

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

GOODWIN J. KNIGHT, Governor
HARVEY O. BANKS, Director of Water Resources
M. J. SHELTON, Deputy Director of Water Resources

REPORT ON
WATERMASTER SERVICE
IN
BIG VALLEY WATERMASTER SERVICE AREA
MODOC AND LASSEN COUNTIES, CALIFORNIA
1957 SEASON

Sacramento, California

April, 1958

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SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF WATER RESOURCES

STATE OF CALIFORNIA

I, William R. Gianelli, Chief, Water Rights Section, Department of Water Resources of the State of California, approve this "Report on Watermaster Service in Big Valley Watermaster Service Area, Modoc and Lassen Counties, California 1957 Season".

/s/ William R. Gianelli

William R. Gianelli
Chief, Water Rights Section

I, Harvey O. Banks, Director of the Department of Water Resources of the State of California, approve and adopt this "Report on Watermaster Service in Big Valley Watermaster Service Area, Modoc and Lassen Counties, California 1957 Season" as a report of the Department of Water Resources.

WITNESS my hand and the seal of the Department of Water Resources of the State of California this 30th day of April, 1958.

State of California
Department of Water Resources

/s/ Harvey O. Banks

HARVEY O. BANKS
Director

SEAL

ORGANIZATION
STATE DEPARTMENT OF WATER RESOURCES

Harvey O. Banks. Director of Water Resources
M. J. Shelton. Deputy Director of Water Resources

The activity covered by this report is under the
direction of

William R. Gianelli
Chief, Water Rights Section

This report was prepared under the supervision of

Orville L. Abbott
Supervising Watermaster

By

Jan L. Warnshuis
Assistant Hydraulic Engineer and
Watermaster

P. A. Towner. Chief Counsel
Paul L. Barnes. Chief, Division of Administration
Isabel G. Nessler Coordinator of Reports

INTRODUCTION

This is the 23rd annual report on watermaster service in the Big Valley Watermaster Service Area and covers the period of water distribution in 1957 beginning April 1 and ending September 30.

The watermaster service area was created by order of the Department of Public Works on November 13, 1934, to include all the water rights on Pit River in Big Valley as determined by agreement in writing entitled "Agreement determining rights to water and use thereof from Pit River in Big Valley in Modoc and Lassen Counties, California", dated October 10, 1933. Boundaries of the service area were extended by an order dated March 11, 1949, to include the water rights on Ash Creek and its tributaries in Modoc and Lassen Counties in California as established by decree entered by the Superior Court, Modoc County, California, on October 27, 1947, in the case of Charles A. Gerig vs. C. W. Clark Company et al Number 3670. Watermaster service has been provided during each irrigation season since the service area was created.

This report is presented under four headings as follows: Introduction, Water Supply, Distribution of Water, and Changes in Ownership of Lands and Water Rights. Following the text are tables presenting precipitation data at Bieber, water supply records at various locations within the area and plates showing (1) hydrographs of Pit River near Canby and Roberts Reservoir releases and (2) Pit River near Bieber.

daily discharge of Pit River near Canby

WATER SUPPLY

Water supply from Pit River in Big Valley was above normal throughout the year. Sufficient water was available to satisfy all first and second priority rights throughout the irrigation season except during August and September, when 74 per cent of the water required was available to second priority rights.

Precipitation

Data on precipitation at Bieber as compiled from records of the Department of Water Resources, California Cooperative Snow Survey for the period October 1, 1956, to September 30, 1957, are shown in Table A-1. The precipitation for the period was 17.41 inches, which is equivalent to about 107 per cent of the 50-year mean.

Water content of the snow pack on April 1 at two stations in the Upper Pit River area as compiled from the Department of Water Resources Bulletin "Water Conditions in California, April 1, 1957", is presented in the following tabulation:

Snow course	:Elevation: : in feet :	Water content of snow in inches :50-year computed mean :	Per cent : of mean : 1957 :
Cedar Pass	7,200	19.9	17.2 86
Adin Mountain	6,500	13.8	8.7 63

The water content of the two stations was about 74 per cent of the combined normal.

Stream Flow

The major source of water for Big Valley is the Pit River. Daily mean discharge of Pit River near Canby as obtained from preliminary records of the United States Geological Survey is presented in Table A-2. The amount of water flowing past this station is considered to be the amount of water available for distribution in Big Valley from Pit River. There are, however, three other minor sources tributary to Pit River between Canby and the uppermost diversion in Big Valley; namely, Turner Creek, located approximately four miles downstream from the Canby Gaging Station, Stone Coal Valley Creek located approximately two miles farther downstream, and Roberts Reservoir located about two miles north of Lookout.

Roberts Reservoir is a source of supplemental supply for a group of users in Big Valley. Released water was used for irrigation and stockwater between July 25 and August 19 during 1957. Daily mean releases from the reservoir are presented in Table A-5.

The flow of Pit River at Canby during the irrigation season is comprised of natural flow of North Fork and South Fork of Pit River together with return flow from lands irrigated with water released from Big Sage, West Valley, and numerous smaller reservoirs, all of which are located above Canby. After July 1, drainage and return flow from irrigated lands comprise all of the flow in Pit River at the Canby Gaging Station. Due to the type of irrigation in Hot Springs Valley, the times at which large heads of water will be available for distribution in Big Valley are unpredictable.

Drainage and return flow together with water in excess of the demands of the users in Big Valley are measured at the Geological Survey Station on Pit River, located approximately six miles south of Bieber. Daily mean discharge of Pit River at this station, as obtained from preliminary records, is presented in Table A-4. Hydrographs of Pit River near Canby and Roberts Reservoir releases and Pit River near Bieber are presented on Plates 1 and 2. Stream gaging stations equipped with automatic water stage records were maintained on Willow Creek near Knudson Ranch and Ash Creek at Adin. The records of daily mean discharge are presented in Tables A-8 and A-9 respectively. A recorder station was installed on Pit River near the Gould Ranch during the 1957 season, and a tabulation of the daily mean discharge is presented in Table A-3.

A record was maintained on Watson Ditch near Bieber. The Watson Ditch station was used to measure water delivered to the L. Babcock and C. Hawkins Ranches. These ranches are entitled to third priority allotments from Pit River plus their proportionate share of water released from Roberts Reservoir. The daily mean discharge at this station is presented in Table A-6. A recorder station was also maintained on the Babcock pipes near Bieber which measures the water delivered to users located southwest of Bieber. A record of the daily mean discharge at this station is presented in Table A-7.

DISTRIBUTION OF WATER

The water rights in the Big Valley Watermaster Service Area are grouped as follows:

1. Pit River in Big Valley as defined in Schedules 2 and 3 of the Big Valley agreement, and

2. Ash Creek and tributaries which includes Rush Creek, Butte Creek, Willow Creek, and Ash Creek. The rights on these creeks are defined in Schedules 3, 4, and 5, respectively, in the Ash Creek Decree. In conjunction with distribution of water from Pit River according to the rights as set forth above, the watermaster regulates the rediversion from Pit River of water released from Roberts Reservoir.

Pit River in Big Valley (Schedules 2 and 3) and Roberts Reservoir

Irrigation in Big Valley for the 1957 season began April 30, at which time Bieber and Ricketts Dams were installed with 540 second-feet in Pit River. Due to the high flow in the river, Lookout and Gerig Dams were not installed until June 11 when the flow receded to 240 second-feet. Sufficient water was available to satisfy all demands until June 25 when Gerig Dam was pulled and the hay lands prepared for haying.

Between June 25 and July 25 when the hay fields were dried for haying, the lands producing pasture and grain (totalling about 2,500 acres) received excellent irrigations. On July 25 Gerig Dam was reinstalled and there followed a period of about eight days when there was an actual shortage of water for irrigation. During this time stock water was delivered to the Kenneth Holl and Dolly Knox Ranches. During August approximately 74 per cent of second priority water was available for distribution. Due to the thorough irrigation during the haying season on the pasture and grain lands, this

supply, while less than full allotments, proved to be adequate for all lands in need of irrigation for the months of August and September.

A summary of distribution of the natural flow of Pit River is presented in the following tabulation:

Month	Per cent of allotments available			
	First priority	Second priority	Third priority	Fourth priority
April	100	100	100	100
May	100	100	100	100
June	100	100	100	100
July	100	100	83	83
August	100	74	0	0
September	100	74	0	0

From July 25 to August 19, water was released from Roberts Reservoir for use by the shareholders as shown in the following tabulation:

Name of shareholder	Number of shares	Amount of water in acre-feet
Peter Gerig	5	247
Oral Gerig	3	149
Ward Kramer	2	98
Merlin Kennedy	1	49
Whaley Land and Cattle Company	1	49
Cyril R. Mamath	1	49
W. H. Hunt Estate Company	2	98
Lester Babcock	3)	398 ^a
Clarence Hawkins	1)	
Lewis Monchamp	1	not measured
TOTALS	20	1,137 ^b

a. Measured through Watson Ditch.

b. Does not include water used by Lewis Monchamp.

The daily mean releases from Roberts Reservoir are presented in Table A-5 and are shown graphically on Plate 1.

Water used by the Lewis Monchamp Ranch is conducted directly from the reservoir to the place of use. The water used by Lester Babcock and Arad Babcock Ranches was rediverted from Pit River through the Watson Ditch and the amount of water delivered to these ranches was measured at a recorder station on the Watson Ditch near Bieber. The two shareholders rotated the use of this water. A record of the daily mean discharge of Watson Ditch near Bieber is presented in Table A-6.

New Installations. Repairs made to Gerig Dam during the 1957 season raised the floor of the dam two and one-half feet to facilitate the installation of flashboards during periods of high flow. The need for this has been apparent for the past few seasons. Prior to the improvement flashboards could not be put in, nor any water diverted until the river flow diminished to about 275 second-feet. This often resulted in no irrigation until late in the growing season.

It was determined during the 1957 season that the proper elevation for the water surface for Gerig Dam between irrigations is no greater than 18 inches from the top of the dam, the measuring point from which to determine this elevation being the top of the east abutment of the dam.

It is recommended that several new installations be made on the Pit River stream system in Big Valley, namely, (head gates) on the Gerig pipes and Babcock pipes and an adequate measuring device in Three Corner Slough to assure the proper distribution of water to the several rights allotted to this ditch system.

Ash Creek and Tributaries

Distribution from Ash Creek and tributaries during the 1957 season followed the methods and practices initiated in past seasons with little or no modification.

Rush Creek (Schedule 3). Water in excess of allotments was available during April, May, and June. Thereafter, the flow decreased gradually until about August 1 and remained constant through the remainder of the season.

Butte Creek (Schedule 4). The water supply was in excess of total allotments until about June 15. Subsequent to this the flow decreased steadily and reached a constant flow of about 1.5 second-feet during August and September.

Willow Creek (Schedule 5). The water supply was sufficient to supply all priorities until about June 1. After this date, the flow decreased gradually until about June 20, at which date water was available for first priority only. There was no critical shortage on this stream system during the 1957 season. A summary of distribution on Willow Creek is shown in the following tabulation:

Month	Per cent of allotments available			
	First priority	Second priority	Third priority	Fourth priority
May	Sufficient to satisfy all demands			
June	100	65		0
July	100	0		0
August	60	0		0
September	58	0		0

Ash Creek (Schedule 6). The average flow of Ash Creek was sufficient to satisfy all demands until about June 1. Thereafter, the flow decreased gradually until about June 20 when approximately 15 second-feet were available. The flow of Ash Creek at Adin fluctuated periodically between June 20 and the end of the season from about 15 to 28 second-feet because of upstream irrigation practices. There was no critical shortage on this stream system during the 1957 season.

CHANGES IN OWNERSHIP OF LAND AND WATER RIGHTS

There were no changes in ownership of lands and water rights in the Big Valley Watermaster Service Area during the 1957 season.

APPENDIX A
RECORDS OF WATER SUPPLY

<u>Table No.</u>		<u>Page</u>
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A-9	Daily Mean Discharge of Willow Creek Near Knudson Ranch.	A-9

TABLE A-1

PRECIPITATION AT BIEBER, LASSEN COUNTY, CALIFORNIA
1956-1957

In Inches

Month	Mean precipitation	1956-1957 precipitation
October	1.80	3.86
November	1.75	.10
December	2.21	.77
January	2.44	1.75
February	2.35	1.86
March	1.86	3.63
April	1.28	1.22
May	1.28	2.40
June	0.41	0.32
July	0.23	0.00
August	0.14	0.00
September	0.48	1.50
TOTALS	16.23	17.41

TABLE A-2

DAILY MEAN DISCHARGE OF PIT RIVER NEAR CANBY

April 1 to September 30, 1957
In Second-Feet

Day	April	May	June	July	August	September
1	556	580	652	108	159	52
2	658	628	598	82	117	52
3	736	658	604	85	80	54
4	766	664	616	96	50	57
5	676	634	610	124	72	61
6	580	580	568	155	78	80
7	550	580	517	200	80	152
8	539	610	512	117	75	105
9	500	628	355	127	46	82
10	484	688	276	130	39	78
11	478	718	434	99	41	59
12	473	724	562	88	37	63
13	473	706	495	82	34	61
14	495	652	412	80	41	57
15	473	676	325	82	44	61
16	440	628	315	82	42	88
17	418	568	330	90	39	70
18	407	495	276	82	80	85
19	478	473	249	75	114	78
20	604	712	163	70	70	70
21	772	850	175	70	59	70
22	889	882	130	68	80	72
23	928	960	57	65	80	72
24	974	1,010	54	63	72	75
25	941	986	70	48	90	85
26	790	908	75	41	111	88
27	592	784	75	17	90	88
28	539	658	75	11	108	99
29	522	586	102	17	111	117
30	539	506	124	39	90	141
31	---	568	---	68	63	---
Mean						
Sec.Ft.	609	687	327	82.6	73.9	74.1
Runoff						
ac-ft.	36,240	42,250	19,450	5,080	4,550	4,700
Total for period - 112,270 acre-feet						

TABLE A-3

DAILY MEAN DISCHARGE OF PIT RIVER ABOVE LOOKOUT

July 27 to September 15, 1957
In Second-Feet

Day	April	May	June	July	August	September
1				N	78	59
2					154	55
3				O	89	55
4					68	57
5					56	59
6						64
7				R	75	89
8				E	74	115
9				C	81	82
10				O	64	80
11				R	47	
12					46	64
13					42	59
14					40	64
15					37	57
16					42	57
17					45	
18					48	
19					56	N
20					72	O
21					81	
22					60	R
23					60	E
24					70	C
25					72	O
26					67	R
27					92	D
28				47	89	
29				30	88	
30				18	89	
31				21	89	
				41	73	
Mean				31.4	69.2	67.7
Runoff ac-ft				311	4,240	2,010
Total for period - 6,561 acre-feet						

TABLE A-4

DAILY MEAN DISCHARGE OF PIT RIVER NEAR BIBBER

April 1 to September 30, 1957
In Second-Feet

Day	April	May	June	July	August	September
1	1,130	655	625	45	9.6	2.6
2	1,190	718	685	36	7.9	4.5
3	1,170	737	802	34	7.0	7.9
4	1,140	782	425	70	6.2	8.4
5	1,140	843	257	140	5.4	7.4
6	1,100	836	836	64	5.1	11.
7	960	829	550	29	5.8	19.
8	878	822	510	33	7.0	23.
9	829	796	540	68	3.4	28.
10	776	796	510	78	2.4	7.9
11	730	836	394	54	3.6	6.6
12	704	878	243	43	6.2	5.4
13	692	885	173	51	3.4	21.
14	685	864	355	51	3.4	30.
15	737	718	351	86	2.5	27.
16	724	485	132	70	2.2	22.
17	667	829	122	41	2.6	26.
18	661	857	505	60	3.6	38.
19	750	802	382	45	3.9	100.
20	1,020	802	380	37	4.5	100.
21	1,200	892	320	32	6.2	52.
22	1,320	1,010	165	31	8.4	38.
23	1,400	1,130	124	33	11.0	30.
24	1,430	1,260	124	47	9.6	28.
25	1,380	1,300	118	50	11.0	28.
26	1,320	1,210	132	28	14.0	29.
27	1,210	1,250	112	34	18.0	33.
28	998	1,100	110	36	7.9	40.
29	829	871	100	20	3.2	54.
30	704	620	79	14	2.0	76.
31	---	704	---	11	2.4	--
Mean	982	875	339	47.5	6.1	30.1
Runoff ac-ft	58,460	53,790	20,150	2,920	376	1,790
Total for period = 137,486 acre-feet						

TABLE A-5

DAILY MEAN RELEASES FROM ROBERTS RESERVOIR

1957 Season
In Second-Feet

Day	April	May	June	July	August	September
1					37.5	
2		N			13.2	
3		O			1.5	
4					1.5	
5		R			1.5	
6			E		1.5	
7			L		1.5	
8				A	1.5	
9				S	1.5	
10				E	1.5	
11				S	1.5	
12					21.5	
13					21.2	
14					42.5	
15					42.5	
16					42.5	
17					42.5	
18					41.0	
19					20.0	
20					N	
21					O	
22						
23						
24						
25				16.3		
26				30.3		
27				33.2		
28				45.0		
29				38.3		
30				35.6		
31				37.5		
Mean				33.7	17.8	
Release ac-ft				468	669	

Total for period - 1,137 acre-feet

TABLE A-6

DAILY MEAN DISCHARGE OF WATSON DITCH

April 1 to September 30, 1957
In Second-Feet

Day	April	May	June	July	August	September
1	N	N	7.1	N	5.8	3.6
2			7.8		9.9	3.5
3	O	O	7.9	O	12.3	3.4
4			6.7		8.8	3.2
5			5.7		8.2	3.1

6	D	D	5.4	D	12.8	3.1
7			4.7		2.8	4.4
8	I	I	3.2	I	8.8	12.4
9			2.8		8.8	14.0
10	V	V	2.5	V	8.2	14.6

11	E	E	1.1	E	5.4	14.2
12			1.8		3.4	14.4
13	R	R	15.0	R	4.0	14.2
14			16.6		6.0	10.8
15	S	S	4.2	S	5.7	6.9

16	I	I	N	I	9.4	3.0
17			O		12.4	1.2
18	O	O		O	9.9	0.4
19			D		9.6	0.1
20	N	N	I	N	3.2	

21			V			
22			E		3.4	
23			R		3.4	
24			S		3.2	
25			I		2.9	

26			O		3.0	
27					3.6	
28					4.0	
29		11.8		0.8	3.8	
30		10.0		2.8	3.6	
31		9.2		3.5	3.6	

Mean		1.0	3.1	0.2	6.5	4.4

Discharge ac-ft		61.4	183	14.0	398	258

Total for period - 914 acre-feet						

TABLE A-7

DAILY MEAN DISCHARGE OF BABCOCK PIPES

June 1 to September 30, 1957
In Second-Feet

Day	June	July	August	September
1	0	No	No	85
2	0			70
3	34	Diversion	Diversion	
4	103		23	
5	115	51	29	
6	108	68	27	N
7	103	106	47	O
8	92	124	43	
9	90	110	17	D
10	77	97		I
11	13	63	N	V
12	123	50	O	E
13		17		R
14	N		D	S
15	O		I	I
16			V	O
17	D	59	E	N
18	I	80	R	
19	V	80	S	
20	E	75	I	
21	R		O	
22	S	66	N	
23	I	58		
24	O	12		
25	N			
26		No	63	
27		Diversion	116	
28			84	
29			103	
30			110	
31			106	
Mean	28.6	36.0	25.6	5
Discharge ac-ft	1,700	2,210	1,520	307

Total for period - 5,737 acre-feet

TABLE A-8

DAILY MEAN DISCHARGE OF ASH CREEK AT ADIN

May 1 to September 30, 1957
In Second-Feet

Day	May	June	July	August	September
1	250	88	12.4	28	
2	236	80	11.0	28	N
3	127	72	12.4	28	O
4	41	65	11.0	28	
5	99	64	11.0	28	
6	138	54	11.0	28	R
7	162	48	11.0	27	E
8	170	41	9.9	27	C
9	150	42	9.9	27	O
10	146	44	9.9	27	R
11	138	44	9.9	27	D
12	133	41	9.9	25	
13	127	40	9.9	24	
14	122	37	9.9	23	
15	116	37	11.0	23	9.9
16	102	33	11.0	21	9.9
17	87	30	12.4	21	9.9
18	110	29	12.9	24	10.0
19	320	26	13.8	21	10.0
20	330	25	15.0	23	12.3
21	240	25	15.0	23	12.3
22	185	25	16.2	24	12.3
23	169	24	18.9	21	12.3
24	149	21	20	17.5	13.8
25	135	20	21	13.8	15.0
26	130	15.0	24	9.9	15.0
27	123	16.2	25	9.9	26
28	114	15.0	25	9.9	24
29	107	12.4	27	9.9	32
30	103	12.4	27	9.9	44
31	98	----	29	9.9	----
Mean	150	38	15.2	21.5	16.8
Runoff ac-ft	9,220	2,230	936	1,320	532
Total for period - 14,238 acre-feet					

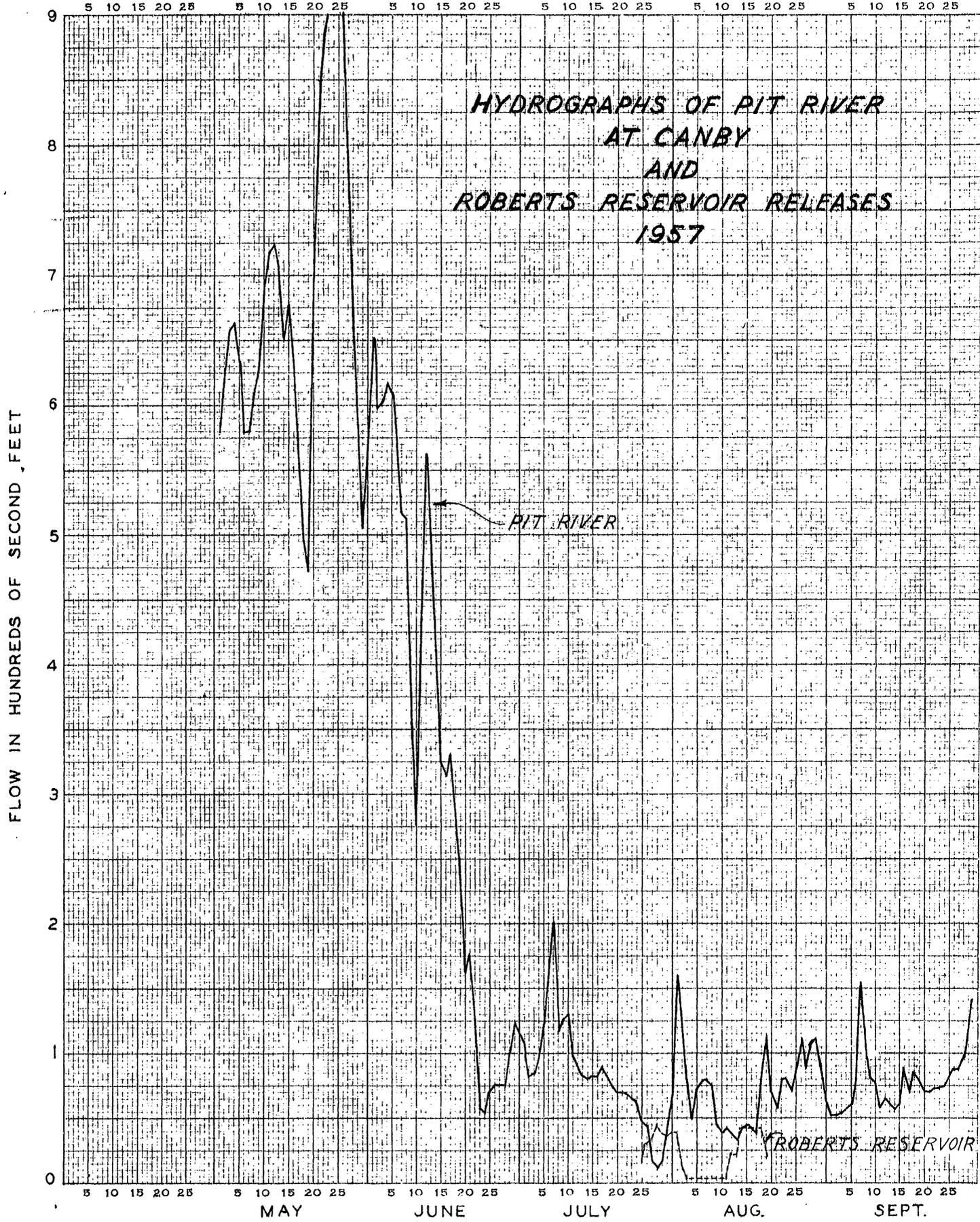
TABLE A-9

DAILY MEAN DISCHARGE OF WILLOW CREEK NEAR KNUDSON RANCH

May 6 to September 10, 1957
In Second-Feet

Day	May	June	July	August	September
1	No	12.4	5.6	4.4	4.7
2		11.0	5.6	4.4	4.7
3	Record	10.8	5.6	4.4	4.7
4		10.2	5.6	4.4	4.7
5		9.6	5.6	4.4	4.7
6	26	9.6	5.3	4.4	4.7
7	27	9.2	5.3	4.4	4.7
8	27	9.2	5.0	4.4	4.7
9	29	8.5	5.0	4.4	4.7
10	28	8.2	5.0	4.4	4.7
11	29	8.2	5.0	4.4	
12	31	7.9	4.7	4.4	N
13	33	7.9	4.4	4.4	O
14	29	8.2	4.4	4.4	
15	27	12.1	4.4	4.4	
16	26	11.4	4.4	4.4	R
17	25	7.6	4.4	4.4	E
18	27	7.3	4.7	4.4	C
19	42	7.3	4.7	4.4	O
20	26	7.3	4.7	4.4	R
21	26	7.0	4.7	4.4	D
22	26	6.7	4.7	4.4	
23	25	6.4	4.7	4.4	
24	17.0	6.1	4.4	4.4	
25	16.6	5.8	4.4	4.4	
26	15.6	5.6	4.4	4.7	
27	15.6	5.6	4.4	4.7	
28	12.1	5.6	4.4	4.7	
29	17.0	5.6	4.4	4.7	
30	16.0	5.6	4.4	4.7	
31	14.8	---	4.4	4.7	
Mean	25.2	8.1	4.7	4.4	4.7
Runoff ac-ft	1,250	482	291	274	93.0

Total for period - 2,390 acre-feet

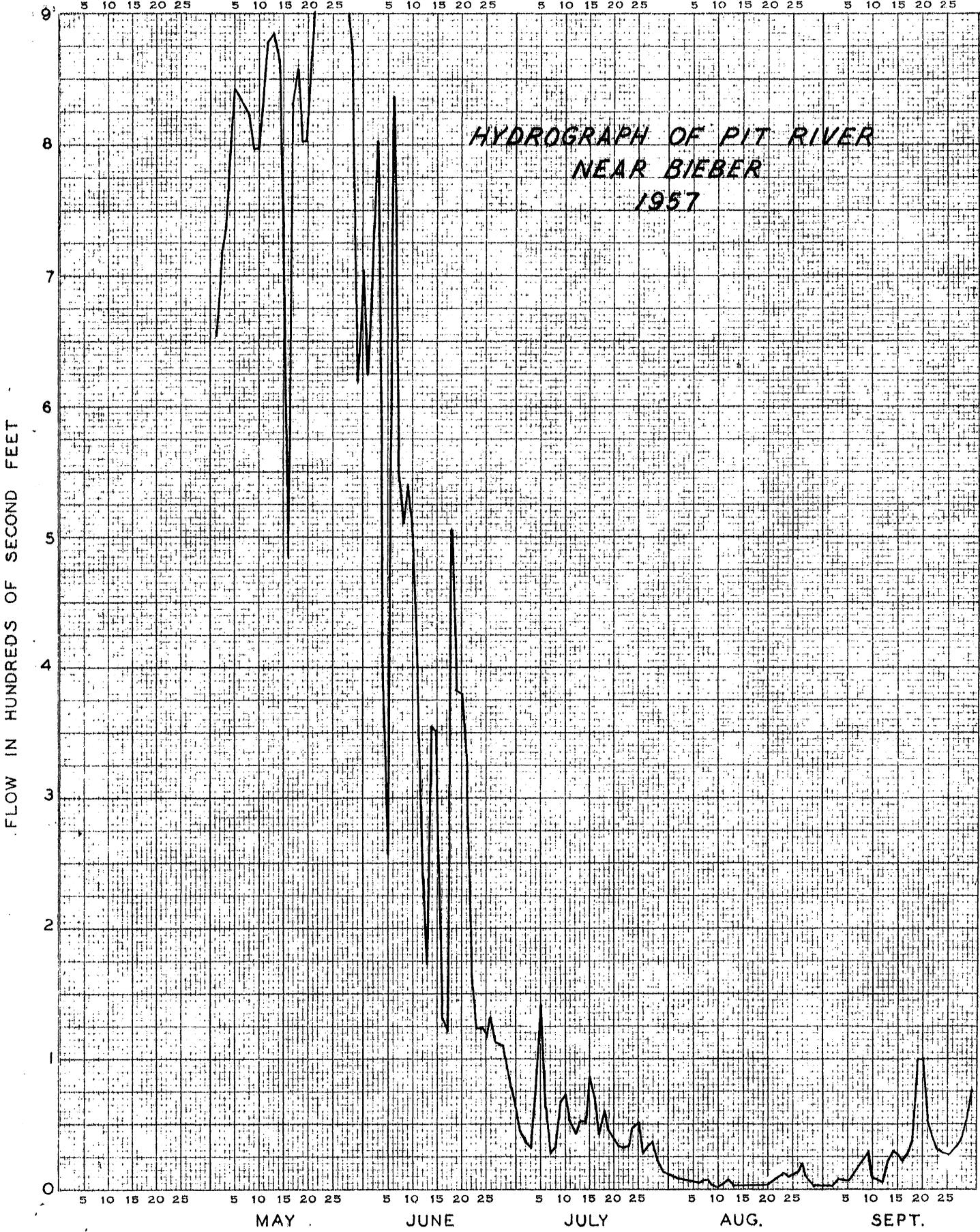


HYDROGRAPHS OF PIT RIVER
AT CANBY
AND
ROBERTS RESERVOIR RELEASES
1957

PIT RIVER

ROBERTS RESERVOIR

359-140L KEUFFEL & ESSER CO.
One Year by Days. Any Fiscal Year.
180 divisions vertically.
MADE IN U. S. A.



HYDROGRAPH OF PIT RIVER
NEAR BIEBER
1957

FLOW IN HUNDREDS OF SECOND FEET

389-140L KEUFFEL & ESSER CO.
One Year by Days, Any Fiscal Year.
150 divisions vertically.
MADE IN U.S.A.