

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

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GOODWIN J. KNIGHT, Governor
FRANK B. DURKEE, Director of Public Works
A. D. EDMONSTON, State Engineer

REPORT ON
WATERMASTER SERVICE
IN
SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA
Modoc and Lassen Counties, California
1953 SEASON

Sacramento, California
March, 1954

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SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF PUBLIC WORKS

I, L. C. Jopson, Principal Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, submit this "Report on Watermaster Service in South Fork Pit River Watermaster Service Area, Modoc and Lassen Counties, California, 1953 Season".

/s/ L. C. JOPSON
Principal Hydraulic Engineer

I, Harvey O. Banks, Assistant State Engineer, Division of Water Resources, Department of Public Works of the State of California, approve this "Report on Watermaster Service in South Fork Pit River Watermaster Service Area, Modoc and Lassen Counties, California, 1953 Season".

/s/ HARVEY O. BANKS
Assistant State Engineer

I, A. D. Edmonston, State Engineer and Chief of the Division of Water Resources, Department of Public Works of the State of California, approve and adopt this "Report on Watermaster Service in South Fork Pit River Watermaster Service Area, Modoc and Lassen Counties, California, 1953 Season", as a report of the Department of Public Works.

WITNESS my hand and the seal of the Department of Public Works of the State of California, this 15th day of April , 1954.

DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA

By /s/ A. D. EDMONSTON
A. D. Edmonston
State Engineer

SEAL

ORGANIZATION
STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

Frank B. Durkee Director of Public Works
A. D. Edmonston State Engineer
Harvey O. Banks Assistant State Engineer

This report was prepared under the direction of

L. G. JOYSON
Principal Hydraulic Engineer

By

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Assistant Civil Engineer
and Watermaster

T. R. Merryweather
Administrative Officer

INTRODUCTION

This is the nineteenth annual report on watermaster service in the South Fork Pit River Watermaster Service Area, and covers the period of water distribution in 1953 beginning on April 1 and terminating on September 30.

The service area was created by order of the Department of Public Works on December 31, 1934, to include with minor exceptions the water rights on South Fork Pit River. Subsequent orders have revised and changed the service area to include the water right of the South Fork Irrigation District, the water rights on Pine Creek and on Pit River in Hot Springs Valley, and to exclude certain rights to spring water on the South Fork Pit River.

Prior to inclusion in the service area, the various water rights involved had been determined as follows:

South Fork Pit River --- W. E. Armstrong v. Frank McArthur, No. 3273 Superior Court, Modoc County, entered October 30, 1934.

Pine Creek --- Agreement Determining Rights to Water and to the Use Thereof from Pine Creek near Alturas, in Modoc County, California, dated November 7, 1934, and

Pit River in Hot Springs Valley --- Agreement Determining Rights to Water and to the Use Thereof from Pit River and Rattlesnake Creek in Hot Springs Valley in Modoc County, California, dated November 22, 1933

By including Pine Creek and Pit River in Hot Springs Valley in the South Fork Pit River Watermaster Service Area, service areas previously created on those two streams on January 12, 1935, were abolished.

Watermaster service has been provided during each irrigation season since the service area was created, and annual reports have been prepared to show the work accomplished during each season.

The report is presented herein 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 Alturas and Jess Valley, Modoc County, California, and water supply records at

various locations within the area and plates showing hydrographs of South Fork Pit River above Likely and West Valley Reservoir Releases, Pine Creek near Alturas below Power House, and Pit River near Canby and Big Sage Reservoir Releases.

WATER SUPPLY

Precipitation

Data on precipitation, compiled from records of the California Cooperative Snow Surveys, for Alturas and Jess Valley are shown in Table 1. The records at these stations for the 1952-1953 season indicate a seasonal precipitation of 135 per cent and 128 per cent of normal, respectively.

The average water content of snow on the Eagle Peak, Blue Lake Ranch, Cedar Pass, and Adin Mountain Snow Courses, as published in the bulletin "Water Conditions in California as of April 1, 1953", was 12.7 inches. The average of the 61 year normals for the above courses is 16.3 inches.

Stream Flow

South Fork of Pit River: A record of daily discharge in cubic feet per second of the South Fork Pit River above Likely from April 1 to September 30, 1953 is given in Table 2. These data were taken from records of the United States Geological Survey. The measuring station is below the mouth of West Valley Creek and about four miles upstream from Likely. Irrigation use in Jess Valley and storage in West Valley Reservoir occur above the station. The computed full natural flow of the South Fork Pit River at the U.S.G.S. Station above Likely from April 1 to September 30 is shown in Table 4.

A record of the mean daily releases from West Valley Reservoir during the period between April 1 and September 30, 1953 is given in Table 3. The reservoir filled in early spring and remained full until August 1. No use was made of the intake ditch from the South Fork Pit River during the 1953 irrigation season.

The data presented in Tables 2 and 3 are shown graphically on Plate 1. On the graph, the solid line represents the total discharge of the South Fork Pit River and the dotted line represents water released from storage in West Valley Reservoir.

Fitzhugh Creek: A record of the available water supply of Fitzhugh Creek above the Clark Ranch is given in Table 5. The daily discharge data were computed from current meter measurements and a continuous record of the water stage for the period from April 16 to September 25. This creek flows in a westerly direction entering the South Fork Valley at a point about 10 miles south of Alturas.

Pine Creek near Alturas: A record of the flow of Pine Creek near Alturas at the California-Oregon Power Company Power House is given in Table 6. An automatic water stage recorder is maintained at this point which is above all irrigation diversion. A hydrograph of the flow of Pine Creek near Alturas has been prepared from the data in Table 6 and is presented on Plate 2.

Pit River and Rattlesnake Creek in Hot Springs Valley and Big Sage Reservoir: The principal sources of water for irrigation in the Hot Springs Valley are the North Fork and the South Fork of Pit River, Big Sage Reservoir, and Rattlesnake Creek. The two forks of Pit River combine at the upper end of the valley and are joined a short distance below by Rattlesnake Creek. Rattlesnake Creek also serves to deliver water released from Big Sage Reservoir to meet the deficiencies in natural water supply.

Due to backwater conditions from river dams it has not been feasible to establish a measuring station below the new junction of the North Fork and South Fork of Pit River. Therefore, no record of the flow entering Hot Springs

Valley from these sources is presented in this report.

A record of water released from storage in Big Sage Reservoir is given in Table 7.

Below Rattlesnake Creek there are other small streams tributary to Pit River in Hot Springs Valley which contribute to the water supply during the early part of each season. In 1953 the flow from these sources continued until about August 1.

A stream flow measuring station is maintained by the U.S. Geological Survey on Pit River near Canby. This station is located at the outlet of Hot Springs Valley, and in the absence of other records, the flow at this station is indicative of water supply conditions in the Hot Springs Valley area. The record of this station also covers the measurement of return flow from irrigation in the area. Table 8 is a record of the flow of Pit River near Canby, as taken from records compiled by the U.S. Geological Survey.

A hydrograph prepared from the data in Table 8 is presented on Plate 3. Superimposed thereon is a hydrograph of the flow released from Big Sage Reservoir.

DISTRIBUTION OF WATER

South Fork of Pit River

The regulation of diversions of the natural flow from the South Fork of Pit River, including Fitzhugh Creek and other upstream tributaries, was made in accordance with Schedules 2 and 3 of the South Fork of Pit River Judgment and Decree No. 3273, which set forth the several rights and priorities. The natural flow of West Valley Creek, less the amounts of the allotments of the Van Loan West Valley Ranch, was permitted to pass through the West Valley Reservoir

without charge as regulated storage release.

The average percentages of allotments delivered from South Fork of Pit River and Fitzhugh Creek are presented in the following tabulations:

SOUTH FORK PIT RIVER

Average percentages of allotments delivered						
Priority:	April	May	June	July	August	September
1st	100	100	100	100	100	100
2nd	100	52	100	46	11	3

FITZHUGH CREEK

Average percentages of allotments delivered						
Priority:	April	May	June	July	August	September
1st	100	100	100	100	100	100
2nd	100	100	100	58	3	1

The regulation of West Valley Reservoir storage was performed in accordance with the by-laws adopted by the South Fork Irrigation District. Water released from the reservoir flows down the natural channels and coningles with the natural runoff, but is separated again by the watermaster at the points of diversion of each member of the district requesting reservoir water. The amount of water to which each person was entitled was determined by multiplying the amount of the total storage at the beginning of the season by the percentage factor of each owner listed below:

<u>Name</u>	<u>Per Cent</u>
W. E. Armstrong (Now Arthur H. Burmister)	2.18
V. F. Christensen (Now H. C. Cattle Co.)	20.46
A. T. Coffman (Now Kenneth Flournoy)	0.73
J. D. Flournoy (Now Flournoy Bros.)	3.98
W. H. Flournoy (Now Kenneth D. and Bernardine Van Loan)	2.51
R. O. Gaustad (Now Jacob F. Derner)	1.79
R. J. Gaustad (Now Peter and John McGarva)	1.95
Jesse Hughes (Now Maston Ramsey)	2.23
Frank McArthur (Now N.H. Monroe & Son $\frac{1}{2}$; and Winema Farms $\frac{1}{2}$)	45.62
Douglas McGarva (Now Flournoy Bros.)	0.24

<u>Name</u>	<u>Per Cent</u>
John and Peter McGarva	2.63
K. Nelson	2.74
Ray Stepp (Now Arthur H. Burmister)	1.07
A. L. Stinson (Now Flournoy Bros.)	0.03
D. E. Van Loan (Now Kenneth D. and Bernadine Van Loan and Flournoy Bros.)	8.53
Gary Williams	2.51
Roy Williams (Now Somer and Georgia Beeson)	0.80
	<u>100.00</u>

There was no need for a supplemental water supply from West Valley Reservoir prior to the haying season. The releases began on July 31 for the irrigation of fall pasture, with all users diverting their share of stored water as each user finished his haying operations.

The mean daily releases for the 1953 season from West Valley Reservoir are given in Table 3.

Pine Creek near Alturas

Distribution of Pine Creek water was made in accordance with the allotments set forth in Schedule 2 of the Pine Creek Agreement.

Late spring rains were instrumental in causing an above normal runoff. There was an excess of water above requirements available during the haying season necessitating the diversion of about 20 cubic feet per second into Dorris Reservoir for several days. A record of the discharge of Pine Creek below powerhouse is given in Table 6.

The average percentages of allotments delivered from Pine Creek are presented in the following tabulation:

PINE CREEK						
Average percentages of allotments delivered						
Priority	April	May	June	July	August	September
1st	100	100	100	100	97	84
2nd	78	100	100	71	9	0

Hot Springs Valley

Distribution of Pit River water was made in accordance with the allotments set forth in Schedule 2 and 3 of the Hot Springs Valley Agreement. The distribution of Big Sage reservoir water was made in accordance with the by-laws of the Hot Springs Valley Irrigation District. As the major part of the water from both these sources is used by the same parties through the same irrigation system and devices, the method of distribution is similar for both stored water and natural flow. The Godfrey Dam, the use of which is regulated by agreement among parties affected by its operation, was not used in 1953.

Water releases from Big Sage Reservoir was delayed by repair of the outlet valve until June 26.

Changes in Ownership of Lands and Water Rights

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for South Fork Pit River watermaster Service Area, Counties of Modoc and Lassen, State of California, for 1953" and which shall be included in the 1954 statement for said service area, are listed in the following tabulation:

Tract No.	Name of Water Right Owner : Appearing in 1953 Statement	Name of Water Right Owner : to Appear in 1954 Statement	Amount of : Water cfs:
7-4	Campbell, George D.	Flournoy, Donald F. et al.	1.10
7-7	Brooks, W. S. and Ada H.	Brooks, Floyd	2.00
7-15	Talbott, Glenn	Kaufman, S. K. and Mary K. Kaufman, L. C. and Edith M.	2.98
7-52	Shields, Jack	Pinneo, Cyrus C.	3.35
7-53	Nicholson, George H.	Peila, Joseph A.	3.00
7-64	Foley, James; Foley, Vernon and Turpin, Zelda	Brown, Chester M. and Betty	.71
7-65	Foley, James; Foley, Vernon and Turpin, Zelda	Turpin, Zelda	.06
7-73	Ivory, Carlton Edward	Coularte, Frank	.94
7-75 } 7-77 }	Ottoman, Ivan F.; Ottoman, Helen and Tscherry, Paul A.	Sutton, M. L. and Blanche C.	2.65

TABLE 1

PRECIPITATION AT ALTURAS AND JESS VALLEY
 MODOC COUNTY, CALIFORNIA
 1952 - 1953
 Alturas, California

Month	In Inches	
	Normal Precipitation	1952 - 1953 Precipitation
October	1.23	.15
November	1.37	.80
December	1.36	2.63
January	1.58	1.99
February	1.29	1.15
March	1.25	1.03
April	1.19	.90
May	1.10	3.35
June	.72	2.10
July	.33	.0
August	.30	.55
September	.50	.0
Total	12.22	14.65

JESS VALLEY, CALIFORNIA

Month	In Inches	
	Normal Precipitation	1952 - 1953 Precipitation
October	1.50	0.29
November	1.75	.51
December	1.56	2.04
January	1.99	2.71
February	1.79	2.34
March	1.65	1.31
April	1.70	1.60
May	1.57	3.65
June	.81	2.37
July	.51	.0
August	.33	.17
September	.75	.10
Total	15.91	17.39

TABLE 2

Daily Discharge
SOUTH FORK PIT RIVER NEAR LIKELY
April 1 to September 30, 1953

In Cubic Feet per Second

Day	April	May	June	July	August	September
1	60	180	287	164	75	105
2	63	162	422	156	82	99
3	71	162	376	144	100	99
4	82	174	325	138	114	98
5	98	189	307	135	113	96
6	104	204	412	131	111	94
7	92	213	552	122	110	93
8	83	233	531	113	122	75
9	75	243	466	108	133	65
10	72	208	412	98	131	65
11	69	186	405	90	128	65
12	65	184	392	87	126	64
13	63	189	372	80	122	66
14	57	208	347	80	119	67
15	46	245	340	77	114	67
16	49	360	328	73	110	67
17	62	310	325	69	108	68
18	59	307	325	71	108	67
19	65	435	328	71	108	71
20	80	491	322	71	106	67
21	114	442	301	69	104	67
22	140	392	284	66	99	77
23	178	369	271	63	100	75
24	195	376	258	60	100	63
25	215	340	245	59	99	52
26	226	319	228	58	98	49
27	255	293	211	57	98	46
28	276	268	195	55	99	49
29	224	271	189	54	100	52
30	195	279	176	66	104	52
31	--	279	--	77	106	--
Total Sec.						
Ft. Days	3,433	8,511	9,932	2,762	3,347	2,140
Mean						
Sec. Ft.	114	275	331	89	108	71
Total						
Ac. Ft.	6,810	16,880	19,700	5,480	6,640	4,240

Total for period - 59,750 acre-feet.

TABLE 3

Daily Releases
WEST VALLEY RESERVOIR
April 1 to September 30, 1953

In Cubic Feet Per Second						
Day	April	May	June	July	August	September
1					25	80
2					25	80
3					60	80
4					60	79
5					60	79
6					60	79
7					60	79
8					84	41
9					84	41
10					84	41
11					84	41
12					84	41
13					84	41
14					83	41
15	No	No	No	No	83	41
16					83	41
17					83	41
18					83	41
19					83	41
20	Release	Release	Release	Release	82	41
21					82	41
22					82	41
23					82	41
24					82	18
25					81	18
26					81	18
27					81	18
28					81	18
29					81	18
30					80	18
31	---		---	25	80	---
<hr/>						
Total Sec.						
Ft. Days				25	2,327	1,338
<hr/>						
Mean						
Sec. Ft.				1	75	45
<hr/>						
Total						
Ac. Ft.				50	4,614	2,653

Total for period - 7,267 acre-feet.

TABLE 4

Full Natural Flow
SOUTH FORK PIT RIVER AT U.S.G.S. STATION ABOVE LIKELY
April 1 to September 30, 1953

	In Acre Feet						
	April	May	June	July	August	September	Total
Regulated discharge at U.S.G.S. Station	6,460	16,930	19,430	5,270	6,410	3,950	58,450
Differential of West Valley Reservoir Storage	0	0	0	0	-3,735	-3,137	- 6,872
Estimated Con- sumption in Jess Valley	0	900	1,800	1,200	500	500	4,900
Full Natural Flow	6,460	16,930	21,230	6,470	3,175	1,313	55,578

TABLE 5

Daily Discharge
FITZHUGH CREEK ABOVE CLARK RANCH
April 16 to September 30, 1953

In Cubic Feet Per Second							
Day	April	May	June	July	August	September	
1		32	38	15	3	*4	
2		18	108	12	3	*4	
3		13	60	14	3	*4	
4		13	44	12	3	*4	
5		7	38	12	3	*4	
6		6	92	12	3	*4	
7	No	6	244	10	3	*4	
8		6	168	8	3	*4	
9	Record	20	120	8	3	4	
10		18	58	8	3	4	
11		8	60	8	3	3	
12		7	56	7	3	4	
13		10	60	7	3	4	
14		13	40	7	3	4	
15		16	32	7	3	4	
16	4	19	96	7	3	4	
17	*4	21	38	6	3	4	
18	*4	22	37	6	3	4	
19	*4	140	36	6	3	4	
20	*4	80	35	6	3	4	
21	8	48	34	5	3	4	
22	10	40	26	4	4	4	
23	12	51	26	4	4	4	
24	10	104	26	4	4	4	
25	8	80	24	4	4	4	
26	8	60	24	4	4	*4	
27	12	50	22	3	4	*4	
28	24	38	20	3	4	*4	
29	14	36	20	3	4	*4	
30	14	37	16	3	4	*4	
31	--	34	--	3	4	--	
<hr/>							
Total Sec.							
Ft. Days	**140	1,053	1,698	218	103	119	
<hr/>							
Mean							
Sec. Ft.	** 9.6	34	56.6	7.0	3.3	4.0	
<hr/>							
Total							
Ac. Ft.	**277.	2,090	3,370	432	204	236	

** 15 day period

* Gage Heights Estimated

Total for period = 6,609 acre-feet

TABLE 6

Daily Discharge
PINE CREEK NEAR ALTURAS BELOW POWER HOUSE
April 6 to September 30, 1953

In Cubic Feet Per Second						
Day	April	May	June	July	August	September
1		50	46	78	34	16
2	No	44	62	75	34	19
3		40	64	74	27	19
4	Record	45	64	72	32	20
5		50	64	71	31	20
6	21	44	70	70	30	14
7	24	44	136	68	29	13
8	22	45	122	65	28	19
9	20	54	100	62	28	22
10	24	45	90	60	27	17
11	24	40	92	56	26	16
12	17	35	85	56	26	17
13	23	32	80	56	25	15
14	16	27	80	58	24	19
15	16	24	78	56	24	16
16	18	33	82	56	24	19
17	24	42	87	54	24	15
18	20	54	92	52	24	14
19	20	64	95	50	23	14
20	20	84	98	46	20	14
21	23	67	100	40	22	15
22	26	64	100	32	21	17
23	31	64	95	32	20	16
24	31	64	95	35	20	14
25	30	60	97	35	20	19
26	31	56	95	35	23	15
27	35	56	90	35	21	16
28	38	52	85	35	22	*16
29	34	46	82	34	20	*16
30	35	46	78	34	20	*16
31	--	50	--	34	16	--
<hr/>						
Total Sec.						
Ft. Days	**623	1,521	2,604	1,616	765	498
Mean						
Sec. Ft.	** 25	49	87	52	25	16.6
Total						
Ac. Ft.	**1,234	3,020	5,160	3,200	1,517	988

** 25 day period

* Gage Heights Estimated

Total for period 15,119 acre-feet

TABLE 7

Daily Releases
BIG SAGE RESERVOIR
April 1 to September 30, 1953

In Cubic Feet Per Second						
Day	April	May	June	July	August	September
1				17	34	34
2				17	34	34
3				17	34	34
4				17	34	34
5				17	34	34
6				17	34	34
7				17	34	34
8				34	34	34
9				34	34	34
10				34	34	34
11				34	34	34
12				34	77	34
13				34	77	34
14				34	77	34
15				34	77	34
16				34	77	34
17				34	77	34
18				34	77	34
19				34	77	34
20				34	77	34
21	No	No	No	34	77	34
22	Release	Release	Release	34	77	34
23				34	34	34
24				34	34	34
25				34	34	34
26				17	34	34
27				17	34	34
28				17	34	34
29				17	34	34
30				17	34	34
31				---	34	---
<hr/>						
Total Sec.						
Ft. Days			*85	935	1,527	1,020
Mean						
Sec. Ft.			*17	30	49	34
Total						
Ac. Ft.			*168	1,850	3,030	2,022

release delayed
(outlet valve
repair)

* 5 day period

Total for period 7,070 acre-feet

TABLE 8

Daily Discharge
PIT RIVER NEAR CANBY
April 1 to September 30, 1953

In Cubic Feet Per Second							
Day	April	May	June	July	August	September	
1	322	646	911	332	68	113	
2	303	574	872	332	28	113	
3	298	541	846	253	21	110	
4	303	486	859	194	22	115	
5	312	443	872	190	22	136	
6	317	427	924	228	27	133	
7	298	405	1,030	116	60	104	
8	298	448	1,160	174	146	70	
9	271	486	1,340	169	133	76	
10	262	524	1,910	159	68	83	
11	237	569	2,120	169	49	90	
12	220	519	1,990	190	30	68	
13	209	459	1,830	140	35	44	
14	201	373	1,620	68	64	37	
15	201	322	1,450	62	57	35	
16	186	389	1,340	30	99	38	
17	176	481	1,240	51	90	76	
18	176	569	1,100	201	62	155	
19	194	748	950	213	73	136	
20	502	930	802	118	90	110	
21	342	1,020	646	110	64	93	
22	205	1,220	563	133	33	88	
23	258	1,410	530	107	37	104	
24	307	1,490	492	45	44	104	
25	352	1,360	465	200	99	104	
26	357	1,290	427	101	140	113	
27	405	1,250	389	96	96	107	
28	470	1,200	394	90	80	113	
29	563	1,130	357	88	90	133	
30	628	1,090	332	86	99	107	
31	--	1,010	--	86	118	--	
<hr/>							
Total Sec.							
Ft. Days	9,173	23,809	29,761	4,531	2,144	2,908	
<hr/>							
Mean							
Sec. Ft.	306	768	992	146	69	97	
<hr/>							
Total							
Ac. Ft.	18,190	47,220	59,030	8,990	4,250	5,770	

Total for period - 143,450 acre-feet.

PLATE I

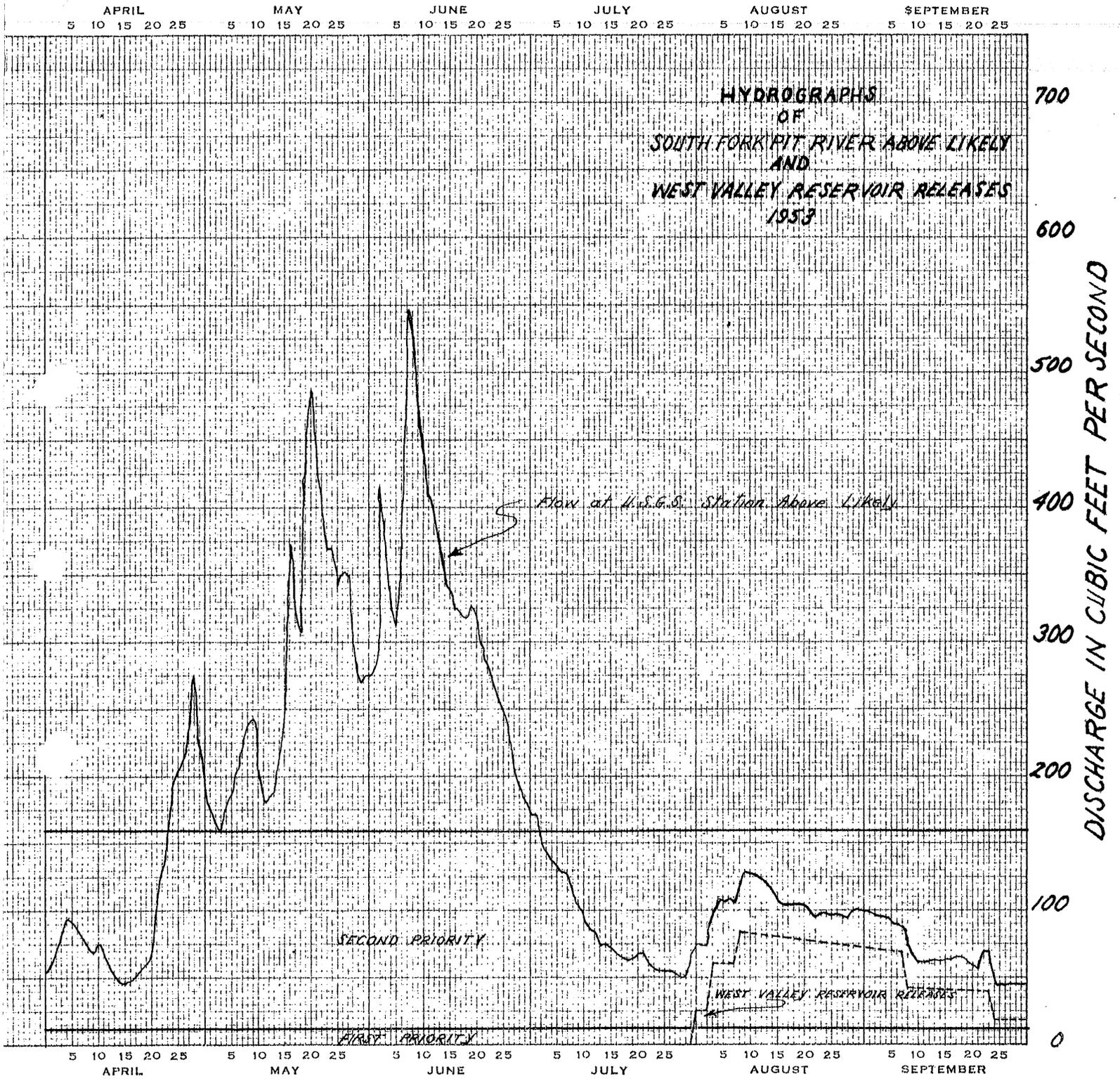


PLATE 2

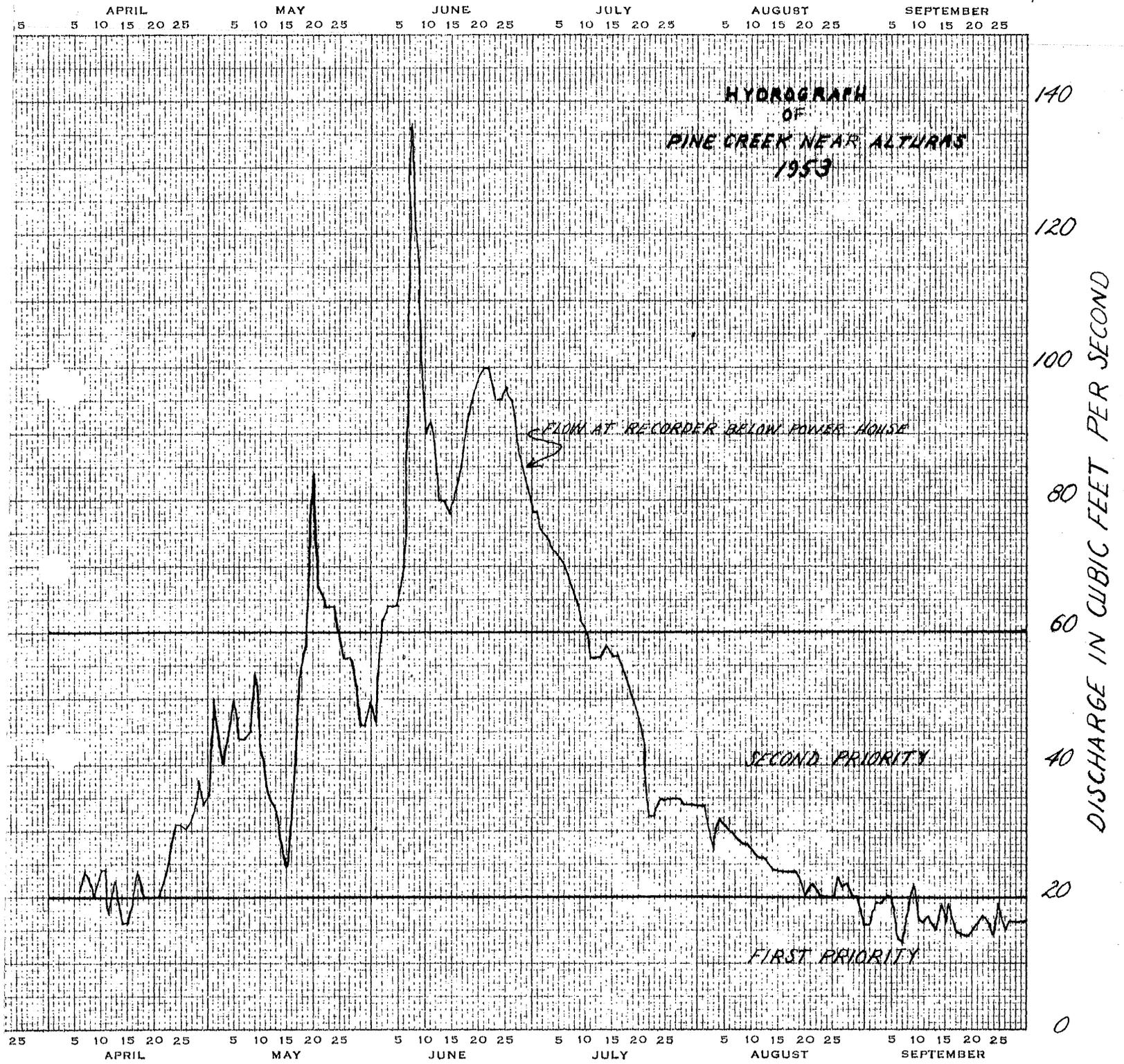


PLATE 3

