	91,166.77
July	91,166.77	4,852.19	3,379.00	30,351.77	62,288.19
Aug.	62,288.19	3,171.83	2,256.00	9,714.98	53,489.04
Sept.	53,489.04	0.00	1,466.00	5,004.86	47,018.18
Oct. '93	47,018.18	1,278.04	1,092.00	5,929.22	41,275.00
Summer Subtotal		64,683.20	16,244.00	83,978.20	
Year Total		129,863.33	17,895.00	83,978.20	

NOTES

[1] Peak contents: 98,151 AF; reached on June 23, 1993.

[2] Source: Oper. Sec. 93 Report Tables I, II, VI, and VIII (includes City of Lamar temporary sub-account operations).

TABLE 2 JOHN MARTIN RESERVOIR CONTENTS DISTRIBUTION NOVEMBER 1, 1992 [AF] BEGIN COMPACT YEAR 1993		
Storage Component	Subtotal	Contents
Conservation Storage		0.00
Agreement Accounts		
Section II Agreement Accounts		
Kansas Account	3,894.95	
Dist. 67 Accounts	2,046.69	
Transit Loss Account	5,592.54	
Subtotal Section II	11,534.18	
Section III Agreement Accounts		
Amity	0.00	
Ft. Lyon	0.00	
Las Animas Cons.	0.00	
Subtotal Section III	0.00	
Total All Accounts	11,534.18	11,534.18
Flood Pool		0.00
Permanent Pool		1,750.69
Total Reservoir Contents		13,284.87

NOTES

[1] Source: Oper. Sec. 93 Report, November accounting sheets, and Oper. Sec. 92 Report, Table XIII.

TABLE 3 JOHN MARTIN RESERVOIR SECTION III ACCOUNTS WINTER INFLOW DISTRIBUTION [AF] (NOV. 15, 1992 - MAR. 15, 1993)					
Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov. '92	0.00	3,668.58	9.22	0.00	3,659.36
Dec.	3,659.36	8,111.52	0.48	0.00	11,770.40
Jan. '93	11,770.40	5,750.08	0.00	0.00	17,520.48
Feb.	17,520.48	6,516.99	22.25	0.00	24,015.22
Mar.	24,015.22	4,742.78	211.54	28,546.46	0.00
Winter Total		28,789.95	243.49	28,546.46	

NOTES:

[1] Inflow stored at JMR during the period Nov. 15, 1992 through March 15, 1993 pursuant to Section III of the 1980 Operating Plan and the Pueblo WWSP.

[2] Not a physical release from JMR, WWSP water allocated to individual Section III Operating Plan accounts on March 16, 1993 as follows:

Account	Total Allocation	Transfer to transit loss	Net to Account
Amity	21,588.65	7,556.03	14,032.62
Ft Lyon	2,949.89	1,032.46	1,917.43
Las Animas	4,007.92	1,402.77	2,605.15
Total	28,546.46	9,991.26	18,555.20

[3] Source: Oper. Sec. 93 Report, Table II, and monthly accounting sheets for Section III account distribution.

No water was bypassed through or released from the reservoir during the winter season. Several transfers into and between accounts did occur. These transfers adjusted the volume of water owned by individual entities, but did not change the total contents of JMR. On November 1, 1992 the excess water in the transit loss account, 5,586.65 acre-feet, was reallocated to the Kansas and District 67 Section II accounts. This reallocation of excess transit loss account water was adjusted by reducing the Amity's share to compensate the other accounts for an inadvertent failure to properly calculate the 35% transit loss account charge on May 1992 inflows to the Amity Canal's Section III account.

On March 16, 1993 the 28,546.46 acre-feet of WWSP water held in the JMR conservation pool was distributed into the appropriate Section III agreement accounts. Following this distribution, 35% of each individual Section III account inflow was reallocated to the transit loss account, a total of 9,991.26 acre-feet. After these actions, the allocation of the reservoir contents at the conclusion of the winter compact storage period on March 31, 1993 was as shown on Table 4. The total contents on March 31, as rounded and published by the USGS, was 76,900 acre-feet which agrees closely with the value of 76,814 acre-feet measured by the Corps of Engineers and used by the Operations Secretary in his 1993 Report.

TABLE 4 JOHN MARTIN RESERVOIR CONTENTS DISTRIBUTION MARCH 31, 1993 [AF] COMPACT YEAR 1993		
<u>Storage Component</u>	<u>Subtotal</u>	<u>Contents</u>
Conservation Storage		35,750.46
Agreement Accounts		
Section II Agreement Accounts		
Kansas Account	5,483.24	
Dist. 67 Accounts	5,649.33	
Transit Loss Account	<u>9,884.45</u>	
Subtotal Section II	21,017.02	
Section III Agreement Accounts		
Amity	13,882.58	
Ft. Lyon	1896.93	
Las Animas Cons.	<u>2,577.29</u>	
Subtotal Section III	<u>18,356.80</u>	
Total All Accounts	39,373.82	39,373.82
Flood Pool		0.00
Permanent Pool		<u>1,689.72</u>
Total Reservoir Contents		76,814.00
NOTES		
[1] Source: Oper. Sec. 93 Report, March accounting sheets.		

The summer storage season began at 0001 hours April 1, 1993. Transfer of 35,545.87 acre-feet of winter conservation storage into the Section II accounts began on April 1, 1993 in accordance with the Operation Plan and was completed on April 16, 1993. Conservation storage operations are summarized in Table 5A and detailed in Appendix B-9. During the period April 1 to April 25, 18,649.26 acre-feet of summer conservation storage was accumulated. After a reduction for evaporation this water was also distributed to the Section II accounts. Kansas received 40% of the April conservation storage transfers (21,613.35 acre-feet) and the Colorado District 67 ditches received 60% (32,428.09 acre-feet), a total of 54,041.44 acre-feet.

Three brief periods of high runoff (May 31-June 7, August 29-30, and October 29-31) resulted in additional summer inflow of 10,313.59 acre-feet to conservation storage. After reduction for evaporation, 10,312.86 acre-feet was subsequently transferred to the Section II accounts, Kansas receiving 40% (4,125.15 acre-feet), and Colorado District 67 ditches 60% (6,187.71 acre-feet). No other inflows to conservation storage occurred during the remainder of the year. With moderate runoff there were no flood control operations during Compact Year 1993, as reflected in Table 5B, Flood Pool Operations. Peak contents in JMR of 98,151 acre-feet was reached on June 23, 1993.

TABLE 5A JOHN MARTIN RESERVOIR CONSERVATION STORAGE OPERATION [AF] COMPACT YEAR 1993					
Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov. '92	0.00	7,117.55	49.73	0.00	7,067.82
Dec.	7,067.82	7,966.48	0.90	0.00	15,033.40
Jan. '93	15,033.40	5,536.92	0.00	0.00	20,570.32
Feb.	20,570.32	5,235.01	25.51	0.00	25,779.82
Mar.	25,779.82	10,534.22	563.58	0.00	35,750.46
Winter Subtotal		38,390.18	639.72	0.00	
Apr.	35,750.46	18,649.26	358.28	54,041.44	0.00
May	0.00	942.77	0.00	909.10	33.67
June	33.67	6,569.42	0.03	6,603.06	0.00
July	0.00	0.00	0.00	0.00	0.00
Aug.	0.00	1,523.36	0.00	1,523.36	0.00
Sept.	0.00	0.00	0.00	0.00	0.00
Oct. '93	0.00	1,278.04	0.70	1,277.34	0.00
Summer Subtotal		28,862.85	359.01	64,354.30	
Year Total		65,353.03	998.73	64,354.30	

NOTES:
 [1] Not a physical release from JMR, transferred to operating plan accounts.
 [2] Source: Oper. Sec. 93 Report, Table I.

TABLE 5B JOHN MARTIN RESERVOIR FLOOD POOL OPERATION [AF] COMPACT YEAR 1993					
Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov. '92	0.00	0.00	0.00	0.00	0.00
Dec.	0.00	0.00	0.00	0.00	0.00
Jan. '93	0.00	0.00	0.00	0.00	0.00
Feb.	0.00	0.00	0.00	0.00	0.00
Mar.	0.00	0.00	0.00	0.00	0.00
Winter Subtotal		0.00	0.00	0.00	
Apr.	0.00	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00	0.00
June	0.00	0.00	0.00	0.00	0.00
July	0.00	0.00	0.00	0.00	0.00
Aug.	0.00	0.00	0.00	0.00	0.00
Sept.	0.00	0.00	0.00	0.00	0.00
Oct. '93	0.00	0.00	0.00	0.00	0.00
Summer Subtotal		0.00	0.00	0.00	
Year Total		0.00	0.00	0.00	

NOTES
 [1] No flood pool operations in CY 1993.
 [2] Source: Oper. Sec. 93 Report, Table IX.

During the summer storage season 26,040.92 acre-feet was stored in the Amity Canal's Section III account pursuant to the Great Plains Reservoir ("GPR") decree. Another 1,648.47 acre-feet was temporarily stored in a sub-account of the Ft. Bent Canal account for reregulation of the City of Lamar's Fryingpan-Arkansas Project transmountain water under procedures approved by the Administration and described in the Operations Secretary Report. In addition, 8,030.96 acre-feet of transmountain water obtained by the Colorado Division of Wildlife was stored in the permanent pool at JMR during the summer season. Combined operations of all the accounts established by Sections II and III of the Operating Plan are shown in Table 6. Operations of the Section II and III accounts during Compact Year 1993 are separately shown in Tables 7 and 8.

TABLE 6 JOHN MARTIN RESERVOIR AGREEMENT ACCOUNTS OPERATION [AF] COMPACT YEAR 1993					
<u>Month</u>	<u>Contents</u> <u>Begin Month</u>	<u>Inflow to</u> <u>Storage</u>	<u>Evaporation</u>	<u>Storage</u> <u>Release</u>	<u>Contents</u> <u>End Month</u>
Nov. '92	11,534.18	0.00	180.64	0.00	11,353.54
Dec.	11,353.54	0.00	1.41	0.00	11,352.13
Jan. '93	11,352.13	0.00	0.00	0.00	11,352.13
Feb.	11,352.13	0.00	12.35	0.00	11,339.78
Mar.	11,339.78	28,546.46	512.42	0.00	39,373.82
Winter Subtotal		28,546.46	706.82	0.00	
Apr.	39373.82	54041.44	1671.97	13193.37	78549.92
May	78549.92	8955.58	2135.31	8152.14	77218.05
June	77218.05	24597.50	3701.47	11631.86	86482.22
July	86482.22	0.00	3133.86	30351.77	52996.59
Aug.	52996.59	3171.83	1899.38	9714.98	44554.06
Sept.	44554.06	0.00	1212.26	5004.86	38336.94
Oct. '93	38336.94	1277.34	872.52	5929.22	32812.54
Summer Subtotal		92,043.69	14,626.77	83,978.20	
Year Total		120,590.15	15,333.59	83,978.20	

NOTES

- [1] Table includes the sum of all Section II and III accounts and City of Lamar temporary operations with Fry-Ark water using the Ft. Bent Canal.
 [2] Transfers between accounts are neither an inflow or a release for Table 6 values.
 [3] Source: Oper. Sec. 93 Report, Table VI and monthly accounting sheets.

TABLE 7

**JOHN MARTIN RESERVOIR
SECTION II ACCOUNTS OPERATION [AF]
COMPACT YEAR 1993**

<u>Month</u>	<u>Contents Begin Month</u>	<u>Inflow to Storage</u>	<u>Evaporation</u>	<u>Storage Release</u>	<u>Contents End Month</u>
Nov. '92	11,534.18	0.00	180.64	0.00	11,353.54
Dec	11,353.54	0.00	1.41	0.00	11,352.13
Jan. '93	11,352.13	0.00	0.00	0.00	11,352.13
Feb.	11,352.13	0.00	12.35	0.00	11,339.78
Mar.	11,339.78	9,991.26	314.02	0.00	21,017.02
Winter Subtotal		9,991.26	508.42	0.00	
Apr.	21,017.02	54,041.44	1,229.86	12,091.70	61,736.90
May	61,736.90	3,725.36	1,657.37	6,968.58	56,836.31
June	56,836.31	12,970.26	2,537.62	11,631.86	55,637.09
July	55,637.09	0.00	1,776.37	28,714.81	25,145.91
Aug.	25,145.91	3,171.83	889.04	5,934.21	21,494.49
Sept.	21,494.49	0.00	604.52	601.89	20,288.08
Oct. '93	20,288.08	1,277.34	501.86	581.88	20,481.68
Summer Subtotal		75,186.23	9,196.64	66,524.93	
Year Total		85,177.49	9,705.06	66,524.93	

NOTES

- [1] Sect. II accounts: Kansas, see Table 9; transit loss, see Table 11; District 67 ditches, see Table 12A; City of Lamar, included as part of District 67.
 [2] Inflows include 19,174.72 AF of water transferred to transit loss account from Section III accounts, see Tables 8 and 11.
 [3] Inflows and releases do not include transfers between various Section II accounts.
 [4] Source: Oper. Sec. 93 Report, Table VI.

TABLE 8

**JOHN MARTIN RESERVOIR
SECTION III ACCOUNTS OPERATION [AF]
COMPACT YEAR 1993**

<u>Month</u>	<u>Contents Begin Month</u>	<u>Inflow to Storage</u>	<u>Evaporation</u>	<u>Storage Release</u>	<u>Contents End Month</u>
Nov. '92	0.00	0.00	0.00	0.00	0.00
Dec	0.00	0.00	0.00	0.00	0.00
Jan. '93	0.00	0.00	0.00	0.00	0.00
Feb.	0.00	0.00	0.00	0.00	0.00
Mar.	0.00	28,546.46	198.40	9,991.26	18,356.80
Winter Subtotal		28,546.46	198.40	9,991.26	
Apr.	18,356.80	0.00	442.11	1,101.67	16,813.02
May	16,813.02	8,046.48	477.94	3,999.82	20,381.74
June	20,381.74	17,994.44	1,163.85	6,367.20	30,845.13
July	30,845.13	0.00	1,357.49	1,636.96	27,850.68
Aug.	27,850.68	0.00	1,010.34	3,780.77	23,059.57
Sept.	23,059.57	0.00	607.74	4,402.97	0.00
Oct. '93	0.00	0.00	370.66	5,347.34	0.00
Summer Subtotal		26,040.92	5,430.13	26,656.73	
Year Total		54,587.38	5,628.53	36,627.99	

NOTES

- [1] Winter inflow stored at JMR per Pueblo WWSP, summer inflow per GPR decree.
 [2] Releases include 9,991.26 AF [March] and 9,183.46 AF [summer] [35% of inflow] transferred to transit loss account, a total of 19,174.72 AF.
 [3] Inflows and releases do not include transfers between Section III accounts.
 [4] Source: Oper. Sec. 93 Report, Tables III, IV, V, and monthly accounting sheets.

Kansas called for release of its entire account during a single run from June 24 to July 28, 1993 resulting in a release of 27,298.33 acre-feet. A separate transit loss account release of 1,953.15 acre-feet was made to support deliveries of Kansas account water to the Stateline. Operations of the Kansas and transit loss accounts are summarized in Tables 9, 10, and 11, and detailed on a daily basis in Appendices B-12 and B-13.

The procedure used to calculate deliveries of requested releases is described in an annual agreement between the states. The Stateline flow attributed to Kansas demands for releases from JMR is calculated using a lag/rundown period to account for the transit time between JMR and the Stateline. Generally, deliveries begin 2 days after the release from JMR commences and continue for up to 7 days following the end of the release. The agreement for 1993, dated Dec. 8, 1992, states in part:

- "3. Credit for delivery to Kansas will stop at the Stateline 7 days after the end of the run at JMR. No credit for over delivery will be determined for a run that exceeds 100% of the Kansas account release.
4. When the daily average flow at the Stateline exceeds the demand, delivery will be credited at not to exceed 105% of the demand."

The total Stateline flow on days of Kansas demands, determined pursuant to the annual agreement by the Operations Secretary using provisional data was 34,841.00 acre-feet. This flow was revised to 34,619 acre-feet when USGS discharge records were finalized and published. Of this Stateline flow, 27,298.33 acre-feet was determined pursuant to the annual agreement to be the credited delivery from the Kansas account.

The operation of the transit loss account in Compact Year 1993 is shown in Table 11. Inflows to the transit loss account are by transfer of 35% of Section III account inflows, as required by the Operating Plan. Releases were made as necessary to support deliveries to the Stateline during the period of Kansas demand. The November 1992 release was the reallocation of excess transit loss account water to the other Section II accounts, and was not a physical release from the reservoir. The ratio used for this reallocation was modified to compensate the other accounts for an inadvertent error in failing to charge the Amity Canal's Section III account the 35% transit loss account charge on inflows that it received in May 1992.

TABLE 9 JOHN MARTIN RESERVOIR KANSAS ACCOUNT OPERATION [AF] COMPACT YEAR 1993					
<u>Month</u>	<u>Contents</u> <u>Begin Month</u>	<u>Inflow to</u> <u>Storage</u>	<u>Evaporation</u>	<u>Storage</u> <u>Release</u>	<u>Contents</u> <u>End Month</u>
Nov. '92	3894.95	1784.17	87.08	0.00	5592.04
Dec.	5592.04	0.00	0.70	0.00	5591.34
Jan. '93	5591.34	0.00	0.00	0.00	5591.34
Feb.	5591.34	0.00	6.07	0.00	5585.27
Mar.	5585.27	0.00	102.03	0.00	5483.24
Winter Subtotal		1,784.17	195.88	0.00	
Apr.	5483.24	21613.35	456.97	0.00	26639.62
May	26639.62	363.64	770.66	0.00	26232.60
June	26232.60	2641.23	1121.56	5256.28	22495.99
July	22495.99	0.00	453.94	22042.05	0.00
Aug.	0.00	609.34	0.78	0.00	608.56
Sept.	608.56	0.00	17.30	0.00	591.26
Oct. '93	591.26	510.94	14.90	0.00	1087.30
Summer Subtotal		25,738.50	2,836.11	27,298.33	
Year Total		27,522.67	3,031.99	27,298.33	

NOTES

[1] November inflow is transfer of Kansas share of excess transit loss account water (11/35 plus additional amount to compensate for error in charging 35% against Amity inflow in May 1992).

[2] Source: Oper. Sec. 93 Report, monthly accounting sheets.

TABLE 10 JOHN MARTIN RESERVOIR KANSAS DEMANDS and RELEASES [AF] COMPACT YEAR 1993				
<u>Month</u>	<u>Demand/</u> <u>Release</u>	<u>Transit Loss</u> <u>Acct. Release</u>	<u>Stateline</u> <u>Flow</u>	<u>Credited</u> <u>Delivery</u>
Nov. '92	0.00	0.00	0	0
Dec.	0.00	0.00	0	0
Jan. '93	0.00	0.00	0	0
Feb.	0.00	0.00	0	0
Mar.	0.00	0.00	0	0
Winter Subtotal	0.00	0.00	0	0
Apr.	0.00	0.00	0	0
May	0.00	0.00	0	0
June	5,256.28	1,809.95	4,401	4,024
July	22,042.05	143.20	28,690	23,274
Aug.	0.00	0.00	1,750	0
Sept.	0.00	0.00	0	0
Oct. '93	0.00	0.00	0	0
Summer Subtotal	27,298.33	1,953.15	34,841	27,298
Year Total	27,298.33	1,953.15	34,841	27,298

NOTES

[1] Stateline flow equals sum of Frontier Ditch and Arkansas River at Coolidge, Kansas gaged flows on days of Kansas demands, adjusted for transit times and "rundown" period.

[2] Source: Oper. Sec. 93 Report, Table XI, XII, and XIII.

TABLE 11

**JOHN MARTIN RESERVOIR
TRANSIT LOSS ACCOUNT SUMMARY [AF]
COMPACT YEAR 1993**

Month	Contents <u>Begin Month</u>	Inflow to <u>Storage</u>	<u>Evaporation</u>	Storage <u>Release</u>	Contents <u>End Month</u>
Nov. '92	5,592.54	0.00	5.89	5,586.65	0.00
Dec.	0.00	0.00	0.00	0.00	0.00
Jan. '93	0.00	0.00	0.00	0.00	0.00
Feb.	0.00	0.00	0.00	0.00	0.00
Mar.	0.00	9,991.26	106.81	0.00	9,884.45
Winter Subtotal		9,991.26	112.70	5,586.65	
Apr.	9,884.45	0.00	238.30	0.00	9,646.15
May	9,646.15	2,816.26	289.73	0.00	12,172.68
June	12,172.68	6,367.20	667.94	1,809.95	16,061.99
July	16,061.99	0.00	715.13	143.20	15,203.66
Aug.	15,203.66	0.00	583.51	0.00	14,620.15
Sept.	14,620.15	0.00	415.14	0.00	14,205.01
Oct. '93	14,205.01	0.00	357.93	0.00	13,847.08
Summer Subtotal		9,183.46	3,267.68	1,953.15	
Year Total		19,174.72	3,380.38	7,539.80	

NOTES

- [1] Inflows are transfers from Section III accounts.
 [2] Transit loss account totals included with Section II accounts in Table 7.
 [3] Nov. 1992 release is reallocation to Kansas account (11/35) and to Colorado ditch accounts (24/35) pursuant to the 1980 Operating Plan and annual agreement.
 [4] Source: Oper. Sec. 93 Report, Table VII.

Combined operations of the Section II accounts for the ditches in Irrigation District 67 of Colorado are shown in Table 12A. The data in Table 12A includes amounts resulting from reregulation of the City of Lamar's Fryingpan-Arkansas Project transmountain water in a temporary Ft. Bent Canal sub-account. Between August 7 and October 7, 1993, 1,648.47 acre-feet was delivered into this sub-account, 57.05 acre-feet was evaporated, and 1,591.42 acre-feet was released from JMR to the Ft. Bent Canal for recharge of the city's well field. Combined Section III accounts operations were previously shown in Table 8. Total releases from all Section II and III accounts to Colorado ditches during the 1993 Compact Year totaled 54,726.72 acre-feet, as summarized in Table 12B.

**TABLE 12A JOHN MARTIN RESERVOIR
COLORADO DIST. 67 DITCHES, SECTION II ACCOUNTS OPERATION [AF]
COMPACT YEAR 1993**

<u>Month</u>	<u>Contents Begin Month</u>	<u>Inflow to Storage</u>	<u>Evaporation</u>	<u>Storage Release</u>	<u>Contents End Month</u>
Nov. '92	2,046.69	3,802.48	87.67	0.00	5,761.50
Dec.	5,761.50	0.00	0.71	0.00	5,760.79
Jan. '93	5,760.79	0.00	0.00	0.00	5,760.79
Feb.	5,760.79	0.00	6.28	0.00	5,754.51
Mar.	5,754.51	0.00	105.18	0.00	5,649.33
Winter Subtotal		3,802.48	199.84	0.00	
Apr.	5,649.33	32,428.09	534.59	12,091.70	25,451.13
May	25,451.13	545.46	596.98	6,968.58	18,431.03
June	18,431.03	3,961.83	748.12	4,565.63	17,079.11
July	17,079.11	0.00	607.30	6,529.56	9,942.25
Aug.	9,942.25	2,562.49	304.75	5,934.21	6,265.78
Sept.	6,265.78	0.00	172.08	601.89	5,491.81
Oct. '93	5,491.81	766.40	129.03	581.88	5,547.30
Summer Subtotal		40,264.27	3,092.85	37,273.45	
Year Total		44,066.75	3,292.69	37,273.45	

NOTES

- [1] Includes City of Lamar temporary sub-account.
 [2] November inflow is Colorado share of excess transit loss account water (24/35 less amount deducted from Amity's share to compensate for error in charging 35% against Amity inflow in May 1992).
 [3] Transfers between ditch accounts, if any, not included as an inflow or release.
 [4] Source: Oper. Sec. 93 Report, monthly accounting sheets.

**TABLE 12B JOHN MARTIN RESERVOIR
SUMMARY OF RELEASES TO COLORADO DITCHES [AF]
COMPACT YEAR 1993**

<u>Month</u>	<u>Release from Sec. II Acct.</u>	<u>Release from Sec. III Acct.</u>	<u>Total Colorado Release to River</u>
Nov. '92	0.00	0.00	0.00
Dec.	0.00	0.00	0.00
Jan. '93	0.00	0.00	0.00
Feb.	0.00	0.00	0.00
Mar.	0.00	0.00	0.00
Winter Subtotal	0.00	0.00	0.00
Apr.	12,091.70	1,101.67	13,193.37
May	6,968.58	1,183.56	8,152.14
June	4,565.63	0.00	4,565.63
July	6,529.56	1,636.96	8,166.52
Aug.	5,934.21	3,780.77	9,714.98
Sept.	601.89	4,402.97	5,004.86
Oct. '93	581.88	5,347.34	5,929.22
Summer Subtotal	37,273.45	17,453.27	54,726.72
Year Total	37,273.45	17,453.27	54,726.72

NOTES

- [1] Includes release of City of Lamar's transmountain Fry-Ark water at 1,591.42 AF.
 [2] Source: Oper. Sec. 93 Report, Table X.

Slightly more than 8,000 acre-feet of water was delivered into the JMR permanent pool from 10,227 acre-feet of transmountain sources obtained by the Colorado Division of Wildlife during Compact Year 1993. The pool contained 8,462.46 acre-feet at the close of the year as shown in Table 13.

TABLE 13 JOHN MARTIN RESERVOIR PERMANENT POOL OPERATION [AF] COMPACT YEAR 1993					
<u>Month</u>	<u>Contents</u> <u>Begin Month</u>	<u>Inflow to</u> <u>Storage</u>	<u>Evaporation</u>	<u>Storage</u> <u>Release</u>	<u>Contents</u> <u>End Month</u>
Nov. '92	1,750.69	0.00	27.41	0.00	1,723.28
Dec.	1,723.28	0.00	0.21	0.00	1,723.07
Jan. '93	1,723.07	0.00	0.00	0.00	1,723.07
Feb.	1,723.07	0.00	1.89	0.00	1,721.18
Mar.	1,721.18	0.00	31.46	0.00	1,689.72
Winter Subtotal		0.00	60.97	0.00	
Apr.	1,689.72	0.00	40.75	0.00	1,648.97
May	1,648.97	0.00	47.69	0.00	1,601.28
June	1,601.28	3,178.77	95.50	0.00	4,684.55
July	4,684.55	4,852.19	245.14	0.00	9,291.60
Aug.	9,291.60	0.00	356.62	0.00	8,934.98
Sept.	8,934.98	0.00	253.74	0.00	8,681.24
Oct. '93	8,681.24	0.00	218.78	0.00	8,462.46
Summer Subtotal		8,030.96	1,288.22	0.00	
Year Total		8,030.96	1,319.19	0.00	
NOTES					
[1] Source: Oper. Sec. 93 Report, Table VIII					

Compact Year 1993 ended at 2400 hours on October 31, 1993. JMR contained 41,275 acre-feet, as determined by the Operations Secretary accounting, which agrees exactly with the value later rounded to 41,300 acre-feet and subsequently published by the USGS. JMR contained approximately 28,000 acre-feet more water than at the beginning of Compact Year 1993. The final contents were allocated as shown in Table 14.

The technical data for this section was compiled by the staff of the Colorado Water Conservation Board using data from the Annual Report of the Operations Secretary Concerning the Operation of John Martin, the USGS, the Colorado Division of Water Resources, the Kansas Division of Water Resources, and the minutes and correspondence of the Arkansas River Compact Administration.

TABLE 14 JOHN MARTIN RESERVOIR CONTENTS DISTRIBUTION OCTOBER 31, 1993 [AF] END COMPACT YEAR 1993		
<u>Storage Component</u>	<u>Subtotal</u>	<u>Contents</u>
Conservation Storage		0.00
Agreement Accounts		
Section II Agreement Accounts		
Kansas Account	1,087.30	
Dist. 67 Accounts	5,547.30	
Transit Loss Account	<u>13,847.08</u>	
Subtotal Section II	20,481.68	
Section III Agreement Accounts		
Amity	12,330.86	
Ft. Lyon	0.00	
Las Animas Cons.	<u>0.00</u>	
Subtotal Section III	<u>12,330.86</u>	
Total All Accounts	32,812.54	32,812.54
Flood Pool		0.00
Permanent Pool		<u>8,462.46</u>
Total Reservoir Contents		41,275.00
NOTES		
[1] Source: Oper. Sec. 93 Report, Table XIII.		

9. GAGING STATIONS

The USGS operates eight compact gaging stations under their "Collection of Basic Records" program and through funding agreements with the Corps of Engineers and the Administration. Data from each of these stations is presented in Appendix B. Since 1992 all compact gaging stations have been linked via satellite for real time data collection. The availability of this data has facilitated improved water management in the basin. For federal fiscal year 1992-1993 (October 1, 1992 to September 30, 1993) the Administration approved cooperative agreements with the Kansas and Colorado Districts of the USGS in the amount of \$28,600. The Administration was assessed one half of this amount, or \$14,300. These funds were used for supplemental stage and flow measurements at compact gaging sites in Colorado and Kansas, the operation of one station (Arkansas River near Granada, Colorado), and the preparation of records for this annual report.

In general, streamflow records of satisfactory accuracy were obtained at the Compact stations. Emphasis was again placed on obtaining more field data, particularly in the form of discharge measurements at various stages of flow. Additional measurements were also made by personnel of the Colorado State Engineer which were incorporated into the records as appropriate. The only significant problem at the stations during the year was the continuing unstable channels and controls.

10. FINDINGS of FACT by the ADMINISTRATION

There were no findings of fact made by the Administration during Compact Year 1993.

11. INVESTIGATIONS

There were no investigations undertaken by the Administration during Compact Year 1993.

12. CHRONOLOGY of EVENTS. KANSAS v. COLORADO LITIGATION

During Compact Year 1993 both states filed concluding briefs in the liability phase of the litigation with the Special Master, Arthur L. Littleworth.

13. RESOLUTION HONORING GERALD E. HILMES

**RESOLUTION
OF THE
ARKANSAS RIVER COMPACT ADMINISTRATION**

DECEMBER 14, 1993

**TO
GERALD E. HILMES**

WHEREAS, Gerald E. Hilmes has worked with other members of the Arkansas River Compact for over twenty years; and

WHEREAS, Mr. Hilmes has faithfully carried out his duties for the Engineering Committee; and

WHEREAS, Mr. Hilmes' dedication to diligently carry out his assignments regarding various aspects of the Compact has earned the respect of the full membership of the Compact;

NOW, THEREFORE, BE IT RESOLVED that the Arkansas River Compact Administration would like to acknowledge its gratitude and appreciation to Gerald E. Hilmes for his service not only to the citizens of the State of Kansas but also, through his work for the Compact, to the citizens of the State of Colorado as well.

/s/

Frank G. Cooley, Chairman
Arkansas River Compact Administration

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Appendix A-1

FY 1992-93 BUDGET 2nd REVISED (July 1, 1992 - June 30, 1993)

EXPENDITURES

A. CONTRACTUAL SERVICES

1. Treasurer	\$ 2,000
2. Recording Secretary	2,000
3. Operations Secretary	6,100
4. Auditor's Fees	400
5. Court Reporter's Fees	<u>1,000</u>

\$11,500

B. GAGING STATIONS

1. U.S. Geological Survey Cooperative Agreements for federal FY 1992	\$13,225
2. State of Colorado Satellite System	<u>8,000</u>

\$21,225

C. OPERATING EXPENSES

1. Treasurer's Bond	\$ 100
2. Annual Reports (Printing 1988 & 1989)	5,000
3. Telephone	3,000
4. Office Supplies/Postage	400
5. Printing/Copying	300
6. Meetings	500
7. Travel	0
8. Rent	<u>600</u>

\$ 9,900

D. EQUIPMENT

0

E. CONTINGENCY

1,000

F. LITIGATION

4,000

\$47,625

INCOME

A. ASSESSMENTS

1. Colorado (60%)	\$23,400
2. Kansas (40%)	<u>15,600</u>

\$39,000

B. INTEREST EARNINGS

1,000

C. MISCELLANEOUS

0

\$40,000

EXPENDITURES FROM SURPLUS

\$7,625

First adopted by the Arkansas River Compact Administration at its December 11, 1990 Annual Meeting, revised at its December 10, 1991 Annual Meeting, and revised again at its December 8, 1992 Annual Meeting.

/s/
James Rogers, Treasurer

Jan. 27, 1993
Date

Appendix A-1

FY 1993-94 BUDGET 1st REVISED (July 1, 1993 - June 30, 1994)

EXPENDITURES

A. SALARIES AND CONTRACTUAL SERVICES

1. Treasurer	\$ 2,000
2. Recording Secretary	2,000
3. Operations Secretary	6,100
4. Auditor's Fees	400
5. Court Reporter's Fees	<u>1,000</u>

\$11,500

B. GAGING STATIONS

1. U.S. Geological Survey Cooperative Agreements for federal FY 1993	\$14,300
2. State of Colorado Satellite System	<u>8,000</u>

\$22,300

C. OPERATING EXPENSES

1. Treasurer's Bond	\$ 100
2. Annual Reports (Printing 1990-92)	7,500
3. Telephone	2,000
4. Office Supplies/Postage	400
5. Printing/Copying	300
6. Meetings	500
7. Travel	0
8. Rent	<u>600</u>

\$11,400

D. EQUIPMENT

0

E. CONTINGENCY

1,000

F. LITIGATION

7,000

\$53,200

INCOME

A. ASSESSMENTS

1. Colorado (60%)	\$24,000
2. Kansas (40%)	<u>16,000</u>

\$40,000

B. SPECIAL ASSESSMENTS

1. Colorado (60%)	\$7,800
2. Kansas (40%)	<u>5,200</u>

13,000

C. INTEREST EARNINGS

500

D. MISCELLANEOUS

0

\$53,500

EXPENDITURES FROM SURPLUS

\$ <\$300>

Adopted by the Arkansas River Compact Administration at its December 10, 1991 Annual Meeting, and revised at its December 8, 1992 Annual Meeting.

/s/
James Rogers, Treasurer

Jan. 27, 1993
Date

Appendix A-1

FY 1994-95 BUDGET (July 1, 1994 - June 30, 1995)

EXPENDITURES

A. SALARIES AND CONTRACTUAL SERVICES

1. Treasurer	\$ 2,000
2. Recording Secretary	2,000
3. Operations Secretary	6,100
4. Auditor's Fees	400
5. Court Reporter's Fees	<u>1,000</u>

\$11,500

B. GAGING STATIONS

1. U.S. Geological Survey Cooperative Agreements for federal FY 1994	\$15,150
2. State of Colorado Satellite System	<u>8,000</u>

\$23,150

C. OPERATING EXPENSES

1. Treasurer's Bond	\$ 100
2. Annual Report (Printing 1993)	3,000
3. Telephone	1,500
4. Office Supplies/Postage	400
5. Printing/Copying	300
6. Meetings	500
7. Travel	0
8. Rent	<u>600</u>

\$ 6,400

D. EQUIPMENT

0

E. CONTINGENCY

1,000

F. LITIGATION

10,000

\$52,050

INCOME

A. ASSESSMENTS

1. Colorado (60%)	\$24,000
2. Kansas (40%)	<u>16,000</u>

\$40,000

B. SPECIAL ASSESSMENT

1. Colorado (60%)	\$6,000
2. Kansas (40%)	<u>4,000</u>

\$10,000

B. INTEREST EARNINGS

500

C. MISCELLANEOUS

0

\$50,500

EXPENDITURES FROM SURPLUS

\$ 1,550

Adopted by the Arkansas River Compact Administration at its December 8, 1992 Annual Meeting.

/s/
James Rogers, Treasurer

Jan. 27, 1993
Date

Appendix A-2

AUDITORS REPORT



Members
NSPA
PASC

Certified Public Accountants

Gary L. Anderson, C.P.A.
Ronald D. Anderson, P.A.

November 5, 1993

To the Representatives of
Arkansas River Compact Administration
Lamar, Colorado 81052

We have audited the accompanying statements of assets, liabilities and equity - cash basis - of the Arkansas River Compact Administration as of June 30, 1993, and the related statements of revenue collected and expenses paid for the year then ended. These financial statements are the responsibility of the Administration's management. Our responsibility is to express an opinion on these financial statements based on our audit.

Our examination was made in accordance with generally accepted auditing standards and accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As described in Note 1a, these financial statements were prepared on the basis of cash receipts and disbursements, which is a comprehensive basis of accounting other than generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly, in all material respects, the assets and liabilities - cash basis - of the Arkansas River Compact Administration as of June 30, 1993 and its revenue collected and expenses paid during the year then ended, on the basis of accounting described in Note 1a.

Anderson & Company, P.C.

1

4th & Parmenter

P. O. Box 1077

Lamar, Colorado 81052

(719) 336-7785

Appendix A-2

AUDITORS REPORT

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF ASSETS AND LIABILITIES - CASH BASIS
June 30, 1993

ASSETS

Cash	\$ 34,983
Equipment	29,811
Concrete Control	<u>8,000</u>
<u>TOTAL ASSETS</u>	<u>\$ 72,794</u>

LIABILITIES

Account Payable (Note 2)	\$ 818
Deferred Revenue (Note 3)	5,200

CASH BASIS EQUITY

Expended:	
Equipment	\$ 29,811
Concrete Control	8,000
Unexpended	<u>28,965</u>
<u>TOTAL LIABILITIES AND CASH BASIS EQUITY</u>	<u>\$ 72,794</u>

See Accountant's Audit Report.

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Appendix A-2

AUDITORS REPORT

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF REVENUES COLLECTED AND EXPENSES PAID
and CHANGES IN CASH BALANCE
For the Year Ended June 30, 1993

CASH BALANCE - July 1, 1992

\$ 22,382

REVENUES

Revenues from Assessments	
Colorado - 60%	\$ 23,400
Kansas - 40%	15,600
Prepaid Assessment - Kansas	5,200
Interest	<u>1,398</u>

TOTAL REVENUES

45,598

EXPENSES

Treasurer Bond	\$ 100
Geological Survey	13,225
Satellite Access Fee	8,000
Operations Secretary	4,350
Office Rent	550
Auditor Fee	350
Office Supplies and Postage	195
Copying & Binding	243
Meeting Expense	387
Telephone	1,597
Recording Secretary	2,000
Treasurer	<u>2,000</u>

TOTAL EXPENSES

(32,997)

EXCESS OF REVENUES OVER EXPENSES

12,601

CASH BALANCE - June 30, 1993

\$ 34,983

See Accountant's Audit Report.
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Appendix A-2

AUDITORS REPORT

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF REVENUES COLLECTED
and EXPENSES PAID WITH BUDGET COMPARISON
For the Budget Year July 1, 1992 to June 30, 1993

	<u>ACTUAL</u>	<u>BUDGET</u>	<u>OVER(UNDER)</u>
<u>REVENUES</u>			
Revenues from Assessments:			
Colorado - 60%	\$ 23,400	\$ 23,400	\$ 0
Kansas - 40%	15,600	15,600	0
Interest	<u>1,398</u>	<u>1,000</u>	<u>398</u>
<u>TOTAL REVENUES</u>	<u>40,398</u>	<u>40,000</u>	<u>398</u>
<u>EXPENSES</u>			
U.S. Geological Survey	\$ 13,225	\$ 13,225	\$ 0
Satellite Access Fee	8,000	8,000	0
Operation Secretary	4,350	6,100	(1,750)
Treasurers Bond	100	100	0
Telephone	1,597	3,000	(1,403)
Court Reporter Fee	818	1,000	(182)
Recording Secretary	2,000	2,000	0
Treasurer	2,000	2,000	0
Meeting Expense	387	500	(113)
Auditor Fee	350	400	(50)
Office Supplies & Postage	195	400	(205)
Printing and Copying	243	300	(57)
Printing Annual Reports -			
1988 and 1989	0	5,000	(5,000)
Office Rent	550	600	(50)
Litigation	0	4,000	(4,000)
Contingency	<u>0</u>	<u>1,000</u>	<u>(1,000)</u>
<u>TOTAL EXPENSES</u>	<u>33,815</u>	<u>47,625</u>	<u>(13,810)</u>
<u>BUDGET SURPLUS (DEFICIT)</u>	<u>\$ 6,583</u>	<u>\$(7,625)</u>	<u>\$ 14,208</u>

See Accountant's Audit Report.

4

Appendix A-2

AUDITORS REPORT

ARKANSAS RIVER COMPACT ADMINISTRATION NOTES TO CASH BASIS STATEMENTS June 30, 1993

NOTE 1 - Summary of significant accounting policies:

- a. The Administration maintains financial records using the cash basis of accounting. By using the cash basis of accounting, certain revenues are recognized when received rather than when earned, and certain expenses and purchases of assets are recognized when cash is disbursed rather than when the obligation is incurred.

NOTE 2 - Court reporter fee for December, 1992 meeting not paid by fiscal year end.

Note 3 - Special assessment (from Kansas) for fiscal year ending June 30, 1994 was received prior to fiscal year end.

Appendix A-3

CASH BALANCE STATEMENT

A.R.C.A. Balance Sheet
As of 12/10/93

12/10/93
COMPACT-All Accounts

Acct	12/10/93 Balance
ASSETS	
Cash and Bank Accounts	
Checking-FFB # 11-093863-3	96.93
Money Market-FFB # 11-039862-5	48,229.71
Petty Cash	9.53
Total Cash and Bank Accounts	48,336.17
TOTAL ASSETS	48,336.17 =====
LIABILITIES & EQUITY	
LIABILITIES	0.00
EQUITY	48,336.17
TOTAL LIABILITIES & EQUITY	48,336.17 =====

B-1
1993

DISCHARGE: ARKANSAS RIVER ABOVE PUEBLO, COLORADO

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7098400
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993

B-1
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	332	98	288	203	106	239	566	2,720	2,470	1,260	742	244	1
2	331	98	285	203	106	296	347	2,400	2,310	1,280	822	238	2
3	344	98	289	204	106	318	222	2,330	2,280	1,290	832	238	3
4	355	98	290	204	128	319	233	2,310	2,280	1,290	708	238	4
5	364	98	291	204	156	295	253	1,780	2,210	1,280	587	443	5
6	396	98	291	204	156	278	268	1,420	2,120	1,470	568	568	6
7	438	98	292	204	158	281	550	1,350	1,910	1,820	580	540	7
8	437	98	292	205	158	281	468	1,330	1,570	1,820	654	548	8
9	483	100	293	205	158	312	523	1,460	1,540	1,500	651	294	9
10	509	101	294	205	158	331	950	1,490	1,870	1,330	621	205	10
11	506	101	297	205	188	368	977	1,370	1,780	1,360	534	223	11
12	562	101	275	205	210	738	973	1,240	1,770	1,420	482	235	12
13	536	101	222	205	211	814	922	1,320	1,760	1,450	478	235	13
14	492	101	174	205	210	881	894	1,420	1,770	1,440	540	258	14
15	296	101	146	205	261	881	872	2,150	2,040	1,460	582	292	15
16	217	101	146	205	345	810	1,130	3,210	2,010	1,480	565	304	16
17	219	100	146	205	370	754	1,400	3,740	1,770	1,440	495	305	17
18	223	100	146	205	373	730	1,910	2,500	1,710	1,400	440	334	18
19	225	100	146	204	338	728	2,240	4,190	1,980	1,290	421	351	19
20	182	100	146	204	302	787	1,950	3,920	2,140	1,200	377	352	20
21	98	100	146	205	303	788	1,530	3,420	1,800	1,170	319	352	21
22	98	99	147	204	298	748	1,380	3,250	1,810	1,010	257	352	22
23	98	100	148	205	273	728	1,410	3,220	2,000	1,010	238	356	23
24	98	98	148	173	254	730	1,570	3,200	2,020	998	238	356	24
25	98	98	147	130	212	728	1,770	3,120	1,940	954	237	362	25
26	98	98	147	108	157	803	1,970	2,880	1,970	904	254	408	26
27	98	131	169	107	143	815	2,270	2,680	1,890	891	286	428	27
28	98	284	204	107	142	518	2,540	2,620	1,590	704	281	438	28
29	98	278	205	—	142	530	2,750	2,720	1,410	538	286	405	29
30	98	286	205	—	142	552	2,850	2,640	1,290	503	255	388	30
31	—	287	204	—	182	—	2,880	—	1,270	523	—	385	31
TOTAL CFS	8,427	3,850	6,518	5,326	6,441	17,372	40,674	73,370	58,370	37,283	14,300	10,662	TOTAL CFS
TOTAL AF	16,710	7,640	13,130	10,560	12,780	34,480	80,680	145,500	115,800	73,950	28,360	21,210	TOTAL AF
TOTAL YEAR	560,780 ACRE-FEET												

B-2a
1993

DISCHARGE: ARKANSAS RIVER AT LAS ANIMAS, COLORADO

B-2a
1993U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7124000
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	96	194	151	113	249	30	52	1,180	394	94	152	91	1
2	58	216	153	118	271	30	156	918	564	121	180	100	2
3	49	172	158	118	311	34	219	1,080	636	125	194	96	3
4	45	157	153	118	362	36	206	1,110	884	299	210	94	4
5	42	155	154	117	227	36	218	1,250	505	304	241	91	5
6	40	154	144	120	181	36	198	1,150	527	359	205	82	6
7	37	145	133	126	164	44	170	837	450	348	89	74	7
8	40	140	125	118	152	46	140	872	375	285	87	73	8
9	36	160	120	112	143	45	139	398	411	443	217	70	9
10	34	200	110	113	134	48	193	342	365	587	270	63	10
11	33	237	90	113	123	47	154	397	334	484	360	59	11
12	33	197	90	114	124	44	137	342	323	360	360	58	12
13	33	188	95	123	124	41	164	316	331	279	322	98	13
14	39	150	95	121	128	37	161	353	591	274	284	119	14
15	202	142	95	115	130	33	145	441	737	236	240	118	15
16	268	140	95	110	87	32	152	419	437	159	185	115	16
17	199	130	95	107	125	32	159	473	227	126	193	111	17
18	178	130	95	102	96	34	347	584	413	151	244	130	18
19	172	120	100	127	203	35	497	890	450	120	298	177	19
20	171	110	100	187	196	38	784	1,030	389	323	339	314	20
21	172	120	110	228	99	35	648	1,530	283	436	276	361	21
22	174	130	120	235	67	33	528	1,080	331	322	222	339	22
23	170	130	110	244	45	31	494	1,160	310	228	198	314	23
24	187	130	104	229	33	47	350	716	338	140	184	295	24
25	184	130	120	231	27	31	530	678	806	125	171	282	25
26	186	130	117	251	24	29	437	762	878	94	144	311	26
27	165	140	108	271	21	29	625	736	890	126	133	156	27
28	170	140	107	229	24	34	858	852	890	130	127	94	28
29	180	155	111	—	31	49	880	481	789	108	103	81	29
30	190	166	111	—	32	53	1,200	418	341	47	92	65	30
31	—	158	108	—	32	—	1,430	—	235	60	—	56	31
TOTAL CFS	3,543	4,746	3,578	4,318	3,935	1,129	12,169	22,395	15,204	7,196	6,350	4,485	TOTAL CFS
TOTAL AF	7,030	9,410	7,100	8,560	7,810	2,240	24,140	44,420	30,160	14,250	12,800	8,920	TOTAL AF
TOTAL YEAR	178,640	ACRE FEET											

B-2b
1993

DISCHARGE: PURGATOIRE RIVER NEAR LAS ANIMAS, COLORADO

B-2b
1993U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7128500
DAILY MEAN DISCHARGE CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	28.0	37.0	78.0	47.0	44.0	377.0	182.0	377.0	29.0	5.3	130.0	22.0	1
2	28.0	37.0	94.0	43.0	50.0	368.0	194.0	317.0	25.0	5.1	150.0	14.0	2
3	30.0	36.0	82.0	41.0	50.0	353.0	174.0	182.0	18.0	21.0	159.0	16.0	3
4	44.0	33.0	61.0	38.0	46.0	376.0	143.0	118.0	22.0	130.0	130.0	17.0	4
5	38.0	33.0	52.0	37.0	49.0	308.0	173.0	98.0	19.0	44.0	51.0	13.0	5
6	30.0	32.0	46.0	36.0	51.0	528.0	174.0	98.0	19.0	17.0	39.0	11.0	6
7	33.0	32.0	43.0	35.0	51.0	1,200.0	143.0	76.0	18.0	115.0	245.0	8.7	7
8	43.0	32.0	41.0	35.0	48.0	816.0	119.0	58.0	17.0	278.0	285.0	11.0	8
9	45.0	38.0	40.0	33.0	43.0	490.0	98.0	50.0	14.0	64.0	183.0	10.0	9
10	38.0	47.0	40.0	31.0	40.0	395.0	83.0	33.0	9.1	26.0	108.0	9.0	10
11	46.0	47.0	41.0	29.0	40.0	347.0	96.0	24.0	7.4	14.0	104.0	11.0	11
12	51.0	48.0	44.0	28.0	42.0	335.0	172.0	24.0	6.4	13.0	113.0	16.0	12
13	47.0	47.0	44.0	26.0	54.0	364.0	184.0	26.0	5.6	9.3	89.0	20.0	13
14	47.0	45.0	43.0	27.0	57.0	348.0	213.0	35.0	6.4	75.0	67.0	20.0	14
15	36.0	44.0	40.0	26.0	58.0	303.0	165.0	27.0	20.0	147.0	52.0	23.0	15
16	34.0	45.0	42.0	25.0	50.0	259.0	128.0	14.0	20.0	69.0	44.0	23.0	16
17	33.0	46.0	37.0	25.0	47.0	207.0	130.0	10.0	11.0	22.0	56.0	23.0	17
18	33.0	45.0	38.0	34.0	51.0	163.0	147.0	16.0	22.0	13.0	48.0	25.0	18
19	35.0	41.0	40.0	48.0	55.0	146.0	110.0	87.0	283.0	13.0	35.0	28.0	19
20	36.0	40.0	41.0	50.0	55.0	140.0	139.0	76.0	129.0	9.9	27.0	28.0	20
21	38.0	45.0	47.0	44.0	52.0	165.0	169.0	52.0	68.0	22.0	22.0	29.0	21
22	37.0	47.0	46.0	45.0	58.0	121.0	119.0	46.0	24.0	116.0	17.0	36.0	22
23	37.0	44.0	45.0	61.0	90.0	99.0	91.0	22.0	18.0	103.0	15.0	37.0	23
24	34.0	41.0	45.0	58.0	83.0	94.0	129.0	12.0	11.0	36.0	29.0	35.0	24
25	27.0	41.0	41.0	49.0	79.0	102.0	83.0	7.7	8.2	23.0	37.0	33.0	25
26	28.0	42.0	38.0	41.0	68.0	127.0	138.0	11.0	7.6	16.0	32.0	38.0	26
27	30.0	40.0	41.0	37.0	85.0	143.0	92.0	16.0	6.7	15.0	41.0	36.0	27
28	32.0	41.0	54.0	37.0	254.0	117.0	101.0	22.0	7.3	19.0	41.0	40.0	28
29	33.0	43.0	47.0	—	478.0	125.0	93.0	27.0	7.4	487.0	36.0	47.0	29
30	34.0	46.0	48.0	—	207.0	154.0	103.0	37.0	7.6	407.0	29.0	51.0	30
31	—	45.0	49.0	—	173.0	—	181.0	—	5.5	285.0	—	52.0	31
TOTAL CFS	1,088.0	1,280.0	1,488.0	1,066.0	2,608.0	9,068.0	4,284.0	1,974.7	872.2	2,619.6	2,392.0	761.7	TOTAL CFS
TOTAL AF	2,150	2,540	2,950	2,110	5,170	17,990	8,480	3,920	1,730	5,200	4,740	1,550	TOTAL AF
TOTAL YEAR	58,510 ACRE-FEET												

B-2c
1993

RIVER FLOW INTO JOHN MARTIN RESERVOIR

CALCULATED USING U.S.G.S. PUBLISHED RECORDS, [1]
DAILY MEAN DISCHARGE CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993

B-2c
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	125	231	229	180	293	407	234	1,557	423	99	282	113	1
2	86	253	247	161	321	398	350	1,235	589	126	330	114	2
3	79	208	240	159	361	397	393	1,242	654	146	352	112	3
4	89	190	214	156	408	412	349	1,228	686	429	340	111	4
5	80	188	206	154	276	344	389	1,346	624	348	282	104	5
6	70	186	190	156	232	562	372	1,248	546	416	244	93	6
7	70	177	176	161	215	1,244	313	913	468	463	334	83	7
8	83	172	188	153	200	982	259	728	392	533	352	84	8
9	81	198	180	145	186	535	237	448	425	507	400	80	9
10	72	247	150	144	174	443	276	375	374	593	378	72	10
11	76	284	131	142	183	394	250	421	341	498	494	70	11
12	84	245	134	142	166	379	309	366	329	278	473	74	12
13	80	215	139	149	178	405	346	342	337	288	411	116	13
14	86	195	138	148	185	385	374	368	587	349	351	139	14
15	238	186	135	141	188	336	310	488	757	363	262	141	15
16	302	185	137	135	147	261	278	433	457	228	228	138	16
17	232	176	132	132	172	239	289	483	238	148	249	134	17
18	211	175	133	136	147	197	494	600	435	164	292	155	18
19	207	161	140	175	258	181	607	877	733	133	333	203	19
20	207	150	141	247	211	178	923	1,106	518	333	368	340	20
21	210	165	157	270	151	200	817	1,582	351	458	288	380	21
22	211	177	166	280	125	154	647	1,126	355	438	239	375	22
23	207	174	155	305	135	130	585	1,182	328	331	213	351	23
24	201	171	149	287	116	141	479	728	349	176	213	330	24
25	211	171	161	280	106	133	613	686	814	148	208	325	25
26	194	172	155	292	92	158	575	773	886	110	176	349	26
27	195	180	149	308	106	172	717	752	897	141	174	195	27
28	202	181	161	286	278	151	859	674	897	149	168	134	28
29	213	198	158	--	509	174	773	508	796	595	138	128	29
30	224	212	159	--	239	207	1,303	455	349	454	121	116	30
31	--	203	158	--	205	--	1,611	--	241	345	--	108	31
TOTAL CFS	4,828	6,026	5,098	5,384	6,543	10,197	16,433	24,370	16,076	9,806	8,742	5,277	TOTAL CFS
TOTAL AF	9,180	11,950	10,050	10,870	12,980	20,230	32,600	48,340	31,890	19,450	17,340	10,470	TOTAL AF
TOTAL YEAR	235,150 ACRE-FEET												

NOTES: [1] Riverflow into John Martin is the combined flow of the Arkansas at Las Animas [B-2a] and the Purgatoire near Las Animas [B-2b], rounded to the nearest CFS.

B-3
1993

CONTENTS OF JOHN MARTIN RESERVOIR

U.S.G.S. PRIMARY DATA, GAGING STATION # 7130008 [1]
MIDNIGHT CONTENTS TO NEAREST ACRE FOOT [2]
REPORT YEAR ENDING OCTOBER 31, 1993

B-3
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	13,974	24,265	40,376	51,568	63,816	77,211	79,301	81,288	90,227	61,863	53,302	48,424	1
2	14,244	24,856	40,875	51,935	64,542	78,007	78,585	83,217	89,055	60,966	53,080	46,006	2
3	14,453	25,374	41,409	52,303	65,270	78,853	78,052	85,083	87,845	60,212	52,831	45,523	3
4	14,600	25,888	41,879	52,635	66,084	79,435	77,520	87,172	88,981	59,940	52,857	45,006	4
5	14,831	26,288	42,283	52,831	66,738	80,155	77,034	88,104	85,838	59,863	52,835	44,561	5
6	14,959	26,470	42,654	53,302	67,271	81,288	76,639	91,015	84,530	58,668	52,303	44,013	6
7	15,169	26,690	43,027	53,637	67,765	83,541	76,268	92,804	83,217	58,435	52,267	46,838	7
8	15,381	26,971	43,570	53,872	68,177	85,130	75,763	93,808	81,973	59,746	52,008	42,982	8
9	15,594	27,476	43,740	54,308	68,590	86,218	75,111	94,059	80,653	59,590	51,896	42,418	9
10	15,809	27,851	44,047	54,870	68,981	86,933	74,548	94,059	79,258	59,590	51,788	41,913	10
11	16,153	28,448	44,287	55,207	69,337	87,804	73,902	94,108	77,765	58,785	51,788	41,308	11
12	16,382	29,048	44,595	55,508	69,754	88,183	73,516	94,160	76,683	58,513	51,825	40,841	12
13	16,610	29,630	44,903	55,808	70,130	88,860	73,173	94,059	75,285	58,241	51,751	40,508	13
14	16,829	30,022	45,144	56,224	70,507	89,542	72,832	93,908	74,246	58,779	51,532	40,310	14
15	17,083	30,445	45,420	56,754	70,885	89,591	72,461	93,856	73,473	58,701	51,385	40,210	15
16	17,782	30,901	45,730	57,019	71,085	88,445	72,024	93,405	72,747	58,278	51,083	39,879	16
17	18,308	31,419	46,146	57,209	71,308	88,008	71,601	92,954	71,474	57,686	50,838	39,945	17
18	18,816	32,031	46,459	57,400	71,812	88,818	71,308	93,355	70,422	57,134	50,693	39,780	18
19	19,239	32,582	46,843	57,818	72,194	88,086	71,178	93,706	69,921	56,594	50,620	39,714	19
20	19,788	33,127	47,183	58,278	72,681	87,604	71,518	94,176	69,337	56,111	50,547	39,615	20
21	20,283	33,638	47,509	58,817	73,002	87,125	71,982	94,588	68,383	55,148	50,402	39,582	21
22	20,757	34,154	47,932	59,397	73,444	86,847	72,321	97,271	67,148	56,111	50,221	39,714	22
23	21,201	34,952	48,321	59,979	73,601	85,839	72,491	98,151	66,003	56,035	49,990	39,945	23
24	21,700	35,479	48,677	60,643	73,859	85,083	72,384	97,840	64,744	55,583	49,538	40,111	24
25	22,102	36,187	49,098	61,153	74,074	84,148	72,874	96,551	63,978	55,057	49,177	40,243	25
26	22,455	36,927	49,484	61,705	74,332	83,356	73,387	95,937	63,897	54,532	48,820	40,475	26
27	22,883	37,727	49,824	62,299	74,591	82,662	73,687	95,020	63,285	54,159	48,392	40,542	27
28	23,037	38,244	50,149	62,816	74,851	81,892	74,591	93,958	63,136	53,599	48,003	40,409	28
29	23,369	38,786	50,511	—	75,851	80,879	75,676	92,704	63,375	53,451	47,509	40,875	29
30	23,804	39,385	50,838	—	76,419	80,155	76,727	91,311	63,175	53,562	47,018	40,875	30
31	—	39,879	51,129	—	76,814	—	78,609	—	62,686	53,488	—	41,275	31

USGS PUBLISHED END OF MONTH CONTENTS [1]:

23,900	40,000	51,200	62,900	76,900	80,200	79,000	91,300	82,800	53,500	47,000	41,300
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[1] USGS' final published record uses this primary data rounded off per USGS procedures.

[2] Determined from elevation-capacity table provided by US Army Corps of Engineers and placed in use Feb. 1, 1988.

B-4
1993

OUTFLOW: ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7130500
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993

B-4
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	2.9	1.8	2.5	2.0	3.9	14.0	619.0	336.0	986.0	560.0	375.0	376.0	1
2	2.0	2.1	2.5	2.1	3.6	21.0	619.0	338.0	1,020.0	539.0	382.0	378.0	2
3	1.8	2.1	2.5	2.0	3.4	17.0	597.0	202.0	1,020.0	513.0	385.0	376.0	3
4	1.8	1.9	2.5	2.0	3.4	16.0	581.0	173.0	999.0	517.0	382.0	368.0	4
5	1.8	2.1	2.5	1.8	3.4	16.0	587.0	227.0	1,040.0	498.0	385.0	361.0	5
6	1.9	2.0	2.5	1.8	3.4	16.0	585.0	231.0	1,060.0	479.0	385.0	361.0	6
7	1.8	9.3	2.5	1.8	3.4	16.0	548.0	249.0	1,040.0	479.0	395.0	350.0	7
8	1.9	3.1	2.5	1.8	3.4	7.2	526.0	272.0	1,020.0	481.0	402.0	345.0	8
9	2.0	2.8	2.5	1.8	3.4	2.3	525.0	311.0	1,020.0	497.0	404.0	352.0	9
10	1.8	2.8	2.5	1.9	3.4	2.1	505.0	342.0	1,020.0	539.0	393.0	353.0	10
11	2.1	2.8	2.5	1.8	3.4	2.1	483.0	342.0	1,020.0	458.0	384.0	338.0	11
12	1.8	2.8	2.5	1.8	3.4	6.1	477.0	340.0	1,020.0	507.0	386.0	306.0	12
13	1.6	2.8	2.5	3.5	3.4	16.0	488.0	342.0	983.0	475.0	385.0	271.0	13
14	1.5	2.6	2.5	3.4	3.4	16.0	506.0	427.0	915.0	472.0	380.0	257.0	14
15	1.5	2.4	14.0	3.4	3.4	285.0	510.0	504.0	898.0	474.0	387.0	257.0	15
16	1.6	2.5	2.6	3.4	3.4	418.0	506.0	518.0	880.0	473.0	365.0	264.0	16
17	1.6	2.5	2.5	3.3	3.4	418.0	498.0	574.0	856.0	472.0	342.0	264.0	17
18	1.6	2.5	2.5	3.4	3.4	416.0	495.0	600.0	856.0	473.0	342.0	252.0	18
19	1.6	2.5	2.5	3.5	3.4	415.0	496.0	498.0	856.0	455.0	336.0	246.0	19
20	1.7	2.5	2.3	3.6	3.4	415.0	493.0	427.0	855.0	444.0	342.0	313.0	20
21	2.1	2.5	2.0	3.6	3.1	432.0	511.0	482.0	854.0	444.0	342.0	353.0	21
22	1.8	2.5	2.0	3.4	3.2	443.0	534.0	578.0	853.0	440.0	342.0	283.0	22
23	1.8	2.5	2.0	3.4	3.2	515.0	538.0	630.0	851.0	441.0	374.0	242.0	23
24	1.9	2.5	2.0	3.4	3.3	558.0	514.0	1,010.0	847.0	441.0	383.0	242.0	24
25	2.2	2.5	2.0	3.4	3.3	558.0	462.0	1,280.0	846.0	436.0	372.0	249.0	25
26	1.9	2.5	2.0	3.4	3.1	585.0	425.0	1,250.0	865.0	435.0	372.0	242.0	26
27	2.0	2.5	2.0	3.4	2.9	574.0	391.0	1,180.0	865.0	433.0	375.0	230.0	27
28	2.0	2.5	2.0	3.4	2.9	573.0	347.0	1,180.0	829.0	430.0	377.0	231.0	28
29	2.0	2.5	2.0	—	3.1	585.0	326.0	1,120.0	585.0	430.0	378.0	94.0	29
30	2.0	2.5	2.0	—	3.1	613.0	328.0	1,030.0	573.0	406.0	377.0	3.6	30
31	—	2.5	2.0	—	2.9	—	332.0	—	563.0	375.0	—	3.4	31
TOTAL CFS	56.0	83.4	83.4	85.3	102.8	7,926.8	15,350.0	17,013.0	27,917.0	14,518.0	11,229.0	8,559.0	TOTAL CFS
TOTAL AF	111	165	165	169	204	15,720	30,450	33,750	55,370	28,800	22,270	16,980	TOTAL AF
TOTAL YEAR	204,155 ACRE-Feet												

B-5
1963

DISCHARGE: ARKANSAS RIVER AT LAMAR, COLORADO

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7133000
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1963B-5
1963

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	7.3	25.0	19.0	21.0	30.0	20.0	42.0	8.8	504.0	64.0	12.0	10.0	1
2	4.6	24.0	21.0	28.0	39.0	22.0	45.0	22.0	513.0	52.0	12.0	9.9	2
3	4.0	24.0	20.0	29.0	38.0	22.0	44.0	452.0	498.0	25.0	12.0	8.8	3
4	3.6	22.0	21.0	28.0	36.0	22.0	14.0	78.0	470.0	19.0	12.0	8.7	4
5	3.7	22.0	20.0	27.0	35.0	24.0	8.1	39.0	476.0	24.0	12.0	9.5	5
6	3.6	21.0	19.0	25.0	33.0	24.0	13.0	19.0	480.0	36.0	11.0	9.6	6
7	3.4	20.0	19.0	25.0	31.0	25.0	8.1	9.8	451.0	22.0	14.0	8.4	7
8	3.3	20.0	18.0	24.0	29.0	14.0	10.0	8.7	415.0	16.0	86.0	7.6	8
9	3.1	22.0	15.0	24.0	29.0	9.1	5.9	9.0	415.0	15.0	41.0	7.4	9
10	3.1	24.0	14.0	23.0	29.0	3.4	3.6	12.0	420.0	16.0	21.0	7.8	10
11	5.5	27.0	14.0	20.0	28.0	3.4	15.0	10.0	418.0	376.0	12.0	8.2	11
12	4.5	24.0	14.0	18.0	27.0	3.5	4.4	7.0	428.0	121.0	11.0	8.6	12
13	3.9	25.0	14.0	18.0	27.0	3.8	3.4	5.7	464.0	38.0	10.0	7.9	13
14	3.6	23.0	14.0	18.0	27.0	4.1	4.1	5.8	579.0	17.0	9.7	7.9	14
15	3.3	23.0	15.0	15.0	26.0	4.4	7.4	5.4	400.0	16.0	9.3	8.8	15
16	3.1	24.0	18.0	13.0	25.0	7.8	27.0	4.9	396.0	15.0	10.0	12.0	16
17	3.0	22.0	16.0	13.0	25.0	3.9	21.0	7.5	403.0	12.0	10.0	11.0	17
18	2.8	23.0	16.0	14.0	25.0	4.9	15.0	17.0	401.0	12.0	8.1	18.0	18
19	2.8	23.0	17.0	15.0	24.0	6.6	5.8	157.0	396.0	12.0	8.2	16.0	19
20	3.6	25.0	18.0	17.0	24.0	8.3	5.3	35.0	394.0	12.0	7.7	11.0	20
21	4.8	27.0	19.0	20.0	22.0	9.4	9.4	17.0	389.0	20.0	7.3	11.0	21
22	3.9	27.0	19.0	22.0	22.0	9.9	12.0	13.0	391.0	21.0	6.8	12.0	22
23	3.7	28.0	19.0	23.0	22.0	11.0	13.0	8.7	347.0	13.0	6.9	11.0	23
24	5.1	25.0	18.0	23.0	21.0	8.8	6.1	71.0	352.0	11.0	15.0	8.0	24
25	10.0	25.0	17.0	22.0	21.0	14.0	6.8	514.0	370.0	10.0	7.3	7.8	25
26	9.0	25.0	18.0	20.0	20.0	20.0	5.6	625.0	380.0	9.8	7.5	10.0	26
27	10.0	26.0	18.0	20.0	20.0	30.0	5.4	559.0	404.0	11.0	7.2	28.0	27
28	15.0	29.0	18.0	20.0	22.0	44.0	10.0	570.0	446.0	12.0	7.3	31.0	28
29	18.0	21.0	18.0	—	20.0	40.0	47.0	597.0	217.0	132.0	7.7	36.0	29
30	20.0	21.0	22.0	—	20.0	41.0	33.0	584.0	131.0	41.0	9.5	25.0	30
31	—	19.0	19.0	—	20.0	—	24.0	—	81.0	14.0	—	11.0	31
TOTAL CFS	175.1	736.0	547.0	587.0	817.0	454.3	474.4	4,472.3	12,443.0	1,214.8	391.5	388.9	TOTAL CFS
TOTAL AF	347	1,460	1,080	1,160	1,620	921	941	8,870	24,680	2,410	777	771	TOTAL AF
TOTAL YEAR	45,037 ACRE-FEET												

B-6
1993

DISCHARGE: ARKANSAS RIVER NEAR GRANADA, COLORADO

B-6
1993

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7134180
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	3.6	80.0	87.0	95.0	120.0	109.0	5.4	8.5	470.0	94.0	31.0	6.9	1
2	3.6	82.0	87.0	107.0	141.0	103.0	6.4	9.3	442.0	70.0	24.0	6.8	2
3	3.5	83.0	87.0	111.0	149.0	107.0	8.2	109.0	440.0	58.0	9.5	7.0	3
4	3.5	83.0	87.0	115.0	148.0	110.0	5.4	328.0	425.0	50.0	9.0	7.3	4
5	3.5	84.0	87.0	111.0	146.0	108.0	5.2	136.0	415.0	49.0	8.3	7.4	5
6	3.5	84.0	86.0	108.0	151.0	103.0	7.2	106.0	414.0	52.0	9.0	6.5	6
7	3.6	80.0	88.0	107.0	142.0	103.0	6.6	74.0	409.0	42.0	8.9	6.5	7
8	3.6	81.0	88.0	107.0	135.0	106.0	5.1	31.0	390.0	36.0	17.0	6.2	8
9	3.5	82.0	85.0	107.0	131.0	123.0	5.4	11.0	368.0	33.0	18.0	5.6	9
10	3.5	85.0	81.0	111.0	128.0	117.0	5.7	7.6	363.0	31.0	12.0	6.5	10
11	3.6	85.0	79.0	100.0	126.0	101.0	5.7	7.1	360.0	32.0	10.0	6.8	11
12	3.3	84.0	81.0	102.0	127.0	60.0	6.7	7.3	367.0	172.0	9.7	7.5	12
13	51.0	84.0	79.0	101.0	125.0	25.0	6.5	7.0	384.0	87.0	8.8	8.7	13
14	52.0	85.0	82.0	104.0	125.0	19.0	6.1	7.1	472.0	56.0	9.6	9.7	14
15	51.0	88.0	83.0	108.0	123.0	17.0	6.4	7.4	416.0	40.0	9.6	9.7	15
16	43.0	88.0	82.0	98.0	120.0	15.0	5.9	7.6	388.0	34.0	8.9	16.0	16
17	28.0	87.0	83.0	95.0	118.0	18.0	5.7	7.7	364.0	28.0	8.3	18.0	17
18	26.0	89.0	84.0	91.0	119.0	10.0	27.0	8.4	353.0	25.0	8.4	29.0	18
19	25.0	89.0	85.0	100.0	118.0	8.7	33.0	86.0	345.0	26.0	8.2	45.0	19
20	26.0	84.0	86.0	110.0	115.0	7.2	32.0	92.0	341.0	24.0	7.9	49.0	20
21	29.0	84.0	84.0	115.0	114.0	5.4	33.0	35.0	340.0	24.0	7.7	43.0	21
22	41.0	86.0	86.0	120.0	112.0	5.1	42.0	19.0	349.0	24.0	7.5	38.0	22
23	43.0	85.0	93.0	123.0	111.0	4.7	45.0	13.0	315.0	22.0	9.2	39.0	23
24	61.0	87.0	90.0	121.0	112.0	4.4	44.0	14.0	298.0	20.0	9.6	39.0	24
25	74.0	90.0	87.0	123.0	114.0	4.3	46.0	123.0	308.0	19.0	9.6	25.0	25
26	71.0	88.0	88.0	120.0	113.0	4.4	46.0	470.0	314.0	18.0	8.0	14.0	26
27	72.0	86.0	89.0	118.0	104.0	4.5	20.0	514.0	327.0	22.0	8.3	13.0	27
28	77.0	87.0	92.0	114.0	108.0	4.5	7.8	492.0	338.0	21.0	6.9	49.0	28
29	80.0	90.0	92.0	—	—	6.0	7.7	485.0	308.0	14.0	6.8	69.0	29
30	79.0	89.0	91.0	—	108.0	5.3	8.0	501.0	189.0	53.0	6.9	72.0	30
31	—	86.0	92.0	—	107.0	—	8.1	—	118.0	41.0	—	79.0	31
TOTAL CFS	1,001.0	2,846.0	2,673.0	3,042.0	3,824.0	1,416.5	501.2	3,722.0	11,110.0	1,318.0	316.7	746.9	TOTAL CFS
TOTAL AF	1,990	5,250	5,300	6,030	7,580	2,810	994	7,380	22,040	2,610	628	1,480	TOTAL AF
TOTAL YEAR	64,092 ACRE-FEET												

B-7a
1993

DISCHARGE: ARKANSAS RIVER NEAR COOLIDGE, KANSAS

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7137500
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993

B-7a
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	82	106	113	135	167	148	108	148	479	202	130	101	1
2	70	99	115	156	182	145	128	152	459	215	106	103	2
3	83	102	116	154	193	148	124	177	440	203	104	98	3
4	71	102	115	152	196	150	121	411	422	200	109	98	4
5	72	102	118	155	198	152	110	382	401	176	118	95	5
6	76	104	118	163	200	144	134	314	418	193	109	93	6
7	82	105	114	150	199	143	163	271	437	177	103	93	7
8	75	104	117	147	192	143	121	243	428	152	102	94	8
9	71	106	113	147	187	145	115	227	394	108	117	98	9
10	70	105	113	152	182	159	107	208	418	100	117	94	10
11	73	107	110	145	179	158	107	150	448	107	129	95	11
12	85	109	112	140	178	142	123	108	458	135	123	85	12
13	80	108	112	140	174	138	127	100	482	186	118	102	13
14	85	109	113	140	174	145	114	103	525	161	105	97	14
15	89	112	114	148	173	137	114	116	570	136	94	98	15
16	87	111	114	138	167	134	122	81	518	128	100	148	16
17	75	112	113	133	162	137	141	78	491	107	80	142	17
18	73	115	113	131	162	175	140	71	478	88	73	178	18
19	62	118	112	136	161	174	121	216	471	88	75	194	19
20	82	112	115	146	158	189	124	210	490	84	75	177	20
21	75	119	116	155	157	180	122	146	478	97	77	159	21
22	88	113	117	158	153	132	126	96	483	99	71	144	22
23	90	112	127	162	153	113	123	77	469	100	69	155	23
24	87	112	123	163	151	107	122	65	432	92	88	165	24
25	79	113	121	165	149	106	124	64	422	84	99	149	25
26	90	113	121	162	148	112	124	287	422	71	118	171	26
27	96	114	126	160	146	110	117	452	414	77	121	168	27
28	98	112	133	160	142	115	124	420	419	76	114	173	28
29	101	113	133	--	149	106	123	427	427	77	102	150	29
30	98	115	131	--	155	104	143	457	318	98	102	167	30
31	--	113	131	--	146	--	151	--	250	131	--	191	31
TOTAL CFS	2,408	3,395	3,857	4,183	5,231	4,189	3,861	6,256	13,780	3,958	3,044	4,082	TOTAL CFS
TOTAL AF	4,770	6,730	7,250	8,300	10,380	8,310	7,860	12,410	27,280	7,850	6,040	8,100	TOTAL AF
TOTAL YEAR	115,080 ACRE FEET												

NOTES: [1] Some January values are estimated data per USGS

B-7b
1993

DISCHARGE: FRONTIER DITCH NEAR COOLIDGE, KANSAS

B-7b
1993

U.S.G.S. PUBLISHED RECORDS, GAGING STATION #7137000
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND, [1]
REPORT YEAR ENDING OCTOBER 31, 1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.5	0.8	0.0	0.0	0.0	0.0	0.0	31.0	38.0	7.6	14.0	1
2	0.0	0.4	0.5	0.0	0.0	0.0	0.0	0.0	25.0	28.0	10.0	11.0	2
3	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	31.0	0.0	9.6	11.0	3
4	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	32.0	0.0	8.6	12.0	4
5	0.0	0.4	0.6	0.0	0.0	0.0	0.0	0.0	40.0	0.0	3.4	11.0	5
6	0.0	0.8	0.3	0.0	0.0	0.0	0.0	0.0	36.0	0.0	0.2	8.9	6
7	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	33.0	0.0	0.0	8.5	7
8	0.0	0.6	0.1	0.0	0.0	0.0	0.0	0.0	24.0	9.7	0.0	8.4	8
9	0.0	0.6	0.1	0.0	0.0	0.0	0.0	0.0	29.0	37.0	0.0	8.8	9
10	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	24.0	37.0	0.0	9.0	10
11	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1	35.0	0.0	11.0	11
12	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.0	0.0	12.0	12
13	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0	0.0	11.0	13
14	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0	0.0	12.0	14
15	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.0	32.0	12.0	15
16	3.8	0.4	0.0	0.0	0.0	0.0	0.0	17.0	0.0	38.0	22.0	7.8	16
17	13.0	0.4	0.0	0.0	0.0	0.0	0.0	34.0	8.1	36.0	25.0	0.6	17
18	14.0	0.5	0.0	0.0	0.0	0.0	0.0	46.0	16.0	37.0	23.0	0.5	18
19	24.0	0.6	0.0	0.0	0.0	0.0	0.0	2.5	19.0	36.0	23.0	0.3	19
20	24.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	27.0	37.0	30.0	0.1	20
21	15.0	0.4	0.0	0.0	0.0	0.0	0.0	12.0	27.0	27.0	30.0	0.0	21
22	1.0	0.7	0.3	0.0	0.0	0.0	0.0	35.0	21.0	21.0	28.0	0.0	22
23	0.5	0.7	0.2	0.0	0.0	0.0	0.0	35.0	16.0	28.0	34.0	0.0	23
24	0.5	0.5	0.0	0.0	0.0	0.0	0.0	37.0	20.0	32.0	36.0	0.0	24
25	0.4	0.4	0.0	0.0	0.0	0.0	0.0	34.0	23.0	31.0	18.0	0.0	25
26	0.4	0.8	0.0	0.0	0.0	0.0	0.0	8.3	25.0	34.0	12.0	0.0	26
27	0.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	25.0	36.0	15.0	0.0	27
28	0.4	1.3	0.0	0.0	0.0	0.0	0.0	28.0	25.0	34.0	15.0	0.0	28
29	0.4	0.8	0.0	--	0.0	0.0	0.0	43.0	25.0	33.0	18.0	0.0	29
30	0.5	0.5	0.0	--	0.0	0.0	0.0	43.0	31.0	27.0	15.0	0.0	30
31	--	0.6	0.0	--	0.0	--	0.0	--	35.0	18.0	--	0.0	31
TOTAL CFS	98.3	17.8	3.8	0.0	0.0	0.0	0.0	376.8	646.2	830.7	417.8	169.9	TOTAL CFS
TOTAL AF	195	35	7	0	0	0	0	747	1,280	1,650	829	337	TOTAL AF
TOTAL YEAR	5,080 ACRE-FEET												

NOTES: [1] USGS published data rounded to nearest 0.1 CFS.

B-7c
1993

STATELINE FLOW

CALCULATED USING U.S.G.S. PUBLISHED RECORDS (1)
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1993B-7c
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	62	106	114	135	167	146	108	148	510	239	138	115	1
2	70	98	115	156	182	145	126	152	484	241	116	114	2
3	83	102	116	154	193	148	124	177	471	203	114	107	3
4	71	102	116	152	186	150	121	411	454	200	116	108	4
5	72	102	117	155	186	152	110	382	441	176	121	106	5
6	78	105	118	153	200	144	134	314	454	193	108	102	6
7	82	106	114	150	199	143	133	271	470	177	103	102	7
8	75	105	117	147	192	143	121	243	452	162	102	102	8
9	71	107	113	147	187	145	115	227	423	145	117	108	9
10	70	106	113	152	182	159	107	209	442	137	117	103	10
11	73	108	110	145	179	153	107	150	448	142	129	106	11
12	85	110	112	140	176	142	123	108	456	170	123	107	12
13	80	109	112	140	174	138	127	100	482	233	118	113	13
14	85	109	113	140	174	145	114	103	525	198	113	109	14
15	89	112	114	148	173	137	114	116	570	174	126	110	15
16	91	111	114	138	167	134	122	98	518	162	122	106	16
17	88	112	113	133	162	137	141	110	487	143	105	143	17
18	87	116	113	131	162	175	140	119	494	125	96	178	18
19	86	117	112	136	161	174	121	219	490	124	98	194	19
20	86	112	115	146	158	189	124	210	517	121	105	177	20
21	90	119	116	155	167	180	122	156	505	124	107	159	21
22	89	114	117	158	153	132	126	131	504	120	99	144	22
23	91	113	127	162	153	113	123	112	485	128	103	155	23
24	87	113	123	163	151	107	122	102	452	124	122	165	24
25	79	113	121	165	146	106	124	98	445	115	115	149	25
26	90	114	121	162	148	112	124	285	447	105	128	171	26
27	96	115	126	160	146	110	117	452	439	113	136	168	27
28	99	113	133	160	142	115	124	448	444	110	129	173	28
29	101	114	133	--	149	106	123	470	452	110	118	150	29
30	98	116	131	--	155	104	143	500	350	125	117	167	30
31	--	114	131	--	146	--	151	--	285	149	--	191	31
TOTAL CFS	2,504	3,413	3,661	4,183	5,231	4,189	3,861	6,533	14,408	4,787	3,482	4,262	TOTAL CFS
TOTAL AF	4,965	6,765	7,257	8,300	10,360	8,310	7,660	13,157	28,570	9,500	6,969	8,437	TOTAL AF
TOTAL YEAR	120,170 ACRE-FEET												

NOTES: (1) The daily Stateline flow is the sum of the flow of the Arkansas near Coolidge [B-7a] and the Frontier Ditch near Coolidge [B-7b], rounded to the nearest CFS.

B-8
1993

DISCHARGE: ARKANSAS RIVER AT GARDEN CITY, KANSAS

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7139000
DAILY MEAN DISCHARGE, CUBIC FEET PER SECOND [1], [2]
REPORT YEAR ENDING OCTOBER 31, 1993

B-8
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.0	0.0	0.0	162.0	84.0	74.0	0.0	0.0	0.1	0.0	0.0	1
2	0.0	0.0	0.0	0.0	157.0	103.0	72.0	0.0	0.0	0.1	0.0	0.0	2
3	0.0	0.0	0.0	0.0	142.0	129.0	69.0	0.0	0.0	0.0	0.0	0.0	3
4	0.0	0.0	0.0	0.0	136.0	126.0	68.0	0.0	0.0	0.0	0.0	0.0	4
5	0.0	0.0	0.0	5.0	129.0	128.0	67.0	0.0	0.0	0.0	0.0	0.0	5
6	0.0	0.0	0.0	78.0	117.0	127.0	87.0	0.0	0.0	0.0	0.0	0.0	6
7	0.0	0.0	0.0	30.0	150.0	123.0	71.0	0.0	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	12.0	100.0	113.0	60.0	0.0	0.0	0.0	0.0	0.0	8
9	0.0	0.0	0.0	7.0	70.0	109.0	56.0	0.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	7.0	50.0	100.0	23.0	0.0	0.0	0.0	0.0	0.0	10
11	0.0	0.0	0.0	4.0	35.0	96.0	13.0	0.0	0.0	0.3	0.0	0.0	11
12	0.0	0.0	0.0	0.0	24.0	97.0	9.7	0.0	0.0	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	27.0	103.0	2.6	0.0	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	30.0	92.0	0.0	0.0	0.1	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	33.0	85.0	0.0	0.0	0.0	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	7.0	88.0	0.0	0.0	0.0	0.0	0.0	0.2	16
17	0.0	0.0	0.0	0.0	3.0	88.0	0.0	0.0	0.0	0.0	0.0	1.0	17
18	0.0	0.0	0.0	0.0	0.0	87.0	0.0	0.0	0.0	0.0	0.0	0.3	18
19	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	0.0	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	0.0	69.0	0.0	4.6	0.0	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	1.3	84.0	0.0	3.9	0.0	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	2.5	106.0	3.4	0.0	0.0	0.0	0.0	0.0	22
23	0.0	0.0	0.0	5.0	4.5	121.0	1.6	0.0	0.0	0.0	0.0	0.0	23
24	0.0	0.0	0.0	30.0	10.0	119.0	0.0	0.0	0.0	0.0	0.5	0.5	24
25	0.0	0.0	0.0	72.0	15.0	104.0	0.0	0.0	0.0	0.0	0.0	0.0	25
26	0.0	0.0	0.0	173.0	30.0	92.0	0.0	0.0	0.0	0.0	0.0	0.0	26
27	0.0	0.0	0.0	153.0	60.0	81.0	0.0	0.4	0.0	0.4	0.0	0.4	27
28	0.0	0.0	0.0	155.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.6	28
29	0.0	0.0	0.0	—	180.0	77.0	0.0	0.0	0.0	0.0	0.0	1.7	29
30	0.0	0.0	0.0	—	97.0	79.0	0.0	0.0	0.0	0.0	0.0	0.9	30
31	—	0.0	0.0	—	84.0	—	0.0	—	0.0	0.0	—	9.5	31
TOTAL CFS	0.0	0.0	0.0	731.0	1,956.3	2,991.0	677.3	8.9	0.1	0.9	0.6	15.0	TOTAL CFS
TOTAL AF	0	0	0	1,450	3,880	5,933	1,343	18	0	2	1	30	TOTAL AF
TOTAL YEAR	12,657 ACRE-Feet												

NOTES: [1] Some February and March values are estimated per U.S.G.S. published record.

[2] Rounded to nearest 0.1 CFS.

B-9
1993

CONTENTS JOHN MARTIN RESERVOIR CONSERVATION STORAGE

OPERATIONS SECRETARY, ARCA MONTHLY ACCOUNTING SHEETS
MIDNIGHT CONTENTS [2400 HOURS] TO NEAREST ACRE FOOT [1]
REPORT YEAR ENDING OCTOBER 31, 1993

B-9
1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	703	7,304	15,283	20,808	26,352	34,647	0	0	0	0	0	0	1
2	980	7,589	15,545	21,008	26,744	33,000	0	0	0	0	0	0	2
3	1,203	7,793	15,875	21,187	26,848	31,404	0	0	0	0	0	0	3
4	1,329	8,039	16,097	21,352	27,261	29,544	0	0	0	0	0	0	4
5	1,590	8,239	16,283	21,473	27,331	27,845	0	0	0	0	0	0	5
6	1,767	8,331	16,438	21,672	27,501	26,657	0	0	0	0	0	0	6
7	1,946	8,437	16,609	21,827	27,715	26,497	0	0	0	0	0	0	7
8	2,166	8,585	16,908	21,975	27,880	25,658	0	0	0	0	0	0	8
9	2,388	8,774	17,082	22,173	28,079	24,325	0	0	0	0	0	0	9
10	2,611	9,030	17,175	22,530	28,172	22,622	0	0	0	0	0	0	10
11	2,964	9,332	17,289	22,737	28,448	20,878	0	0	0	0	0	0	11
12	3,211	9,591	17,411	22,831	28,705	19,293	0	0	0	0	0	0	12
13	3,437	9,886	17,521	22,967	28,921	18,062	0	0	0	0	0	0	13
14	3,684	10,091	17,663	23,202	29,138	16,830	0	0	0	0	0	0	14
15	3,936	10,259	17,774	23,555	29,348	15,439	0	0	0	0	0	0	15
16	4,321	10,473	17,919	23,677	29,588	14,163	0	0	0	0	0	0	16
17	4,421	10,763	18,110	23,765	29,829	12,595	0	0	0	0	0	0	17
18	4,613	11,074	18,255	23,854	30,365	11,082	0	0	0	0	0	0	18
19	4,779	11,336	18,433	24,126	30,777	9,455	0	0	0	0	0	0	19
20	5,087	11,653	18,611	24,401	31,274	7,827	0	0	0	0	0	0	20
21	5,355	11,898	18,756	24,599	31,645	6,273	0	0	0	0	0	0	21
22	5,579	12,159	18,935	24,789	32,016	4,719	0	0	0	0	0	0	22
23	5,779	12,454	19,114	24,974	32,302	3,053	0	0	0	0	0	0	23
24	6,064	12,789	19,279	25,228	32,590	1,487	0	0	0	0	0	0	24
25	6,204	13,180	19,430	25,353	32,835	0	0	0	0	0	0	0	25
26	6,383	13,549	19,715	25,516	33,122	0	0	0	0	0	0	0	26
27	6,500	13,922	19,897	25,687	33,411	0	0	0	0	0	0	0	27
28	6,629	14,217	20,057	25,780	33,700	0	0	0	0	0	0	0	28
29	6,847	14,496	20,255	--	34,729	0	0	0	0	0	0	642	29
30	7,068	14,795	20,412	--	35,282	0	0	0	0	0	0	980	30
31	--	15,033	20,570	--	35,750	--	34	--	0	0	--	0	31

NOTES: [1] Values are the volume of winter and/or summer compact water remaining in conservation storage prior to release to storage accounts, as reported by the Operations Secretary, and rounded to the nearest AF.

B-10
1993

TRANSFER OF WATER FROM JMR CONSERVATION STORAGE

B-10
1993

TRANSFERRED INTO JOHN MARTIN RESERVOIR AGREEMENT ACCOUNTS
OPERATIONS SECRETARY, ARCA: IN ACRE FEET
REPORT YEAR ENDING OCTOBER 31, 1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.0	0.0	0.0	0.0	1,549.6	0.0	1,567.9	0.0	0.0	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	1,030.2	0.0	0.0	0.0	0.0	2
3	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	916.3	0.0	0.0	0.0	0.0	3
4	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	970.9	0.0	0.0	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	896.5	0.0	0.0	0.0	0.0	5
6	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	896.5	0.0	0.0	0.0	0.0	6
7	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	412.7	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	0.0	0.0	0.0	0.0	0.0	8
9	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	0.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	0.0	0.0	0.0	0.0	0.0	10
11	0.0	0.0	0.0	0.0	0.0	2,478.4	0.0	0.0	0.0	0.0	0.0	0.0	11
12	0.0	0.0	0.0	0.0	0.0	2,219.5	0.0	0.0	0.0	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	0.0	1,963.5	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	1,676.6	0.0	0.0	0.0	0.0	0.0	0.0	25
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
31	0.0	0.0	0.0	0.0	0.0	0.0	908.1	0.0	0.0	0.0	0.0	1,277.3	31
TOTAL AF	0.0	0.0	0.0	0.0	0.0	54,041.4	908.1	6,603.0	0.0	1,523.4	0.0	1,277.3	TOTAL AF
TOTAL YEAR	64,354 ACRE FEET												

NOTES: [1] All conservation storage water was apportioned into Colorado and Kansas accounts as follows: 40% to Kansas and 60% to Colorado, as described in the Administration's 1980 Operating Plan for John Martin Reservoir Resolution.

[2] Values reported are "winter compact water" and "summer compact water" releases from monthly accounting sheets, to nearest 0.1 AF.

B-11
1963

DEMANDS BY COLORADO FOR AGREEMENT ACCOUNT WATER

B-11
1963

RELEASES TO COLORADO USERS FROM JOHN MARTIN RESERVOIR
OPERATIONS SECRETARY, ARCA: IN ACRE FEET (1)
REPORT YEAR ENDING OCTOBER 31, 1963

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.0	0.0	0.0	0.0	18.4	934.8	680.8	155.9	418.8	185.1	442.5	1
2	0.0	0.0	0.0	0.0	0.0	29.5	682.2	680.8	218.6	684.3	185.1	442.5	2
3	0.0	0.0	0.0	0.0	0.0	29.5	411.5	418.2	256.2	815.7	156.3	442.5	3
4	0.0	0.0	0.0	0.0	0.0	29.5	392.2	378.5	256.2	251.8	151.1	454.2	4
5	0.0	0.0	0.0	0.0	0.0	29.5	375.6	483.1	271.4	251.8	151.1	422.3	5
6	0.0	0.0	0.0	0.0	0.0	29.5	437.2	483.1	288.2	251.8	151.1	422.3	6
7	0.0	0.0	0.0	0.0	0.0	29.5	408.6	370.0	282.8	251.8	88.0	412.2	7
8	0.0	0.0	0.0	0.0	0.0	11.1	389.9	130.3	282.8	142.5	87.8	442.8	8
9	0.0	0.0	0.0	0.0	0.0	0.0	389.9	43.8	313.8	183.7	78.7	482.9	9
10	0.0	0.0	0.0	0.0	0.0	0.0	487.9	43.8	490.7	389.1	15.8	482.9	10
11	0.0	0.0	0.0	0.0	0.0	0.0	515.6	0.0	568.6	351.2	0.0	471.9	11
12	0.0	0.0	0.0	0.0	0.0	16.0	470.7	0.0	282.9	218.7	0.0	442.8	12
13	0.0	0.0	0.0	0.0	0.0	29.5	282.4	0.0	111.4	103.4	0.0	430.1	13
14	0.0	0.0	0.0	0.0	0.0	29.5	289.8	0.0	402.4	103.4	0.0	14.2	14
15	0.0	0.0	0.0	0.0	0.0	0.0	507.9	328.1	0.0	103.4	125.9	0.0	15
16	0.0	0.0	0.0	0.0	0.0	784.9	328.1	0.0	0.0	103.4	243.4	0.0	16
17	0.0	0.0	0.0	0.0	0.0	794.9	328.1	0.0	0.0	457.4	280.1	27.8	17
18	0.0	0.0	0.0	0.0	0.0	794.9	277.3	0.0	0.0	689.8	63.6	53.6	18
19	0.0	0.0	0.0	0.0	0.0	794.9	105.5	0.0	0.0	339.4	23.9	22.3	19
20	0.0	0.0	0.0	0.0	0.0	787.4	9.9	0.0	0.0	177.3	23.9	0.0	20
21	0.0	0.0	0.0	0.0	0.0	832.4	0.0	0.0	0.0	39.9	23.9	0.0	21
22	0.0	0.0	0.0	0.0	0.0	853.4	0.0	0.0	0.0	39.9	175.1	0.0	22
23	0.0	0.0	0.0	0.0	0.0	1,007.0	0.0	0.0	328.9	39.9	310.9	0.0	23
24	0.0	0.0	0.0	0.0	0.0	1,096.2	0.0	0.0	849.5	314.9	342.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	1,082.1	0.0	0.0	804.0	302.5	342.0	0.0	25
26	0.0	0.0	0.0	0.0	0.0	681.9	0.0	0.0	618.9	385.6	342.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	529.2	0.0	0.0	479.1	445.8	342.0	0.0	27
28	0.0	0.0	0.0	0.0	0.0	492.7	0.0	0.0	429.8	445.8	342.0	0.0	28
29	0.0	0.0	0.0	0.0	0.0	921.2	0.0	0.0	406.7	222.4	635.6	402.3	29
30	0.0	0.0	0.0	0.0	0.0	918.1	0.0	0.0	406.7	208.6	813.8	402.3	30
31	0.0	0.0	0.0	0.0	0.0	0.0	316.8	0.0	223.6	14.0	0.0	0.0	31
TOTAL AF	0.0	0.0	0.0	0.0	0.0	13,183.4	8,152.1	4,565.6	8,166.5	9,715.0	5,004.9	5,826.2	TOTAL AF
TOTAL YEAR	54,727 ACRE FEET												

NOTES: (1) Operations Secretary data rounded to the nearest 0.1 AF.
(2) Includes releases from temporary sub-account to City of Lamar's recharge project as follows: Aug. 799.1 AF, Sept. 471.7 AF, Oct. 320.6 AF.

B-12
1993

DEMANDS BY KANSAS FOR AGREEMENT ACCOUNT WATER

B-12
1993

RELEASES TO KANSAS USERS FROM JOHN MARTIN RESERVOIR [1]
OPERATIONS SECRETARY, ARCA, IN ACRE FEET [2]
REPORT YEAR ENDING OCTOBER 31, 1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	2
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	3
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	5
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	6
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	8
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	10
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	11
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	495.9	793.4	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	793.4	0.0	0.0	0.0	25
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	793.4	0.0	0.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	793.4	0.0	0.0	0.0	27
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	620.3	0.0	0.0	0.0	28
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	0.0	29
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	0.0	30
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31
TOTAL AF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,250.3	22,042.1	0.0	0.0	0.0	TOTAL AF
TOTAL YEAR	27,298 ACRE FEET												

NOTES: [1] Does not include releases from transit loss account.

[2] Operations Secretary data rounded to the nearest 0.1 AF.

B-13
1993

STATELINE FLOWS ON DAYS OF KANSAS DEMANDS

B-13
1993

FRONTIER DITCH PLUS ARKANSAS RIVER AT THE STATELINE
OPERATIONS SECRETARY, ARCA, IN ACRE FEET [1], [2]
REPORT YEAR ENDING OCTOBER 31, 1993

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0	0	0	0	0	0	0	0	1,012	472	0	0	1
2	0	0	0	0	0	0	0	0	960	476	0	0	2
3	0	0	0	0	0	0	0	0	934	403	0	0	3
4	0	0	0	0	0	0	0	0	901	397	0	0	4
5	0	0	0	0	0	0	0	0	875	0	0	0	5
6	0	0	0	0	0	0	0	0	801	0	0	0	6
7	0	0	0	0	0	0	0	0	932	0	0	0	7
8	0	0	0	0	0	0	0	0	897	0	0	0	8
9	0	0	0	0	0	0	0	0	839	0	0	0	9
10	0	0	0	0	0	0	0	0	877	0	0	0	10
11	0	0	0	0	0	0	0	0	868	0	0	0	11
12	0	0	0	0	0	0	0	0	904	0	0	0	12
13	0	0	0	0	0	0	0	0	956	0	0	0	13
14	0	0	0	0	0	0	0	0	1,041	0	0	0	14
15	0	0	0	0	0	0	0	0	1,131	0	0	0	15
16	0	0	0	0	0	0	0	0	1,027	0	0	0	16
17	0	0	0	0	0	0	0	0	986	0	0	0	17
18	0	0	0	0	0	0	0	0	960	0	0	0	18
19	0	0	0	0	0	0	0	0	972	0	0	0	19
20	0	0	0	0	0	0	0	0	1,025	0	0	0	20
21	0	0	0	0	0	0	0	0	1,002	0	0	0	21
22	0	0	0	0	0	0	0	0	1,000	0	0	0	22
23	0	0	0	0	0	0	0	0	962	0	0	0	23
24	0	0	0	0	0	0	0	0	897	0	0	0	24
25	0	0	0	0	0	0	0	0	883	0	0	0	25
26	0	0	0	0	0	0	0	0	887	0	0	0	26
27	0	0	0	0	0	0	0	0	897	871	0	0	27
28	0	0	0	0	0	0	0	0	889	881	0	0	28
29	0	0	0	0	0	0	0	0	832	897	0	0	29
30	0	0	0	0	0	0	0	0	982	694	0	0	30
31	0	0	0	0	0	0	0	0	585	0	0	0	31
TOTAL AF	0	0	0	0	0	0	0	4,295	28,575	1,749	0	0	TOTAL AF
TOTAL YEAR	34,619 ACRE FEET												

NOTES [1] Stateline flow is sum of Arkansas River and Frontier Ditch near Coolidge, Kansas, on days of Kansas demand, including applicable
rundown period, rounded to nearest acre foot, data revised from that presented in Oper. Sec. 93 Report Table XI to reflect final USGS
published data shown in Appendix B-7c.

B-14a
1993

DIVERSIONS BY DITCHES, COLORADO WATER DISTRICT 14

SOURCE: COLO. DWR, WATER COMMISSIONER MONTHLY REPORTS, ACRE-FEET (1)
REPORT-YEAR ENDING OCTOBER 31, 1993

B-14a
1993

DITCH OR CANAL	SOURCE [2]	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
BESSEMER	RIVER	787.7	0.0	0.0	0.0	2,907.4	4,301.8	8,278.5	14,096.7	11,127.4	4,635.6	4,508.7	4,508.9	54,941.8
	RES./IMP.	0.0	0.0	0.0	0.0	1,070.3	2,088.5	587.3	3,840.5	6,705.6	852.0	482.7	15,398.7	
	TOTAL	787.7	0.0	0.0	0.0	2,907.4	5,372.1	10,367.0	14,964.0	14,967.8	11,341.3	5,181.7	5,058.6	70,328.5
MINNEQUAJUNION		1,667.9	2,739.6	980.2	1,882.4	3,721.3	2,357.8	4,390.8	4,236.9	4,412.5	4,068.4	4,048.3	3,079.5	37,805.5
WEST PUEBLO		0.0	0.0	0.0	0.0	0.0	59.6	47.0	112.2	157.0	114.5	23.8	27.8	541.9
EXCELSIOR		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLLIER		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLORADO	RIVER	0.0	255.7	8,268.9	11,481.7	5,837.6	0.0	10,239.3	28,240.7	2,697.0	0.0	0.0	0.0	65,020.9
	RES./IMP.	0.0	1,382.9	4,533.5	0.0	0.0	12,780.0	9,885.4	890.9	9,109.8	7,555.4	3,113.4	0.0	48,981.2
	TOTAL	0.0	1,618.6	12,802.3	11,418.7	5,837.6	12,780.0	19,924.8	27,101.6	11,788.8	7,555.4	3,113.4	0.0	216,894.1
HIGHLINE	RIVER	3,286.4	0.0	0.0	0.0	2,465.7	7,162.0	14,977.8	20,489.5	13,888.9	7,155.6	7,173.0	6,485.9	83,094.9
	RES./IMP.	0.0	0.0	0.0	0.0	0.0	3,974.0	3,007.9	555.4	4,232.3	5,459.6	874.4	0.0	17,903.6
	TOTAL	3,286.4	0.0	0.0	0.0	2,465.7	11,136.0	17,985.7	21,044.9	18,121.2	12,615.2	7,847.4	6,485.9	100,998.5
OXFORD-FARMER RIVER		1,109.1	0.0	0.0	0.0	1,072.9	5,082.0	4,711.9	5,515.3	7,103.1	2,121.8	849.7	1,332.9	28,878.4
	RES./IMP.	0.0	0.0	0.0	0.0	0.0	587.6	92.6	0.0	1,877.3	164.5	0.0	0.0	2,721.9
	TOTAL	1,109.1	0.0	0.0	0.0	1,072.9	5,082.0	5,299.5	5,607.8	7,103.1	3,994.0	1,014.1	1,332.9	31,595.3
TOTAL	RIVER	6,851.1	2,995.3	9,259.1	13,374.1	15,704.9	18,943.2	42,645.1	70,891.3	39,385.9	18,095.9	16,804.5	15,533.0	270,083.3
DISTRICT # 14	RES./IMP.	0.0	1,382.9	4,533.5	0.0	0.0	17,804.3	15,389.4	2,076.1	17,182.5	21,597.9	4,804.2	482.7	84,983.5
	TOTAL	6,851.1	4,358.3	13,792.5	13,374.1	15,704.9	36,747.5	58,014.6	72,767.4	56,568.4	39,693.8	21,208.7	15,995.6	355,078.8

NOTES: [1] Colorado DWR data rounded to nearest 0.1 acre feet

[2] "River" refers to direct flow surface diversions of native Arkansas River flows.

"Res." refers to diversion of stored water released from reservoirs.

"Imp." refers to diversions of imported non-native (transmountain) water brought into the Arkansas Basin for use by the canal.

B-14b
1993

DIVERSIONS BY DITCHES, COLORADO WATER DISTRICT 17

SOURCE: COLO. DWR, WATER COMMISSIONER MONTHLY REPORTS, ACRE-FEET (1)
REPORT-YEAR ENDING OCTOBER 31, 1993B-14b
1993

DITCH OR CANAL	SOURCE (2)	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
OTERO	RIVER	1,760.5	0.0	0.0	0.0	1,004.1	0.0	2,670.4	4,009.4	1,226.7	3.1	20.4	5.9	10,702.5
	RES./IMP.	0.0	0.0	0.0	0.0	0.0	0.0	97.2	131.8	266.9	266.9	262.9	89.4	1,180.0
	TOTAL	1,760.5	0.0	0.0	0.0	1,004.1	0.0	2,767.5	4,141.2	1,493.6	302.9	313.4	95.3	11,882.4
CATLIN	RIVER	4,157.1	0.0	0.0	0.0	4,123.6	12,504.7	15,715.3	17,757.1	16,362.2	15,686.3	16,483.3	9,600.1	112,401.7
	RES./IMP.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	668.9	2,875.8	64.9	0.0	3,609.6
	TOTAL	4,157.1	0.0	0.0	0.0	4,123.6	12,504.7	15,715.3	17,757.1	17,031.1	18,562.1	16,548.2	9,600.1	116,011.3
HOLBROOK	RIVER	0.0	2,149.5	2,885.9	900.6	2,492.5	0.0	13,641.1	21,151.3	6,078.1	290.0	0.0	0.0	49,590.0
	RES./IMP.	0.0	0.0	0.0	0.0	0.0	0.0	4,592.0	0.0	2,078.6	6,512.8	2,449.5	0.0	15,631.0
	TOTAL	0.0	2,149.5	2,885.9	900.6	2,492.5	0.0	18,233.1	21,151.3	8,156.7	6,802.8	2,449.5	0.0	65,221.0
ROCKY FORD	RIVER	159.7	0.0	0.0	0.0	1,639.2	4,906.4	5,439.2	6,214.8	6,434.6	6,711.3	4,235.4	4,248.2	39,991.5
	RES./IMP.	13,818.0	14,954.5	12,571.4	12,438.5	5,131.3	0.0	1,198.0	3,131.8	4,978.6	0.0	0.0	0.0	63,243.6
	TOTAL	13,977.7	14,954.5	12,571.4	12,438.5	6,762.5	0.0	7,197.2	9,266.6	11,413.2	0.0	0.0	0.0	123,235.1
FT. LYON STORE	RIVER	15,240.2	0.0	0.0	0.0	10,661.6	21,445.1	28,456.5	42,218.1	40,227.3	13,262.5	11,037.0	15,941.7	199,490.0
	RES./IMP.	0.0	0.0	0.0	0.0	0.0	2,241.1	2,034.7	0.0	4,115.9	27,698.5	329.6	0.0	36,420.8
	TOTAL	15,240.2	0.0	0.0	0.0	10,661.6	23,686.2	30,491.2	42,218.1	44,343.2	40,982.0	12,666.7	23,517.8	244,778.9
LAS ANIMAS CON.	RIVER	35,135.5	17,104.1	15,457.3	13,339.1	25,052.4	38,859.2	68,120.4	94,482.3	70,331.9	35,965.1	31,776.1	29,795.9	475,419.3
	RES./IMP.	0.0	0.0	0.0	0.0	0.0	2,241.1	6,723.9	7,861.5	12,108.8	37,398.0	3,136.9	86.4	69,549.7
	TOTAL	35,135.5	17,104.1	15,457.3	13,339.1	25,052.4	41,100.3	74,844.4	102,343.8	82,440.7	73,363.1	34,913.0	29,882.2	544,969.0
DISTRICT # 17	RIVER	41,986.5	20,099.4	24,716.4	26,713.2	40,757.3	57,802.5	110,765.6	165,173.6	109,717.8	54,061.0	48,390.6	45,328.8	745,502.8
	RES./IMP.	0.0	1,362.9	4,533.5	0.0	0.0	20,043.4	22,093.4	9,937.6	29,291.4	58,985.9	7,741.1	552.0	154,543.1
	TOTAL	41,986.5	21,462.3	29,249.8	26,713.2	40,757.3	77,847.9	132,859.0	175,111.2	139,009.2	113,046.9	56,121.7	45,880.9	900,045.7

NOTES: (1) Colorado DWR data rounded to nearest 0.1 acre feet

(2) "River" refers to direct flow surface diversions of native Arkansas River flows.

"Res." refers to diversion of stored water released from reservoirs.

"Imp." refers to diversions of imported non-native (transmountain) water brought into the Arkansas Basin for use by the canal.

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REPORT-YEAR ENDING OCTOBER 31, 1993

[1] DWR data rounded to nearest 0.1 acre foot

NOTES:

[2] City of Lamar's receipt of Fry-Ark water via Ft. Bent Canal.

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1993

DIVERSIONS BY DITCHES, KANSAS STATELINE TO GARDEN CITY

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1993

COMPILED BY KANSAS DIV. OF WATER RESOURCES, ACRE-FEET [1]
REPORT YEAR ENDING OCTOBER 31, 1993

DITCH OR CANAL	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
DIVERSIONS STATELINE TO SYRACUSE													
FRONTIER [2]	3	35	7	0	0	0	0	747	209	1,598	829	337	3,785
FT. AUBREY [3]	192	0	0	0	0	0	0	0	1,071	52	0	0	1,315
SUBTOTAL	195	35	7	0	0	0	0	747	1,280	1,650	829	337	5,080
DIVERSIONS SYRACUSE TO GARDEN CITY													
AMAZON	0	0	0	0	0	0	0	2,793	3,747	1,598	0	0	8,136
GREAT EASTERN	0	0	0	1,287	3,490	0	1,514	1,181	5,410	958	1,423	1,308	16,551
SOUTH SIDE	1,037	0	0	0	0	0	0	160	2,531	2,987	2,341	0	9,056
FARMERS	1,228	0	0	0	0	0	2,306	2,772	5,310	2,427	594	0	14,637
GARDEN CITY	28	0	0	0	0	0	90	326	504	232	112	0	1,292
SUBTOTAL	2,293	0	0	1,287	3,490	0	3,910	7,212	17,502	8,200	4,470	1,308	49,672
TOTAL DIVERSIONS STATELINE TO GARDEN CITY													
TOTAL	2,488	35	7	1,287	3,490	0	3,910	7,959	18,782	9,850	5,298	1,645	54,752

NOTES:

- [1] Frontier Ditch is USGS record, other ditches are Kansas DWR records.
- [2] Frontier Ditch total diversion includes 731 AF returned directly to the River.
- [3] 1315 AF diverted by Frontier Ditch as authorized under the Ft. Aubrey water right, an uncalculated amount of this water was also returned to the river.

B-16
1993

TRANSMOUNTAIN DIVERSIONS INTO THE ARKANSAS BASIN

SOURCE: DIVISION ENGINEER, COLORADO WATER DIV. 2, ACRE-FEET [1]
REPORT: YEAR ENDING OCTOBER 31, 1993

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1993

STRUCTURE/OWNER	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
TWIN LAKES TUNNEL [2]	265.0	209.0	108.0	87.0	78.0	69.0	10,100.0	29,180.0	17,040.0	3,830.0	1,870.0	571.0	63,193.0
HOMESTAKE TUNNEL [3]	0.0	0.0	0.0	0.0	9,120.0	7,590.0	0.0	2,130.0	8,110.0	1,030.0	28.0	0.0	28,008.0
LARKSPUR DITCH [CATLIN]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	181.0	73.0	48.0	34.0	0.2	334.2
WURTZ DITCH [PUEBLO]	0.0	0.0	0.0	0.0	0.0	0.0	854.0	2,380.0	707.0	136.0	49.0	3.8	4,128.6
EWING DITCH [PUEBLO]	0.0	0.0	0.0	0.0	0.0	0.0	308.0	873.0	299.0	90.0	54.0	5.6	1,627.6
COLUMBINE DITCH [PUEBLO]	0.0	0.0	0.0	0.0	0.0	0.0	335.0	1,490.0	531.0	86.0	35.0	3.5	2,480.5
BOUSTED TUNNEL [SECWCD]	137.0	141.0	141.0	150.0	201.0	228.0	15,670.0	43,870.0	25,120.0	2,390.0	523.0	143.0	88,712.0
BUSK-IVANHOE TUNNEL [4]	0.0	0.0	0.0	0.0	0.0	0.0	415.0	2,740.0	1,430.0	243.0	112.0	3.3	4,943.3
BLUE RIVER PROJECT [5]	38.0	0.0	196.0	172.0	84.0	223.0	3,293.0	5,938.0	343.0	301.0	700.0	596.0	11,995.0
TRANSMOUNTAIN TOTAL	441.0	350.0	443.0	419.0	9,461.0	8,108.0	30,873.0	88,782.0	53,653.0	7,952.0	3,405.0	1,326.2	205,293.2

NOTES:

- [1] Transmountain water diverted into the Arkansas Basin through a facility is generally delivered to some type of storage prior to use. The values reported reflect water diverted into the basin, generally to storage, and are not necessarily measured as flow below Pueblo.
- [2] Twin Lakes ownership: Colorado Spgs. 54.65%, Pueblo 23.14%, Pueblo West 11.56%, Aurora 4.9%, others 5.75%; (also known as Independence Pass Tunnel).
- [3] Homestake ownership: Pueblo 50%, Aurora 49%, others 1%; (also known as Carlton Tunnel).
- [4] Busk-Ivanhoe ownership: Pueblo 50%, Aurora 49%, others 1%; (also known as Carlton Tunnel).
- [5] Values show amount of transmountain water "delivered into the Colorado Springs potable water system" from the Blue and South Platte Rivers via Hoosier Tunnel and Montgomeary Pipeline, as shown in Table 2 of city's Blue River letter report for water year 1993 (October data from subsequent report).
- [6] Aurora owned transmountain water is generally rediverted into and used in the South Platte River Basin via the Otter Pump Station and Spinney Mountain Reservoir. Total Imports for Compact Year 1993 should be reduced by 14,284 AF to reflect water used by Aurora outside the Arkansas Basin.

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1983

SUMMARY TABULATION
COMPILED BY COLORADO WATER CONDS. BD., ACRE FEET
REPORT YEAR ENDING OCTOBER 31, 1983

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1983

STATION/DATE	SOURCE	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	YEAR
Arkansas River at Las Animas	App B-2a	7,030	9,410	7,100	8,560	7,810	2,240	24,140	44,420	30,160	14,250	12,600	8,920	176,640
Purgatoire River near Las Animas	App B-2b	2,150	2,540	2,950	2,110	5,170	17,990	8,460	3,920	1,730	5,200	4,740	1,550	58,510
River Flow into John Martin Res.	App B-2c	9,180	11,950	10,050	10,670	12,980	20,230	32,500	48,340	31,890	19,450	17,340	10,470	235,150
End Month JMR contents [USGS]	App B-3	23,900	40,000	51,200	62,900	76,900	80,200	79,000	91,300	62,800	53,500	47,000	41,300	N/A
Net Change in JMR Contents	calc	10,615	16,100	11,200	11,700	14,000	3,300	(1,200)	12,300	(28,500)	(9,300)	(6,500)	(5,700)	28,015
Evaporation from John Martin Res.	Table 1	267	3	0	62	1,319	2,071	2,183	3,797	3,379	2,256	1,466	1,092	17,895
Outflow from John Martin Res.	App B-4	111	165	165	169	204	15,720	30,450	33,750	55,370	28,800	22,270	16,980	204,155
Diversions in District 67	App B-14c	4,290	24	0	0	266	16,326	37,137	33,222	42,957	37,956	29,824	23,858	225,859
Arkansas River at Stateline	App B-7c	4,965	6,765	7,257	8,300	10,380	8,310	7,660	13,157	28,570	9,500	6,869	8,437	120,170
Diversions by ditches in Kansas	App B-15	2,488	35	7	1,287	3,490	0	3,910	7,959	18,782	9,850	5,299	1,645	54,752

NOTES:
[1] Beginning contents of JMR at 0001 hours, Nov. 1, 1992 was 13,284.87 AF.
[2] Diversions by ditches in Kansas includes 731 AF, and an undetermined amount of water authorized from the Fort Aubrey water right, diverted by Frontier and returned directly to the River, see Appendix B-15 notes [2] and [3].

Notes