Twenty-Ninth Annual Report

Arkansas River Compact Administration

(1977)

For the Report-Year

November 1, 1976 to October 31, 1977

LAMAR, COLORADO

December 13, 1977

THE ADMINISTRATION

FRANK G. COOLEY
Chairman and Representative of the United States

ROBERT TEMPEL, HARRY BATES JR., and FELIX L. SPARKS
for Colorado

CARL E. BENTRUP, M. P. REEVE, and GUY E. GIBSON
for Kansas

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800 South Eighth Street
Lamar, Colorado 81052

TABLE OF CONTENTS

Annual Report Of

ARKANSAS RIVER COMPACT ADMINISTRATION

(1977)

Report-Year November 1, 1976 to October 31, 1977

TO: THE PRESIDENT OF THE UNITED STATES AND THE GOVERNORS OF THE STATES OF COLORADO AND KANSAS

Sirs:

Pursuant to Article VII of the Arkansas River Compact, the Arkansas River Compact Administration submits its report for the Report-year November 1, 1976 through October 31, 1977, as follows:

1. Members of the Administration

Representatives of the United States:

Frank G. Cooley

Colorado Representatives:

Harry Bates Jr., Holly, Colorado (Nov. 1, 1976 to Aug. 16, 1977)
Robert Tempel, Wiley, Colorado (Nov. 1, 1976 to Aug. 16, 1977)
Kent Reyher, Las Animas, Colorado (Aug. 16, 1977 to Oct. 31, 1977)
Leo Idler, Lamar, Colorado (Aug. 16, 1977 to Oct. 31, 1977)
Felix Sparks, Denver, Colorado

Kansas Representatives:

M. P. Reeve, Garden City, Kansas (Nov. 1, 1976 to June 7, 1977)
W. F. Stoeckly, Garden City, Kansas (June 7, 1977 to Oct. 31, 1977)
Carl E. Bentrup, Deerfield, Kansas
Guy E. Gibson, Topeka, Kansas

2. Officers of the Administration

Chairman:

Frank G. Cooley

Vice Chairman:

Carl E. Bentrup

Secretary:

Lane L. Hackett

Treasurer:

Harry Bates Jr. (Nov. 1, 1976 to Aug. 16, 1977)

3. Standing Committee

Administrative and Legal Committee:

Felix L. Sparks (Chairman)
M. P. Reeve (Nov. 1, 1976 to June 7, 1977).

Engineering Committee:

Guy E. Gibson, (Chairman)
Robert Tempel (Nov. 1, 1976 to Aug. 16, 1977)

Operations Committee:

Harry Bates Jr., (Chairman) (Nov. 1, 1976 to Aug. 16, 1977)
Carl E. Bentrup

The Representative of the United States is an ex-officio member of all standing committees.

4. Meetings:

Dec. 14, 1976	Annual Meeting
April 12, 1977	Special Telephonic Meeting
April 23, 1977	Special Meeting in Trinidad, Colorado
May 22, 1977	Special Telephonic Meeting
May 26, 1977	Special Telephonic Meeting
August 3, 1977	Special Telephonic Meeting
August 11, 1977	Special Telephonic Meeting
August 23, 1977	Special Telephonic Meeting

5. Fiscal:

Note: At the 1976 annual meeting, the Compact Administration voted that all future audits be done on the fiscal year from July 1 to June 30. The treasurer's report for the 29th annual report is therefore abbreviated to the eight month period from November 1, 1976 to June 30, 1977.

(a) Balance on hand November 1, 1976	$9,436.00
(b) Receipts: Interest (Pass book savings account)	123.00
(c) Total funds available	$9,559.00

(d) Disbursements by the Administration:

Date	Voucher No.	Payee—Purpose		
11/ 8/76	287	Mountain Bell—Telephone		$ 54.95
11/ 8/76	288	Lane L. Hackett—Salary	$423.68	
		Travel	163.56	
		Postage	26.00	613.24
11/23/76	289	Sears Roebuck—Office Supplies		29.27
12/10/76	290	Mountain Bell—Telephone		56.55
12/ 3/76	291	Joetta Hackett—Typing		30.00
12/15/76	292	Crimond, Schemahorn & Co.—Audit		200.00
12/15/76	293	Gobins—Office Supplies		13.50
1/ 1/77	294	Mountain Bell—Telephone		112.23
1/ 1/77	295	Federal Reserve Bank—F.I.C.A.		52.65
1/ 3/77	296	Judith Sternholm—Certified Reporter		140.14
1/ 7/77	297	First National Bank—Savings Account		(6,000.00)
2/ 4/77	298	Crimond, Schemahorn—Printing (Xerox)		109.65
2/ 4/77	299	Etter Office Supply—Office Supplies		51.55
2/ 4/77	300	Lane L. Hackett—Salary	$423.68	
		Office Supplies	17.20	
		Postage	26.00	
		Travel	158.32	625.20
2/ 4/77	301	Mountain Bell—Telephone		61.04
2/22/77	302	Federal Reserve Bank—F.I.C.A.		52.65
3/ 9/77	303	Mountain Bell—Telephone		86.06
4/ 9/77	304	Mountain Bell—Telephone		48.12
4/ 9/77	305	Federal Reserve Bank—F.I.C.A.		52.65
4/23/77	307	Dan Marques—Travel		20.30
5/11/77	308	Mountain Bell—Telephone		123.45
5/11/77	309	Bertha Sandoval—Certified Reporter		132.50
6/ 8/77	310	Ramada Inn—Meeting		33.71
6/ 8/77	311	Mountain Bell—Telephone		47.88
6/ 8/77	312	Milne Agents—Treasurers Bond		25.00
6/ 8/77	313	Lamar Daily News—Printing		633.36
6/ 8/77	314	Lane L. Hackett—Salary	$423.63	
		Office Supplies	15.60	
		Postage	52.00	
		Travel	171.60	662.88
		TOTAL DISBURSEMENTS		$4,167.00

(e) Balance on hand June 30, 1977 ..... $5,392.00

(f) The budget for fiscal year July 1, 1978 to June 30, 1979 was adopted by the administration at the annual Compact meeting December 14, 1976.

PROPOSED BUDGET

Fiscal Year July 1, 1978—June 30, 1979

Personal Services		$ 3,540.00
Secretary's Salary	$2,400.00	
Social Security	140.00	
Professional Services	1,000.00	
U.S. Geological Survey		9,800.00
Cooperative Agreement	$4,800.00	
Flood Routing Study	5,000.00	
Capital Outlay		$ 100.00
Office Equipment	$ 100.00	
Maintenance and Operation		5,175.00
Bond (Treasurer)	$ 25.00	
Printing	850.00	
Travel and Meeting	1,350.00	
Telephone and Telegraph	650.00	
Office Supplies	300.00	
Contingency	2,000.00	
TOTAL BUDGET 1978-1979		$18,615.00
Estimated Carryover June 30, 1978		250.00
To Be Appropriated		$18,365.00
Colorado (60%)	$11,019.00	
Kansas (40%)	7,346.00	

(g) Pursuant to provisions of the Compact (Article VIII-E(3)) and of the By-Laws of the Administration (Article VII (5)), the receipts and disbursements of the Administration during the compact year have been audited, and the report of the audit is hereto attached as Appendix "A."

6. Facts about John Martin Project:

The John Martin Reservoir Project was built by the Corps of Engineers, United States Army. 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 by 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 Engineer District, Albuquerque, New Mexico. Mr. Russell Smith has been the resident superintendent of the project since October, 1976.

The John Martin Reservoir Project is part of the comprehensive

plan for the control of floods and the development of the water resources of the entire Arkansas River basin. The reservoir provides 270,375 acre-feet of storage capacity for flood control. It protects the fertile Arkansas River Valley below the dam from floods originating in the 18,915 square miles of the Arkansas River basin above the dam. It provides 350,951 acre-feet of storage space for conservation and recreation. John Martin Reservoir supplies water to the irrigated lands below the dam as far as Garden City, Kansas. The top of the conservation pool is 3,851 feet above mean sea level, which provides 350,951 acre-feet of storage for irrigation. The release of stored flood waters in excess of the conservation and recreation pools and above elevation 3,851 feet is planned so that, when combined with flows originating downstream from the dam, the capacity of the channel will not be exceeded. Upon request of the Arkansas River Compact Administration, irrigation water for downstream water users is released through the outlet works in the base of the dam. Downstream flood damages prevented by John Martin Dam already exceed the cost of the project. Benefits have already passed the $92 million mark.

Recreation and favorable fish and wildlife habitats are derived from this project. With reservoir lands open to all, there are many attractive public use areas for outdoor recreation, water sports, fishing and boating, or just relaxed living. 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, the center of year-round recreation.

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 gated spillway provided with sixteen 30 feet by 64 feet tainter gates with 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 are 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'	16
Discharge capacity, cubic feet per second	639,200
OUTLET WORKS	
Sluicing conduits, 6' x 7½'	4
Regulating conduits, 4' x 4'	2
RESERVOIR	
Capacity, acre-feet	621,326
Flood control storage, acre-feet	270,375

Conservation (irrigation) and recreation, storage, acre-feet	350,951
Water surface at spillway crest, acres	8,960
Water surface at top of conservation pool, acres	11,655
Water surface at top of flood control pool, acres	17,630
Drainage area, square miles	18,915

A ½-mile of the historic Santa Fe Trail north of the reservoir has been enclosed by a fence. An appropriate sign perpetuates this bit of Americana for posterity.

7. Cooperative Studies and Activities:

(a) 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, the Commissioner of the United States Bureau of Reclamation, and the Chief of the Engineers, United States Army, to cooperate and collaborate with the Administration and with 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.

(b) 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 United States Geological Survey has continued the operation of the compact gaging stations and the analysis and compilation of the hydrologic data presented in this report and used in the administration of the Compact. The Corps of Engineers continued to operate the conservation pool of John Martin Reservoir in accordance with the terms of the Compact and the orders of the Administration.

8. Water Supply, Reservoir Operation, and Hydrologic Data

During Compact Year 1976, the Amity Mutual Irrigation Company developed a proposal to store its adjudicated Great Plains Reservoir storage rights in John Martin Reservoir. This proposal was presented to the Compact Commission and was enthusiastically adopted by the Commission after a few minor alterations. The final agreement allowed the Amity to store up to 15,000 acre feet of its Great Plains storage rights in John Martin during the 1977 Compact Year beginning November 1, 1976. Under terms of the agreement, the Amity storage water was defined as the amount of water actually delivered to John Martin Reservoir by the Amity minus evaporation losses. The Amity water could only be delivered after the compact water in the conservation pool was evacuated and was apportioned 90% to Colorado and 10% to Kansas. Appendices B-16 and B-17 record demands by Kansas and Colorado for Amity storage water. The Amity storage

reached a maximum of 12,255 acre feet on February 18, 1977 the last day Amity water was delivered to John Martin. Kansas made a demand for its share of Amity storage at 0600 hrs. on April 15, 1977. Colorado's demand for Amity water followed at 0700 hrs. on April 16, 1977.

The winter storage season for John Martin Reservoir began on November 1, 1976 at 12:01 a.m., with the reservoir empty.

By April 1, 1977, the first day of the summer storage period, total compact storage had reached 8722 acre feet. No demand was made for Compact water until 0001 hrs. on April 11, 1977 when Colorado demanded 600 cfs and Kansas demanded 400 cfs. Both states sustained demand until 0600 hrs. on April 15, 1977 when compact storage was emptied.

Although several tributary freshets occurred above John Martin in late April and early May of 1977, flows were not sufficient to justify summer storage until May 21. At 1400 hrs. on May 21, Colorado demanded 420 cfs and Kansas demanded 400 cfs until storage was emptied at 1900 hrs. on May 22. Due to flows from the Purgatoire, summer storage was again commenced at 0630 hrs. on May 26, 1977 when Colorado called for 450 cfs and Kansas called for 400 cfs. Storage was emptied at 1800 hrs. on May 27.

River flows were low during June and July and no water was available for storage until August. Due to a freshet from the Purgatoire River, John Martin Reservoir gates were regulated for storage beginning at 2000 Hrs. on August 2, 1977 and a release of 400 cfs was made to Kansas and 600 cfs to Colorado. These releases were continued until 2000 Hrs. on August 3 when the reservoir was emptied. Purgatoire River flows again justified storage at 1700 Hrs. on August 10, 1977. Calls for 400 cfs from Kansas and 600 cfs from Colorado emptied the Reservoir by 1800 Hrs. on the following day.

Combined flows from the Arkansas River, Purgatoire River, and Rule Creek were sufficient to begin storage at 1600 Hrs. on August 18, 1977 when Colorado demanded a 600 cfs release and Kansas demanded a 400 cfs release. These demands caused the Reservoir to be emptied by August 26 at 1700 Hrs.

Low river flows were encountered for the remainder of the compact year and the gates were closed for winter storage at 2400 Hrs. on October 31, 1977.

The first demand for river flow was made by Colorado at 0800 Hrs. on March 1, 1977. This demand for river flow was continued until 1100 Hrs. on April 26, 1977 when the reservoir was evacuated of both the Compact water and Amity storage water. John Martin went into summer storage five other times during the Compact year and Colorado made demands for river flow releases during two of these periods. The first river flow demand of 250 cfs occurred from 2000 hrs. on August 2, 1977 until 2000 hrs. on August 3, 1977. The second demand was for 200 cfs from 1700 hrs. on August 10, 1977 to 1430 hrs. on August 11, 1977.

9. GAGING STATIONS

In general, streamflow records of satisfactory accuracy were obtained at the compact stations. Emphasis was continued on performing additional field work to increase the accuracy of the records and on providing current streamflow data to the Administration and State officials, as required.

The control for the Purgatoire River near Las Animas continues to be a problem, but the expense of a permanent control is probably not justified. The changing of the stage-discharge relationship by beavers building brush dams just downstream from several of the gages continues to be a problem.

The replacement radios for the four gaging stations and the receivers for the Lamar, Colorado, and Garden City, Kansas offices should be available soon after January 1, 1978.

The administration approved a cooperative agreement with the U.S. Geological Survey for the fiscal year October 1, 1977, to September 30, 1978, in the amount of $28,000 — $14,400 for each party. These funds are for the operation of the compact stations, the providing of current streamflow data, maintenance of radio equipment, and the preparation of records for the Annual Report. The replacement of the four transmitting stations for the total amount of $20,000 is included in this agreement.

The operation of the Frontier Ditch and Arkansas River at Coolidge gaging stations was transferred to the Kansas District, U.S. Geological Survey effective October 1, 1977. No change in the cooperative agreement is required, nor are any operation problems anticipated.

10. Findings of fact by the Administration

SPECIAL TELEPHONIC MEETINGS

August 3, 1977

A special telephonic meeting was held August 3, 1977 in accordance with Article V-f of the Compact for the purpose of declaring that the reservoir would become empty August 3, 1977. Mr. C. J. Kuiper, Colorado State Engineer, and Mr. Robert Jesse, Division Engineer were notified of this action and the administration of decreed water rights for Colorado would begin August 3, 1977, unless a change of conditions justified cancellation or modification of this notice. The reservoir became empty at 8:00 P.M. Aug. 3, 1977.

Participating members:

For Colorado — Mr. Bates and Mr. Temple
For Kansas — Mr. Bentrup and Mr. Reeve.

August 11, 1977

A special telephonic meeting was held August 11, 1977 in accordance with Article V-f of the Compact for the purpose of declaring that the reservoir would become empty August 11, 1977. Mr. C. J. Kuiper, Colorado State Engineer, and Mr. Robert Jesse, Division Engineer were notified of this action and the administration of decreed water rights for Colorado would begin August 11, 1977, unless a change of conditions justified cancellation or modification of this notice. The reservoir became empty at 6:00 P.M. Aug. 11, 1977.

Participating members:

For Colorado — Mr. Bates and Mr. Temple
For Kansas — Mr. Bentrup and Mr. Reeve.

August 23, 1977

A special telephonic meeting was held August 23, 1977 in accordance with Article V-f of the Compact for the purpose of declaring

that the reservoir would become empty August 25, 1977. Mr. C. J. Kuiper, Colorado State Engineer, and Mr. Robert Jesse, Division Engineer were notified of this action and the administration of decreed water rights for Colorado would begin August 25, 1977, unless a change of conditions justified cancellation or modification of this notice. The reservoir became empty at 5:00 P.M. August 26, 1977.

Participating members:

For Colorado — Mr. Bates and Mr. Temple
For Kansas — Mr. Bentrup and Mr. Reeve

April 12, 1977

A special telephonic meeting was held April 12, 1977 in accordance with Article V-f of the Compact for the purpose of declaring that the reservoir would become empty April 15, 1977. Mr. C. J. Kuiper, Colorado State Engineer, and Mr. Robert Jesse, Division Engineer were notified of this action and the administration of decreed water rights for Colorado would commence on April 15, 1977, unless a change of conditions justified cancellation or modification of this notice. The reservoir became empty at 6:00 A.M., April 15, 1977.

Participating members:

For Colorado — Mr. Bates and Mr. Temple
For Kansas — Mr. Bentrup and Mr. Reeve

May 22, 1977

A special telephonic meeting was held May 22, 1977 in accordance with Article V-f of the Compact for the purpose of declaring that the reservoir would become empty May 22, 1977. Mr. C. J. Kuiper, Colorado State Engineer, and Mr. Robert Jesse, Division Engineer were notified of this action and the administration of decreed water rights for Colorado would commence on May 22, 1977, unless a change of conditions justified cancellation or modification of this notice. The reservoir became empty at 7:00 P.M. May 22, 1977.

Participating members:

For Colorado — Mr. Bates and Mr. Temple
For Kansas — Mr. Bentrup and Mr. Reeve

May 26, 1977

A special telephonic meeting was held May 26, 1977 in accordance with Article V-F of the Compact for the purpose of declaring that the reservoir would become empty May 26, 1977. Mr. C. J. Kuiper, Colorado State Engineer, and Mr. Robert Jesse, Division Engineer were notified of this action and the administration of the decreed water rights for Colorado would commence on May 26, 1977, unless a change of conditions justified cancellation or modification of this notice. The reservoir became empty at 6:00 P.M. May 26, 1977.

Participating members:

For Colorado — Mr. Bates and Mr. Temple
For Kansas — Mr. Bentrup and Mr. Reeve

APPENDICES FOR ANNUAL REPORT OF THE ARKANSAS RIVER COMPACT ADMINISTRATION

For the Report-Year
November 1, 1976, to October 31, 1977

Appendices:

APPENDIX "A"

AUDITOR'S REPORT

Crimond, Schemahorn & Co.

CERTIFIED PUBLIC ACCOUNTANTS
203 East Oak
Lamar, Colorado 81052

To the Representatives
Arkansas River Compact Administration
Lamar, Colorado 81052

We have examined the Statement of Assets and Liabilities Arising from Cash Transactions of the Arkansas River Compact Administration as of June 30, 1977, and the Statement of Cash Receipts and Disbursements and Changes in Cash Balance for the eight month period then ended. We have also examined the Statement of Cash Receipts and Disbursements with Budget Comparison for the budget year ended June 30, 1977. Our examination was conducted 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.

EXHIBIT A

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF ASSETS AND LIABILITIES
ARISING FROM CASH TRANSACTIONS
JUNE 30, 1977

ASSETS:		
Cash and Savings	$5,392	
Equipment	1,715	
Concrete Control	8,000	
TOTAL ASSETS		$15,107
LIABILITIES:		
CASH BASIS EQUITY:		
Expended:		
Equipment	$1,715	
Concrete Control	8,000	
Unexpended		5,392
TOTAL CASH BASIS EQUITY —NOTE 1a and 2		$15,107
TOTAL LIABILITIES AND CASH BASIS EQUITY		$15,107

The accompanying notes are an integral part of the financial statements.

EXHIBIT B

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
AND CHANGES IN CASH BALANCE
FOR THE EIGHT MONTH PERIOD ENDED JUNE 30, 1977

CASH IN BANK, NOVEMBER 1, 1976		$ 9,436
RECEIPTS:		
Revenue from Assessments:		
Colorado	$ —	
Kansas	—	
Interest	123	
TOTAL RECEIPTS		$ 123
DISBURSEMENTS:		
Insurance	25	
Professional Fees	200	
Office Supplies	127	
Printing	743	
Secretary's Salary—Net	1,271	
Payroll Taxes	158	
Telephone	590	
Typing and Mailing	134	
Travel and Meetings	547	
Certified Reporter	372	
TOTAL DISBURSEMENTS		$ 4,167
EXCESS OF DISBURSEMENTS OVER RECEIPTS		(4,044)
CASH BALANCE, JUNE 30, 1977		$ 5,392

The accompanying notes are an integral
part of the financial statements.

EXHIBIT C

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
WITH BUDGET COMPARISON FOR THE BUDGET YEAR
JULY 1, 1976 TO JUNE 30, 1977

	BUDGET	ACTUAL	ACTUAL OVER (UNDER)
CASH IN BANK, JULY 1, 1976	$ 100	$ 4,005	$ 3,905
RECEIPTS:			
Revenue from Assessments:			
Colorado—60%	4,980	4,980	—
Kansas—40%	3,320	3,320	—

Interest	---	123	123
TOTAL RECEIPTS	8,300	8,423	123
TOTAL TO ACCOUNT FOR	8,400	12,428	4,028
DISBURSEMENTS:			
U.S. Geological Survey—Gauging	4,000	1,000	(3,000)
Secretary's Salary—Net	1,800	1,695	(105)
Bond	25	50	25
Telephone	375	901	526
Payroll Taxes	210	158	(52)
Typing and Mailing	150	160	10
Travel and Meetings	600	1,158	558
Professional Fees	140	200	60
Office Supplies	100	127	27
Printing	600	743	143
Certified Reporter	100	764	664
Office Equipment	100	80	(20)
Office Publications	100	---	(100)
Investigation and Inspection	100	---	(100)
TOTAL DISBURSEMENTS	8,400	7,036	(1,364)
CASH IN BANK, JUNE 30, 1977	$ ---	$ 5,392	$ 5,392

The accompanying notes are an integral part of the financial statements.

ARKANSAS RIVER COMPACT ADMINISTRATION
NOTES TO CASH BASIS STATEMENTS
JUNE 30, 1977

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 key accounts needed to present financial position and results of operations are omitted; examples of these accounts are accounts receivable and accounts payable.

Note 2—The Compact, during its December 14, 1976, meeting, changed the year end from October 31 to June 30. The statements are presented for the eight month period November 1, 1976, to June 30, 1977, except for the Statement of Cash Receipts and Disbursements with Budget Comparison which is for the period July 1, 1976, to June 30, 1977.

In our opinion, Exhibits A and B, present fairly the Assets and Liabilities Arising from Cash Transactions of the Arkansas River Compact Administration at June 30, 1977, and the results of Cash Transactions for the eight month period then ended and Exhibit C presents fairly the cash transactions of the budget year ended June 30, 1977.

Crimond, Schemahorn & Co.

July 11, 1977
Lamar, Colorado

APPENDIX 'B-1'

Arkansas River Above Pueblo, Colorado

ARKANSAS RIVER ABOVE PUEBLO, CO.
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	292	144	82	82	73	112	182	274	546	225	76	106
2	336	144	82	82	73	90	192	396	535	154	86	103
3	382	144	82	84	73	99	244	490	451	120	84	103
4	459	144	82	84	73	88	252	595	520	116	84	128
5	495	144	82	84	103	82	372	605	383	122	92	144
6	488	146	82	84	120	87	313	605	278	134	86	120
7	500	146	82	81	132	101	296	640	260	146	98	118
8	427	130	82	75	140	116	264	611	252	148	90	126
9	364	128	82	75	140	116	316	1060	268	132	78	130
10	332	122	82	75	178	106	585	1170	278	101	88	146
11	313	122	82	75	192	139	639	1260	238	63	68	140
12	310	122	82	75	170	254	778	1070	223	73	90	126
13	86	122	81	75	162	257	640	859	212	132	140	154
14	82	122	81	75	154	257	515	728	235	166	160	140
15	87	122	81	75	128	288	590	660	252	549	164	134
16	103	110	81	75	138	306	783	739	210	178	146	134
17	116	103	81	75	148	306	750	728	220	164	156	134
18	126	103	81	75	134	418	690	728	208	156	162	156
19	126	174	81	75	124	656	673	700	192	175	162	178
20	128	382	81	75	124	734	646	610	389	381	162	182
21	128	382	81	75	124	414	605	575	739	445	160	178
22	130	388	81	73	124	394	575	560	1120	414	154	142
23	132	318	82	73	124	427	560	310	700	340	114	126
24	142	103	82	73	116	418	545	299	630	324	97	126
25	142	103	82	73	99	388	280	344	853	320	110	122
26	144	101	82	73	92	360	152	555	963	344	122	120
27	144	94	82	73	92	352	198	520	595	190	126	116
28	144	82	82	73	92	340	250	540	751	99	128	106
29	144	82	82		101	302	302	535	278	106	134	106
30	144	82	82		99	164	320	535	235	103	126	106
31		82	82		114		296		195	79		106
TOTAL												
sec. ft.	6954	4705	2532	2142	3756	8171	14033	19341	13258	6197	3542	4058
ac. ft.	13790	9330	5020	4250	7450	16210	27830	38360	26300	12290	7030	8050

THE YEAR 175,900 acre-ft.

APPENDIX 'B-2'

Arkansas River At Las Animas, Colorado

ARKANSAS RIVER AT LAS ANIMAS, COLORADO
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	69	55	85	253	51	14	171	8.5	8.0	35	17	4.2
2	43	44	216	310	29	14	110	7.6	7.6	15	17	4.2
3	32	40	220	260	29	14	67	8.0	7.2	25	17	5.3
4	26	36	240	252	29	14	57	8.5	6.4	16	16	4.5
5	24	35	260	220	26	14	26	8.0	5.6	26	15	4.2
6	24	33	232	174	21	14	19	8.5	5.6	14	14	4.2
7	20	31	252	156	20	14	17	8.0	5.3	14	12	4.2
8	18	30	275	102	20	14	16	8.5	7.2	85	12	3.9
9	14	35	165	85	30	14	14	8.0	6.0	24	11	4.2
10	14	37	150	85	30	14	14	8.9	5.3	852	10	4.5
11	13	36	177	65	19	14	14	14	5.3	351	10	4.8
12	13	37	195	59	19	14	14	153	4.8	174	12	5.1
13	13	36	236	54	22	16	13	280	4.5	146	10	5.4
14	14	34	275	49	22	16	14	220	4.9	80	8.7	5.4
15	14	34	295	49	19	16	13	174	6.8	24	7.8	5.4
16	13	33	248	49	18	16	13	196	18	19	7.8	5.4
17	12	33	236	49	17	16	12	102	7.2	318	7.0	5.4
18	12	33	252	46	17	84	11	123	5.3	127	6.6	5.4
19	12	33	300	44	16	36	12	153	4.9	1720	7.0	5.4
20	12	29	280	42	16	215	15	91	4.5	277	7.0	5.4
21	11	29	265	42	16	531	21	83	7.2	563	5.8	5.4
22	11	26	265	43	15	402	12	50	107	253	5.4	5.4
23	11	26	310	38	14	285	13	26	288	154	5.4	6.2
24	11	30	330	36	15	150	14	17	130	97	5.8	6.2
25	11	31	295	39	15	150	13	16	97	52	5.1	5.8
26	12	28	248	37	14	112	11	14	679	47	5.1	5.8
27	30	28	265	35	14	81	10	13	347	37	4.2	5.8
28	45	28	300	32	14	39	16	11	238	26	3.4	5.8
29	45	28	192		14	29	16	9.4	171	55	4.2	5.8
30	50	25	177		14	243	9.8	9.4	54	33	4.2	5.4
31		135	200		13		8.5		148	22		5.4
TOTAL												
sec. ft.	661	1190	7466	2704	588	2604	764.3	1837.3	2207.7	5630	273.5	159.5
ac. ft.	1310	2360	14810	5360	1170	5170	1520	3640	4380	11170	542	316

THE YEAR 51,750 acre-ft.

APPENDIX 'B-3'

Purgatoire River Near Las Animas, Colorado

PURGATOIRE RIVER NEAR LAS ANIMAS, COLORADO
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	12	3.5	2.8	3.0	3.6	2.8	6.0	7.0	1.6	97	11	2.6
2	6.5	3.3	2.8	3.1	3.6	3.0	4.3	3.6	1.3	1460	8.0	2.4
3	5.5	3.5	2.8	3.0	3.8	3.5	3.8	3.0	1.1	574	7.0	2.3
4	7.5	3.5	2.8	3.0	4.0	4.0	2.7	3.1	.75	215	6.0	2.2
5	8.0	3.5	2.7	3.0	4.0	3.6	2.2	2.1	.40	146	5.0	2.1
6	10	3.5	2.8	3.0	4.0	4.0	2.4	2.1	.45	137	4.0	1.8
7	12	3.5	2.8	2.8	4.0	4.3	2.7	2.1	.25	288	3.8	1.7
8	12	3.5	3.0	2.7	6.8	4.0	2.7	1.6	.60	96	3.6	1.6
9	7.5	3.3	3.0	2.7	3.6	4.0	2.7	1.6	.88	47	3.5	1.4
10	7.0	3.3	3.0	2.7	3.3	3.8	2.2	1.6	.40	559	3.5	1.3
11	7.5	3.5	3.1	2.7	7.8	4.0	2.1	1.6	.55	115	3.5	1.3
12	13	3.5	3.1	2.7	4.6	4.6	2.6	1.6	.65	81	3.5	1.2
13	14	3.6	3.0	2.8	5.5	4.0	4.3	1.7	.65	30	3.6	1.3
14	27	3.6	2.8	2.8	4.8	4.3	3.6	1.5	.60	19	3.3	1.3
15	18	3.5	3.0	3.1	18	5.0	18	1.5	.60	17	3.8	1.2
16	7.5	3.0	3.0	3.8	5.5	5.5	4.3	1.6	.50	15	4.6	1.3
17	3.1	2.6	3.3	3.5	4.3	5.5	2.4	1.7	.35	209	10	1.3
18	3.6	2.3	3.0	3.0	6.5	5.5	1.2	38	.30	1610	7.0	1.3
19	3.6	2.3	3.0	3.1	5.5	5.5	.65	7.9	.20	1480	5.5	1.3
20	4.0	2.4	3.3	4.0	7.2	5.5	1.6	2.6	.08	598	5.5	1.4
21	4.0	2.1	3.1	3.8	7.5	5.5	161	1.8	.18	1280	5.0	1.5
22	3.8	1.6	3.8	4.0	10	5.0	63	1.6	118	769	4.6	1.5
23	3.8	1.5	3.6	8.6	6.0	4.6	13	1.5	393	408	4.0	1.5
24	3.6	1.5	3.5	12	3.0	4.3	4.6	1.7	240	240	3.5	1.5
25	3.6	1.5	3.1	4.6	2.7	4.0	581	2.1	60	125	3.3	1.5
26	8.0	2.0	3.0	3.5	2.4	6.7	321	1.7	1273	69	3.0	1.5
27	4.3	3.0	3.0	3.5	2.3	9.0	139	2.0	1250	50	3.0	1.5
28	3.6	2.8	3.1	3.5	2.6	6.5	64	2.1	347	49	3.0	1.5
29	3.5	3.0	3.1		3.0	4.6	66	2.1	1190	46	3.0	1.6
30	3.5	2.8	3.0		2.6	9.3	28	1.6	328	21	2.8	1.6
31		2.8	3.0		2.7		13		126	14		1.6
TOTAL sec. ft.	231.2	89.5	94.4	104.0	155.2	145.9	1526.05	105.7	4537.39	10864	140.9	49.1
ac. ft.	459	178	187	206	308	289	3030	210	8600	21550	279	97

THE YEAR 35,390 acre-ft.

APPENDIX 'B-4'

River Flow Into John Martin Reservoir

RIVER FLOW INTO JOHN MARTIN RESERVOIR
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	54	59	66	255	35	17	177	16	9.6	132	27	6.8
2	50	48	219	313	33	17	114	11	8.9	1460	25	6.6
3	38	44	223	263	33	18	71	11	8.3	590	24	7.6
4	34	49	243	255	33	18	40	12	7.2	231	22	6.7
5	33	39	263	223	30	18	26	10	6.0	172	20	6.3
6	34	37	225	177	26	18	21	11	6.0	151	18	6.0
7	32	35	255	159	24	18	20	10	5.8	208	16	5.9
8	30	40	275	105	27	18	19	10	7.8	181	16	5.5
9	32	36	188	86	24	18	17	9.6	6.9	71	15	5.6
10	31	40	159	86	23	18	16	11	5.7	1410	14	5.8
11	31	40	180	88	27	18	16	16	5.8	446	14	6.1
12	36	41	183	82	24	19	17	155	5.6	265	16	6.3
13	37	39	229	87	28	20	17	282	5.2	175	14	6.7
14	41	38	276	83	27	20	18	223	5.5	89	13	6.7
15	33	38	308	83	27	21	31	175	7.4	41	13	6.6
16	30	35	351	83	26	22	16	198	18	34	12	6.7
17	15	35	386	83	24	23	14	104	7.6	527	17	6.7
18	16	35	325	49	24	30	12	161	5.6	1740	14	6.7
19	16	34	305	47	22	41	13	161	5.1	3300	13	6.7
20	16	31	363	46	23	221	17	94	4.8	675	12	6.8
21	15	31	395	46	24	527	182	65	7.4	1050	11	6.9
22	15	27	389	47	25	407	75	52	225	1020	10	6.9
23	15	26	314	47	20	280	26	28	653	562	9.4	7.7
24	15	32	324	48	18	154	19	19	390	457	9.3	7.7
25	15	33	388	44	18	154	583	18	117	177	8.4	7.3
26	30	30	351	41	16	119	332	16	652	116	8.1	7.3
27	34	32	268	39	16	90	149	15	1800	87	7.2	7.3
28	40	33	303	36	17	46	80	13	575	75	7.4	7.3
29	40	29	195		17	34	53	11	1960	101	7.2	7.4
30	54	28	180		17	252	38	11	302	54	7.0	7.0
31		138	263		16		23		274	36		7.0
TOTAL sec. ft.	888	1206	7562	2613	746	2795	2282	1940.6	6551.8	10605	418.0	206.6
ac. ft.	1760	2350	15000	5180	1480	5460	4530	3870	13000	20940	829	414

THE YEAR 67,450 acre-ft.

APPENDIX 'B-5'

Contents Of

John Martin Reservoir

CONTENTS OF JOHN MARTIN RESERVOIR
Report-Year ending October 31, 1977
Corps of Engineers Records—Provisional; Subject to Revision
Midnight contents in acre-feet from capacity table dated Nov. 1, 1972

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	809	2359	5004	14751	20096	20687	0	0	0	0	0	0
2	882	2442	5068	15192	20163	20687	0	0	0	983	0	0
3	961	2535	5258	15681	20209	20778	0	0	0	0	0	0
4	1046	2640	5469	16083	20209	20756	0	0	0	0	0	0
5	1135	2749	5799	16467	20221	20756	0	0	0	0	0	0
6	1197	2830	6098	17075	20254	20756	0	0	0	0	0	0
7	1249	2920	6365	17479	20254	20778	0	0	0	0	0	0
8	1308	3022	6857	17758	20277	20756	0	0	0	0	0	0
9	1331	3118	6896	17995	20277	20778	0	0	0	1014	0	0
10	1387	3207	7013	18168	20366	20756	0	0	0	0	0	0
11	1444	3286	7126	18330	20460	18760	0	0	0	0	0	0
12	1485	3382	7226	18473	20550	18801	0	0	0	0	0	0
13	1540	3467	7414	18605	20618	14690	0	0	0	0	0	0
14	1602	3544	7736	18693	20778	12977	0	0	0	0	0	0
15	1675	3622	8066	18824	20778	11057	0	0	0	0	0	0
16	1730	3711	8539	18813	20868	9431	0	0	0	0	0	0
17	1772	3782	8617	19045	20947	8005	0	0	0	0	0	0
18	1815	3864	8932	19156	20924	6972	0	0	0	1397	0	0
19	1850	3957	9301	19245	20924	5824	0	0	0	3875	0	0
20	1886	3989	9694	19356	20901	4768	0	0	0	3772	0	0
21	1928	4053	10083	19512	20947	4237	1101	0	0	4873	0	0
22	1966	4139	10501	19557	20947	3515	0	0	0	4815	0	0
23	2005	4204	10952	19579	20901	2679	0	0	0	4204	0	0
24	2044	4270	11411	19602	20924	1749	0	0	0	3005	0	0
25	2085	4325	11868	19758	20924	1075	0	0	0	1548	0	0
26	2121	4403	12351	19688	20901	0	0	0	0	0	0	0
27	2145	4470	12790	20028	20924	0	0	0	0	0	0	0
28	2189	4549	13147	20073	20924	0	0	0	0	0	0	0
29	2234	4629	13629		20924	0	0	0	0	0	0	0
30	2292	4652	14019		20687	0	0	0	0	0	0	0
31		4673	14156		20710		0		0			0

APPENDIX 'B-6'

Outflow From John Martin Reservoir

OUTFLOW FROM JOHN MARTIN RESERVOIR
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	7.9	0.60	0.60	0.80	17	16	319	57	20	151	61	13
2	.60	.60	.60	.80	25	15	192	47	19	446	50	13
3	.60	.60	.60	.80	24	15	144	43	18	1160	43	13
4	.85	.60	.60	.80	24	15	106	[illegible]	15	338	40	13
5	.60	.60	.60	.80	24	15	75	38	13	203	46	13
6	.60	.60	.60	.80	24	15	60	34	13	138	38	12
7	.60	.60	.60	.80	24	15	49	33	13	179	34	13
8	.60	.60	.60	.80	24	15	43	32	15	198	33	11
9	.60	.60	.60	.80	24	16	40	26	15	119	31	10
10	.60	.60	.60	.80	24	16	38	27	13	423	76	10
11	.60	.60	.50	.80	24	943	57	28	12	1060	25	10
12	.60	.80	.40	.80	24	1000	71	38	12	250	23	11
13	.60	.80	.40	.80	24	1010	57	190	9.8	199	23	13
14	.60	.80	.40	.80	24	995	67	251	9.2	132	22	13
15	.60	.80	.40	.80	24	1110	50	263	8.6	85	20	13
16	.60	.80	.40	.80	24	827	52	191	9.2	63	20	13
17	.60	.80	.40	.80	24	682	39	179	19	226	20	13
18	.60	.80	.50	.80	24	691	34	132	9.8	625	20	13
19	.60	.80	.60	.60	24	673	31	206	7.5	1090	19	13
20	.60	.60	.60	.60	24	628	35	147	7.5	1060	19	14
21	.60	.60	.60	.60	24	740	436	109	11	1100	18	14
22	.60	.50	.80	.60	25	794	715	92	10	1080	15	13
23	.60	.60	.80	.60	25	776	129	65	325	1040	15	14
24	.60	.60	.80	.60	26	758	65	47	459	1050	15	14
25	.60	.50	.80	.80	26	714	132	43	235	1060	15	15
26	.60	.50	.80	.60	25	391	762	38	513	809	13	15
27	.60	.60	.80	1.0	25	132	251	33	1120	138	15	15
28	.60	.60	.80	1.0	25	104	154	29	743	109	15	15
29	.60	.60	.80		25	79	210	28	1030	101	14	15
30	.60	.60	.80		25	91	132	23	651	97	13	16
31		.60	.80		22		79		281	75		15
TOTAL sec. ft.	25.55	19.90	19.20	21.00	747	13291	4604	2448	5566.6	14857	812	408
ac. ft.	51	39	38	42	1480	26360	9130	4860	11040	29470	1610	809

THE YEAR 84,670 acre-ft.

APPENDIX 'B-7'

Arkansas River At Lamar, Colorado

ARKANSAS RIVER AT LAMAR, COLORADO
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	4.6	6.0	4.9	6.7	4.9	6.4	56	8.6	2.2	52	13	0.90
2	6.4	6.0	5.0	6.4	4.0	6.4	25	6.4	1.9	78	19	.90
3	2.5	6.5	5.0	6.4	3.4	9.8	9.4	2.8	1.9	536	20	.90
4	2.2	7.4	5.0	6.1	4.3	10	3.4	2.2	1.6	281	16	.70
5	2.2	7.4	5.0	5.8	5.5	7.8	3.1	2.2	1.1	256	13	.70
6	1.9	6.7	5.3	6.1	6.1	7.0	3.1	2.2	1.1	175	12	.70
7	4.5	7.0	6.0	5.2	6.4	7.0	14	5.5	1.3	61	8.6	.70
8	7.4	7.4	5.8	5.2	6.1	6.7	13	9.4	1.3	50	7.0	.70
9	7.0	6.7	5.2	4.9	5.8	6.7	10	9.0	1.1	48	6.4	.90
10	7.4	6.7	5.0	4.9	5.5	6.1	11	6.7	1.3	28	6.4	.90
11	7.4	6.1	5.0	4.9	6.1	411	10	5.5	1.3	538	6.4	.90
12	8.6	6.4	5.0	4.9	10	597	16	8.2	1.3	213	6.1	.90
13	9.8	6.7	5.5	4.9	11	412	446	12	1.1	129	5.8	.90
14	9.8	7.0	5.5	4.9	8.2	432	4.6	51	.90	81	5.8	.90
15	9.8	6.7	5.0	4.3	6.7	464	22	29	1.1	32	5.5	.90
16	8.6	7.4	5.0	4.3	6.4	449	21	23	1.1	25	3.7	.90
17	9.0	6.4	5.0	4.3	6.4	183	20	44	1.1	34	2.8	.90
18	9.4	6.4	6.0	4.3	6.1	165	9.8	45	.90	44	1.9	.90
19	9.4	6.1	6.7	4.6	5.8	165	12	52	.70	541	1.6	.90
20	9.8	6.7	7.8	4.6	7.0	133	13	51	.70	634	1.6	.90
21	9.4	6.1	8.0	4.6	7.0	129	44	21	.70	571	1.3	.90
22	9.4	6.0	8.2	4.9	7.4	116	300	25	.70	781	1.3	.70
23	9.0	6.0	8.2	4.6	6.4	106	144	21	.70	589	1.3	.70
24	9.0	6.0	7.4	4.6	6.4	94	50	25	49	559	.90	.70
25	8.6	6.5	6.7	6.7	7.4	82	41	20	32	543	.90	.70
26	9.0	6.5	6.7	5.2	7.8	75	286	11	178	532	.90	.70
27	7.0	6.5	7.0	4.9	8.6	69	122	6.4	187	170	.90	.70
28	6.7	6.4	6.4	4.3	7.8	54	81	4.9	414	82	.90	.90
29	6.2	5.8	5.8		7.4	47	169	3.7	131	45	.90	.90
30	6.0	5.4	5.2		8.2	79	45	3.1	417	37	.90	.90
31		5.2	6.0		7.4		15		52	21		1.3
TOTAL sec. ft.	218.0	200.1	184.3	143.5	207.5	4355.9	2019.4	516.8	1486.90	7766	172.80	26.10
ac. ft.	432	397	366	285	412	8640	4010	1030	2950	15400	343	52

THE YEAR 34,320 acre-ft.

APPENDIX 'B-8'

Arkansas River At The Colorado-Kansas State Line

ARKANSAS RIVER AT THE COLORADO-KANSAS STATE LINE
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	24	15	6.0	10	9.2	14	50	111	25	48	31	4.3
2	22		6.5	10	9.6	14	166	95	22	45	24	3.7
3	18	14	7.0	10	8.0	16	250	82	19	33	17	3.4
4	17	14	7.0	11	8.4	17	83	64	18	196	26	3.3
5	17	14	7.0	11	8.4	15	54	59	16	204	19	3.0
6	16	14	7.0	11	8.4	14	36	47	17	279	16	3.6
7	15	14	7.0	11	8.4	14	31	40	17	192	14	3.9
8	15	14	6.0	11	8.8	14	27	38	15	97	12	2.9
9	16	13	6.0	10	9.2	14	26	36	15	57	16	3.5
10	16	13	6.5	10	9.6	13	26	34	15	49	12	4.2
11	15	13	8.0	11	12	13	28	34	12	41	11	4.1
12	13	12	10	11	11	39	28	35	13	223	12	5.0
13	14	8.4	12	11	10	236	35	31	10	165	88	3.8
14	20	11	12	10	10	211	174	30	9.0	93	64	3.4
15	19	14	12	10	10	237	63	30	8.2	64	20	3.0
16	13	14	11	10	9.6	255	45	31	8.7	43	15	3.6
17	12	13	10	9.6	12	264	40	31	8.3	32	13	4.3
18	11	13	9.5	9.2	14	146	35	43	7.6	31	11	3.3
19	10	13	9.5	9.6	16	108	30	37	6.4	37	10	3.0
20	10	12	9.5	9.8	15	105	40	40	5.9	226	9.5	3.0
21	9.5	12	9.2	9.6	13	74	77	54	5.5	377	9.2	2.8
22	9.7	10	10	10	12	48	124	46	6.8	385	8.8	2.9
23	9.7	9.6	10	10	12	46	159	30	7.2	512	9.0	2.6
24	9.6	9.6	11	9.2	12	39	130	28	6.1	445	9.3	2.8
25	10	9.2	12	9.6	10	46	317	34	5.8	433	9.9	2.8
26	12	9.6	11	9.6	14	44	209	28	12	421	10	2.7
27	34	9.2	12	9.6	16	48	177	25	24	369	8.3	2.6
28	22	9.2	11	9.6	16	44	172	22	50	192	6.4	2.5
29	18	9.0	9.5		15	45	322	24	105	97	6.0	2.0
30	16	7.5	11		14	42	364	21	45	63	5.1	2.2
31			10		14		162		107	43		2.2
TOTAL												
sec. ft.	462.5	363.1	286.2	283.2	355.6	2235	3490	1260	642.5	5482	522.5	100.4
ac. ft.	917	720	568	562	705	4430	6900	2500	1270	10870	1040	199

THE YEAR 30,080 acre-ft.
The daily discharges are the sum of the flows of the Arkansas River near Coolidge, Kansas, and the Frontier Ditch.

APPENDIX 'B-9'

Demands By Colorado For Reservoir Water (CFS)

DEMANDS BY COLORADO FOR RESERVOIR WATER (CFS)
Report ending October 31, 1977
Data Source: U.S. Corps of Engineers and Orders by the Secretary
of the Arkansas River Compact Administration (Provisional, Subject to Revision)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1									2000 Hrs.: Open	100		
2									2000 Hrs.: Empty	500		
3												
4												
5												
6												
7												
8												
9									1700 Hrs.: Open	175		
10									1800 Hrs.: Empty	450		
11					0001 Hrs.: Open	600						
12						600						
13						600						
14						600						
15					0600 Hrs.: Empty	150						
16									1600 Hrs.: Open	200		
17										600		
18										600		
19										600		
20										600		
21								1400 Hrs.: Open	175	600		
22									420	600		
23								1900 Hrs.: Empty	332	600		
24										600		
25										600		
26								0630 Hrs.: Open	328			
27								1800 Hrs.: Empty	338			
28												
29												
30												
31												
TOTALS											6050	
CFS						2550	1593				11997	
AF						5057	3159					

THE YEAR 20,213 A.F.

APPENDIX 'B-10'

Demands By Colorado For River Flow Under Article V-A And V-B (SFS)

DEMANDS BY COLORADO RIVER FLOW UNDER ARTICLE V-A AND V-B (CFS)
Report-Year ending October 31, 1977
Data Source: Colorado State Engineer's Office and Orders of the Secretary of the Arkansas River Compact Administration

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1					17	15						
2					25	15						
3					25	15				42		
4					25	15				206		
5					25	15						
6					25	15						
7					25	15						
8					25	15						
9					25	15						
10					25	15						
11					25	15				58		
12					25	15				121		
13					25	15						
14					25	15						
15					25	15						
16					25	15						
17					25	15						
18					25	15						
19					25	15						
20					25	15						
21					25	256						
22					25	400						
23					25	400						
24					25	400						
25					25	213						
26					25	46						
27					25							
28					25							
29					25							
30					25							
31					18							
TOTAL CFS					760	2015				429		
AF					1507	3996				851		

THE YEAR 6,354 A.F.

APPENDIX 'B-11'

Demands By Kansas For Reservoir Water (CFS)

DEMANDS BY KANSAS FOR RESERVOIR WATER (CFS)
Report ending October 31, 1977
Data Source: Kansas State Board of Agriculture and Orders by the
Secretary of the Arkansas River Compact Administration (Provisional-Subject to Revision)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1								2000 Hrs.: Open		67		
2								2000 Hrs.: Empty		333		
3												
5												
6												
7												
8												
9								1700 Hrs.: Open		117		
10						400		1800 Hrs.: Empty		300		
11			0001 Hrs.: Open			400						
12						400						
13						400						
14						400						
15			0600 Hrs.: Empty			100						
16												
17												
18								1600 Hrs.: Open		133		
19										400		
20										400		
21							167			400		
22							400			400		
23					1900 Hrs.: Empty		317			400		
24										400		
25							292			400		
26					0630 Hrs.: Open		300	1700 Hrs.: Empty		283		
27					1800 Hrs.: Empty							
28												
29												
30												
31												
TOTALS										4033		
CFS						1700	1476					
AF						3371	2927			7997		

THE YEAR: 14,295 A.F.

APPENDIX 'B-12'

Stateline Flow On Days Of Kansas Demand (CFS)

STATELINE FLOW ON DAYS OF KANSAS DEMAND (CFS)
Report-Year ending October 31, 1977
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1												
2												
3												
4												
5										204		
6										279		
7												
8												
9												
10												
11												
12												
13												
14						211				165		
15						237				93		
16						255						
17						264						
18						146						
19						108						
20												
21												
22										377		
23										385		
24										512		
25							130			445		
26							317			433		
27							209			421		
28							209			369		
29										182		
30							322			97		
31							364					
TOTALS												
sec. ft.						1113	1342					
ac. ft.						2207	2661			3902		
THE YEAR: 12,725 A.F.										7857		

*Three Days' Time is Allowed for Water Released from John Martin Reservoir to Reach State Line.

APPENDIX 'B-13'

Diversion In Ditches By Colorado (Acre Feet)

DIVERSION IN DITCHES BY COLORADO (Acre-Feet)
DISTRICT #14 & #17—DIVISION #2
Source: Water Commissioner's Monthly Reports
Report Year ending October 31, 1977

NAME OF CANAL	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Bessemer (Riv)	1741	0	34	0	3531	4248	4680	5422	5634	5590	3106	1583	35569
Res. or Imported	0	0	0	0	0	0	0	0	0	0	306	0	306
Total: Bessemer	1741	0	34	0	3531	4248	4680	5422	5634	5590	3412	1583	35875
Minnequa-Ft. Union	6776	7612	7558	6628	7464	7234	7626	7396	7436	7518	7196	7446	88182
West Pueblo (Riv)	56	0	0	0	77	148	232	244	184	193	194	54	1382
Excelsior (Riv)	0	0	0	0	0	0	0	0	0	0	0	0	0
Res. or Imported	0	0	0	0	0	0	0	0	0	0	0	0	0
Total: Excelsior	0	0	0	0	0	0	0	0	0	0	0	0	0
Collier	0	0	0	0	0	0	8958	2750	516	654	0	0	12588
Colorado Canal (Riv.)	0	2450	0	0	0	0	0	2750	7634	3422	0	0	14006
Res. or Imported	0	0	0	0	0	0	8958	2750	8350	4096	0	0	26594
Total: Colo. Canal	0	2450	0	0	4415	5622	5605	6679	7443	6628	3766	4269	46764
Highline (Riv.)	2137	0	0	0	0	0	0	0	0	394	0	0	394
Res. or Imported	0	0	0	0	4415	5622	5605	6679	7443	7012	3766	4269	47148
Total: Highline	2137	0	0	0	917	1170	780	1020	1600	2196	766	709	9887
Oxford Farmers (Riv.)	718	0	0	0	0	0	0	0	0	0	0	0	0
Res. or Imported	0	0	0	0	917	1170	780	1020	1600	2196	766	709	9887
Total: Oxford Farmers	718	0	0	0	16404	16822	27881	20763	22812	22791	15028	14061	194372
Total District #14	11428	10062	7592	6628	0	0	0	0	7634	3805	306	0	14696
Import District #14	0	0	0	0	0	0	0	2750	150	0	0	0	1708
Otero	0	0	0	0	0	0	0	0	0	0	0	0	0
Res. or Imported	0	0	0	0	0	0	0	1558	150	0	0	0	1708
Total: Otero	3350	0	0	0	2662	7326	7610	8634	3910	3570	0	0	37282
Catlin Canal (Riv.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Res. or Imported	3350	0	0	0	2662	7326	7610	8634	3910	3570	0	0	37282
Total: Catlin	1596	3110	3004	2456	322	0	0	816	366	2486	0	0	14126
Holbrook (Riv.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Res. or Imported	1596	3110	3004	2456	322	0	0	816	366	2486	0	0	14126
Total: Holbrook	2214	1294	1060	640	4264	5182	4660	5888	4598	4468	3178	4200	41646
Rocky Ford	695	10826	2184	2750	0	0	0	0	600	0	0	0	17056
Ft. Lyon Storage	21956	9510	3980	9364	10606	7336	8468	9156	7352	18890	3420	5532	115670
Ft. Lyon (Riv.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Res. or Imported	0	750	7746	4011	10606	7336	8468	9156	7952	18890	3420	5532	125507
Kicking Bird*	0	21086	13810	16125	0	1838	2278	2124	2800	3368	770	436	145233
Total: Ft. Lyon-K.B.	23652	2120	0	0	1460	21682	23016	28376	19776	32782	7368	10168	17194
Las Animas Consol.	2120	25490	17874	19191	19514	40304	50897	49139	42588	55573	22396	24229	257169
Total: Dist. #17	31932	35552	25466	26119	35918	0	0	2750	7834	3806	306	0	451541
Total: Dist. #14-#17	43360	0	0	0	0	61986	73913	80265	70198	92161	30070	34397	14696
Res. or Imp. #14-#17	0	61042	43340	45310	55432								723406
Grand Total	75292												

*Measured at Las Animas Gage—Transported Down River for Storage in John Martin Reservoir

APPENDIX 'B-14'

Diversions By Ditches In Colorado Water District No. 67—Division 2

DIVERSIONS BY DITCHES IN COLORADO WATER DISTRICT #67—DIVISION 2
Report-Year ending October 31, 1977
Source: Water Commissioners Monthly Report
(Units in Acre-Feet)

NAME OF DITCH	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Fort Bent Canal	158	0	0	0	458	2072	1620	1188	948	1828	292	10	8574
Keesee Ditch	0	0	0	0	738	780	794	768	728	736	752	740	6036
Amity Canal	128	0	0	0	0	10770	3276	550	3302	7532	0	0	25558
Lamar Canal	1230	1170	1158	1068	1098	3876	2884	2540	2382	5380	990	914	24670
Hyde Ditch	0	0	0	0	0	198	22	0	0	60	0	0	190
Manvel Canal	0	0	0	0	0	198	82	0	128	254	0	0	652
X, Y, & Graham Canal	0	0	0	0	0	794	490	186	232	1043	0	0	2714
Buffalo Canal	350	0	0	0	5160	3248	3450	3250	3148	3382	1838	720	19912
Total: District	1856	1170	1158	1068	2810	21836	12808	8482	10868	20226	3872	2384	88306
Trans-Mtn. Diversions	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total:	1856	1170	1158	1068	2810	21836	12808	8482	10868	20226	3872	2384	88306

APPENDIX 'B-15'

Diversions By Ditches

In Kansas

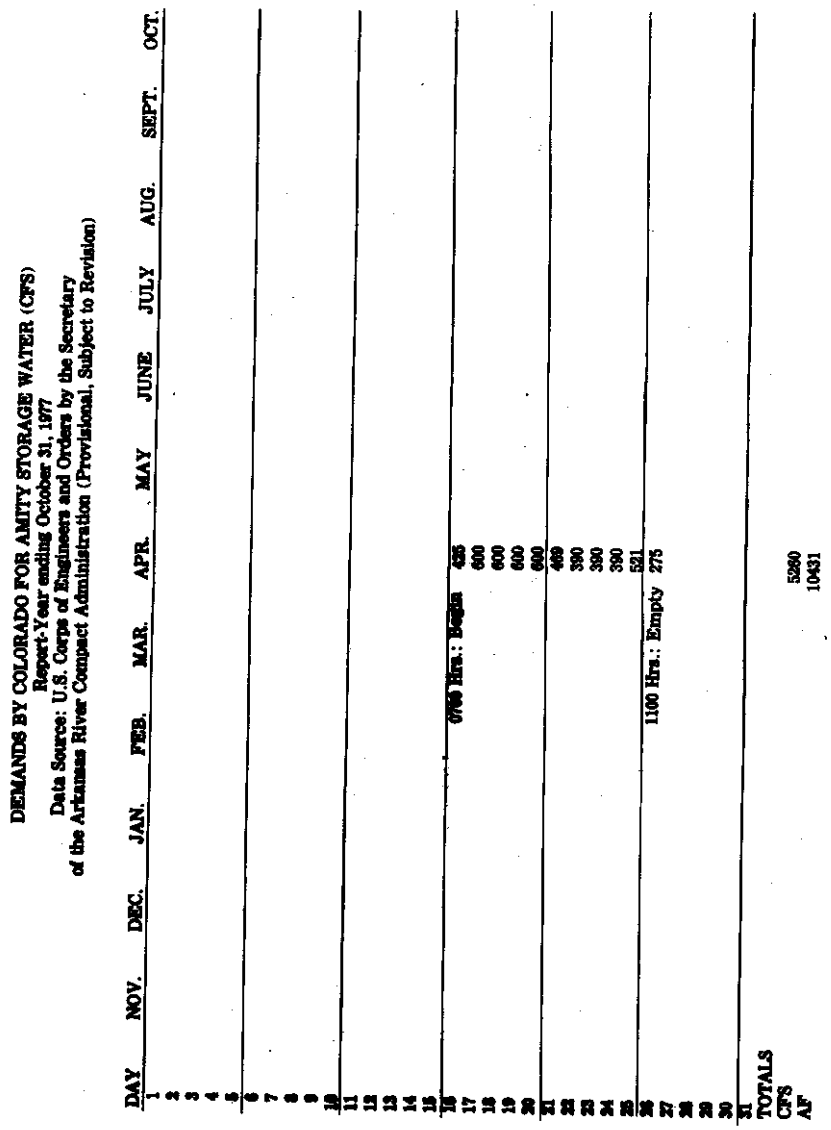
DIVERSIONS BY DITCHES IN KANSAS
Report-Year ending October 31, 1977
Source of Information: Frontier Ditch—USGS Records
Other Ditches—Kansas Division of Water Resources Records

NAME OF DITCH	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Frontier Ditch	380	66	0	0	0	1156	830	881	661	1216	441	72	*5703
Ft. Aubrey Canal	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Stateline to Syracuse	380	66	0	0	0	1156	830	881	661	1216	441	72	5703
Amazon Canal	0	0	0	0	0	0	0	1503	0	0	0	0	1503
Great Eastern Canal	0	0	0	0	0	1661	754	226	0	0	0	0	2641
South Side Ditch	0	0	0	0	0	0	0	0	0	0	0	0	0
Farmers Ditch	0	0	0	0	0	0	819	41	0	2090	135	0	3085
Garden City Canal	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Syracuse to Garden City	0	0	0	0	0	1661	1573	1770	0	2090	135	0	7229
Total Stateline to Garden City	380	66	0	0	0	2817	2403	2651	661	3306	576	72	12932

*3062 Acre-Feet Returned Directly To River

APPENDIX 'B-16'

Demands By Colorado For Amity Storage Water (CFS)



DEMANDS BY COLORADO FOR AMITY STORAGE WATER (CFS)
Report-Year ending October 31, 1977
Data Source: U.S. Corps of Engineers and Orders by the Secretary
of the Arkansas River Compact Administration (Provisional, Subject to Revision)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16							0765 Hrs.: Begin	435				
17								600				
18								600				
19								600				
20								600				
21								600	469			
22									390			
23									390			
24									390			
25									390			
26									521			
27									1100 Hrs.: Empty	275		
28												
29												
30												
31												
TOTALS												
CFS												5260
AF												10431

APPENDIX 'B-17'

Demands By Kansas For Amity Storage Water (CFS)

DEMANDS BY KANSAS FOR AMITY STORAGE WATER (CFS)
Report-Year ending October 31, 1977
Data Source: U.S. Corps of Engineers and Orders by the Secretary
of the Arkansas River Compact Administration (Provisional, Subject to Revision)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14							0800 Hrs.: Begin	806				
15							0700 Hrs.: Cease	349				
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
TOTALS								1245				
CFS								2460				
AF												

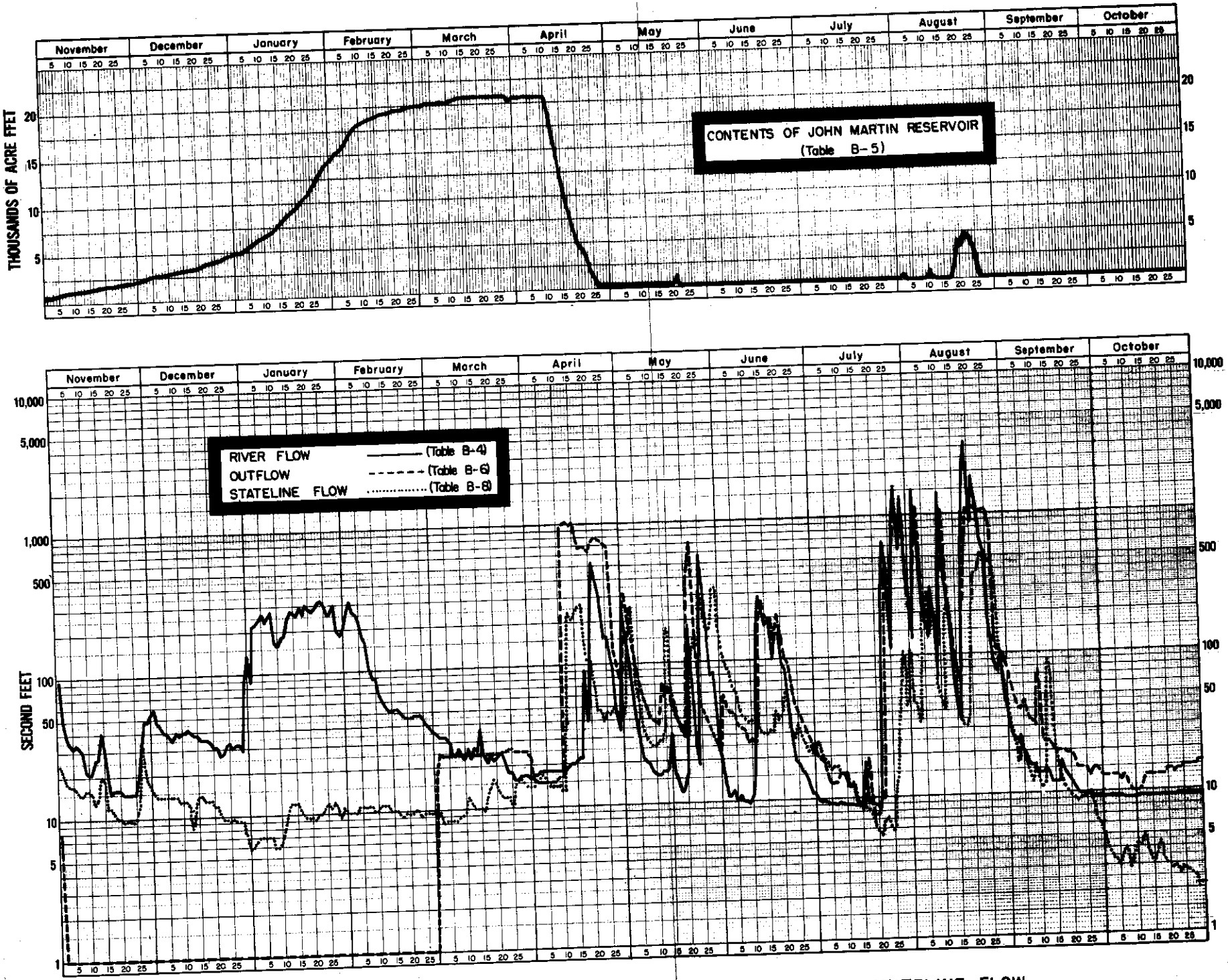
APPENDIX 'B-18'

Summary Tabulation

SUMMARY TABULATION
(ACRE FEET)

	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Arkansas River at Las Animas, Colo.	1310	2300	14810	5360	1170	5170	1530	3640	4380	11170	542	316	51750
Purgatoire Riv. Near Las Animas, Colo.	490	178	187	296	306	289	3030	210	8850	21550	279	97	35390
Inflow to John Martin Reservoir*	1790	2580	15000	5580	1490	5400	4550	3870	13000	32940	829	414	87450
Reservoir Contents at End of Month	2292	4673	14156	20073	-30710	0	0	0	0	0	0	0	
Net Change in Reservoir Contents	2292	2381	9283	5917	637	30710	0	0	0	0	0	0	
Outflow from John Martin Reservoir	51	30	38	42	1480	26300	9130	4880	11080	29470	1610	809	84970
Diversions in District 67, Colo.	1856	1170	1158	1058	2810	21536	12606	8482	10868	20226	3872	2384	88308
Flow at Colorado-Kansas Stateline	917	720	588	562	705	4430	6900	2500	1270	10870	1040	199	30680
Diversions in Kansas	380	66	0	0	0	2817	2403	2651	661	3306	576	72	12932

*Because of Computation Rules, Figures Are Not Necessarily The Exact Sum Of Appendix B-2 and B-3 Totals.



INFLOW, OUTFLOW AND CONTENTS OF JOHN MARTIN RESERVOIR AND STATELINE FLOW

PLATE I

Report Year, November 1, 1976 - October 31, 1977