STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

Reports of the
Division of Water Resources
Edward Hyatt, State Engineer

REPORT ON WATERMASTER SERVICE IN SOUTH FORK PIT RIVER WATERMASTER DISTRICT MODOC AND LASSEN COUNTIES, CALIFORNIA 1943 SEASON

By
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SACRAMENTO

DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

October 12, 1943

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Attention: Mr. Gordon Zander, Supervising Hydraulic Engineer

Dear Sir:

Herewith is submitted the annual report covering watermaster service within the South Fork Pit River Water Master District, Modoc and Lassen Counties, California, during the 1943 season.

The report presents a general description of the work and a discussion of the results obtained. Records of precipitation, run-off and other pertinent data are included.

Respectfully submitted,

J. Victor Seamon
Watermaster

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REPORT ON
WATERMASTER SERVICE
IN
SOUTH FORK PIT RIVER WATERMASTER DISTRICT
MODOC AND LASSEN COUNTIES, CALIFORNIA
1943 SEASON

INTRODUCTION

The South Fork Pit River Water Master District, now termed Watermaster Service Area, Counties of Modoc and Lassen, California, was created by the order of the Division of Water Resources, entered December 31, 1934. As created the service area embraced the water rights determined by a decree entered October 30, 1934, by the Superior Court, Modoc County, in the case of W. E. Armstrong vs. Frank McArthur, et al, No. 3273, with the exception of certain rights defined in the paragraphs of said decree enumerated in said order. Subsequent thereto, orders changing said service area have been entered by the Division of Water Resources on December 31, 1936, whereby certain water rights on springs and spring channels near Likely, California, were excluded; on April 19, 1937, whereby the water rights of the South Fork Irrigation District were included in the watermaster service area; and on January 30, 1940, whereby the said service area was enlarged by incorporating therein the Pine Creek and Hot Springs Valley Watermaster Districts, theretofore created by the orders entered by the Division of Water Resources on January 12, 1935.

Watermaster service in the South Fork Pit River Watermaster Service Area for the 1943 season covered the regulation of

of diversions from the South Fork of Pit River and its tributaries, Pit River and Rattlesnake Creek in Hot Springs Valley, and Pine Creek near Alturas all included within the scope of the service area as enlarged by said order of January 30, 1940. Watermaster service was carried on throughout the season in accordance with the "Distribution of Water" procedure contained in Sections 4000 to 4360, inclusive, of the Water Code. Such service extended over the period from April 1 to September 30. J. Victor Scammon, Deputy Watermaster, South Fork Pit River Watermaster Service Area, administered the distribution of water from the various streams within the district during the period April 27 to September 30. Harrison Smitherum was supervising watermaster.

WATER SUPPLY

Precipitation

The results of the annual snow surveys made on the four courses in the Upper Pit River watershed are shown in Table 1 of this report. The table is arranged to show the water content of the snow at the beginning of the run-off period, April 1 to July 31, inclusive, as compared with the average water content over years of actual measurements. This information is used to forecast the probable April - July flow of the South Fork of Pit River above Likely, and enables the watermaster to rough out a schedule of operation for the irrigation season. The forecast of the probable run-off is especially valuable in the operation of West Valley Reservoir.

Table 2 gives the monthly, seasonal and average amounts of precipitation for stations in the Upper Pit River Area. Each of the stations listed has a common 14 year record and comparisons are made using the 14 year averages. For precipitation data prior to

1940-41 reference is made to the watermaster report for the 1940 season.

Stream Flow

South Fork Pit River: The record of the daily discharge of the South Fork of Pit River above Likely is given in Table 3. These data were compiled from records of the United States Geological Survey. The station is below the junction of West Valley Creek and about four miles upstream from Likely. The data exclude any record of use in Jess Valley and storage in West Valley Reservoir, but do include the record of storage releases from that reservoir.

Table 4 is a record of the daily releases, in cubic feet per second, from West Valley Reservoir during the irrigation season.

The total net available water supply of the South Fork of Pit River for the irrigation season from April 1 to September 30 is shown in Table 5.

A comparison of the seasonal irrigation water supply to the South Fork Area over a 15 year period is given in Table 6.

The basic data for a comparison of the runn-off in the South Fork of Pit River above Likely to the results of the annual snow surveys is given in Table 7. The Division of Water Resources issues an annual snow survey report as of April 10th, in which forecasts for the April - July Flow are made. The 1943 forecast of the South Fork of Pit River above Likely was 50,122 acre feet. The actual flow of that period was 52,580 acre feet.

Plate I shows graphically the data presented in Tables 3 and 4. The solid line represents South Fork Flow and the dotted line the storage releases from West Valley Reservoir.

Fitzhugh Creek: Table 8 is a record of the available water supply of Fitzhugh Creek above the Clark Ranch. The daily discharge data were computed from current meter measurements and a continuous record of the water stage throughout the entire season. 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: Table 9 is a record of the flow of Pine Creek near Alturas at the Power House. A continuous water stage recorder is maintained by the Division of Water Resources at a point above all irrigation diversions. Plate II shows the daily hydrograph of flow prepared from the data in Table 9.

Table 10 gives the basic data for a comparison of the run-off in the Pine Creek Basin to the results of the annual snow surveys. No forecast is made for this creek in the annual snow survey bulletin issued by the Division of Water Resources.

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 and South Forks of Pit River, Big Sage Reservoir, and Rattlesnake Creek. Water from the latter source enters Pit River about four miles west of Alturas and is principally in the form of water stored in Big Sage Reservoir which is released down Rattlesnake Creek to meet irrigation demands.

Prior to 1940, the flow entering at the head of Hot Springs Valley was measured at the station on Pit River below the junction of the North and South Forks. Channel improvements made on the North Fork of Pit River in the winter of 1939 now causes the water from that source to by-pass the station so that measurements there are of no value. Furthermore, due to backwater conditions from river dams it

has not been feasible to establish a new 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 from these sources is presented in this report.

Table 11 is a record of water released from storage in Big Sage Reservoir. Table 12 presents a comparison of the seasonal operations for the years 1935 to 1943, inclusive.

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 1943, the flow from these sources failed about June 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 13 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 12 is presented on Plate III. 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 Judgement and Decree No. 5273, 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 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 comingles with the natural run-off, 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:

Name	Per Cent
W. E. Armstrong	2.18
V. F. Christensen	20.46
A. T. Coffman	0.73
J. D. Flournoy (Now Arthur Flournoy)	3.98
W. H. Flournoy	2.51
R. O. Gaustad (Now Jacob F. Derner)	1.79
R. J. Gaustad (Now Peter and John McGarva)	1.95
Jesse Hughes	2.23
Frank McArthur (Vaughn)	45.62
Douglas McGarva	0.24
John and Peter McGarva	2.63
K. Nelson	2.74
Ray Stepp (Now Arthur H. Burmister)	1.07
A. L. Stinson	0.03
D. E. Van Loan	8.53
Gary Williams	2.51
Roy Williams	0.80
	100.0

During the 1943 season the lack of adequate farm labor due to war conditions delayed all farming operations, especially haying and in turn the fall irrigation of pasture lands. Care was exercised

in releasing reservoir water to each user when he became ready for fall irrigation, to prevent wetting adjoining fields which were in process of being harvested. Weather conditions were very poor during the spring as the growing season was cold but during the summer and fall conditions were very good for harvesting crops as there was no storm of any consequence. The greatest release from West Valley Reservoir was at the rate of 173 cubic feet per second.

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. The season's flow for 1943 was above average. It amounted to 13,700 acre feet as compared with the 24 year mean of 7,412 acre feet. For other comparisons see Table 10. The largest single diversion from Pine Creek goes to P.S. and G.B. Dorris, who are entitled to receive one-half of the total allotments shown in Schedule 2. On July 22 G. B. Dorris requested that the Dorris allotment be shut off during the haying operations. At that time there was no need for irrigation water by any of the other users and Pine Creek water was diverted into the Dorris Reservoir in accordance to Paragraph 7 of the Pine Creek agreement. The Dorris direct diversions remained closed until August 30 so that the watermaster was able to furnish sizeable heads to the other Pine Creek users as needed. As a result good fall pastures were grown.

Hot Springs Valley

Distribution of Pit River water was made in accordance with the allotments set forth in Schedules 2 and 3 of the Hot Springs Valley Agreement. The distribution of Big Sage water was made in accordance

with the by-laws of the Hot Springs Valley Irrigation District. However, the major part of the water from both sources is used by the same parties through the same irrigation systems and devices. The same method of distributing the water also applies to both stored water and natural flow.

In 1943 the natural flow during the months of April, May and June, was in excess of demands. Each divertor was able to irrigate his lands at leisure without resourt to rotation, whereas the usual procedure is for the uppermost user to impound the initial head which then is successively released to the next downstream user.

The Merlini upper dam was the only river dam rebuilt during the season in the Hot Springs Valley area. Most of the other structures remained in a poor state of repair. The watermaster suggested to the president and secretary of Hot Springs Valley Irrigation District that some effort be made to clean the canal through the Spicer place so that haying operations on that place will not retard the fall irrigation of other users below them.

General

Better than average crops were obtained by all and no controversies occurred.

OWNERSHIP OF LANDS AND WATER RIGHTS

Change in Ownership

On September 25, 1943, a search was made through the official records of Modoc County for recent changes in ownership in lands and water rights embraced in the South Fork Pit River Watermaster District. Further assistance came from various persons living within the area

who furnished additional information concerning transfers of ownership.

The changes in ownership of lands and water rights, which have occurred subsequent to filing "Statement for South Fork Pit River Watermaster District, Counties of Modoc and Lassen, California, For 1943", are listed in the following tabulation. The new names should appear in the 1944 Statement.

Tract No.	Name of Water Right Owner Appearing in 1943 Statement	Name of Water Right Owner to Appear in 1944 Statement	Amount of Water c.f.s.
7-31	Gherald M. and Roma Miller	John and Maude McGarva, and P. B. and Phyllis McGarva	2.20
7-70	George Hagge	William Hagge	6.47

TABLE 1
SNOW SURVEY DATA—UPPER PIT RIVER

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
Eagle Peak Course Elev. 7500 Ft. Date of Survey	4/3	4/1	3/30	3/30	4/2	4/10	4/9	3/29	3/31	3/30	4/4	3/26	3/29	3/24			
Depth of Snow—Inches	24.3	13.3	43.8	38.1	9.9	66.1	50.5	47.3	71.3	27.2	38.4	35.1	38.6	58.9			
Water Content—Inches	11.0	5.2	18.7	14.3	3.3	22.6	22.1	17.5	23.6	10.4	15.6	13.8	14.7	24.7			
Density—Percent	45.3	39.1	42.6	37.5	33.3	34.2	43.7	37.1	33.1	38.2	40.6	39.3	38.1	41.8			
Record Average—Inches								14.32	15.35	14.8	14.9	14.8	14.8	15.5			
% of Record Aver.	78.0	36.3	131.0	100.0	23.0	158.0	154.0	122.0	153.7	70.5	104.7	93.3	99.3	152.9			
Cedar Pass Course Elev. 7200 Ft. Date of Survey	3/31	3/30	3/26	3/28	3/31	3/27	4/5	4/10	3/26	3/28	3/22	3/24	3/27	3/22			
Depth of Snow Inches	29.3	22.1	49.2	43.9	2.2	56.4	68.2	54.4	79.1	28.2	35.9	40.8	47.4	62.3			
Water Content Inches	13.3	8.3	19.8	16.3	0.9	21.1	26.2	21.6	25.2	10.5	14.6	17.9	19.3	25.8			
Density—Percent	44.4	37.6	40.3	37.1	40.8	37.4	38.4	39.6	31.8	37.2	40.7	43.8	40.7	41.4			
Record Average—Inches								15.9	16.9	16.3	16.1	16.3	16.0	17.2			
% of Record Average	82.0	50.4	118.0	102.5	5.7	133.0	165.0	136.0	149.1	64.4	90.7	109.0	120.6	150.0			

TABLE 1 (Continued)

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
Blue Lake Ranch Course Elev. 7300 Ft.			New Course 1940														
Date of Survey											4/11	3/28	3/31	3/26			
Depth of Snow-Inches											16.3	18.8	28.9	34.9			
Water Content-Inches											6.4	8.5	11.7	15.3			
Density—Percent											39.2	45.2	40.5	43.8			
Record Average-Inches																	
% of Record Average																	
Adin Mountain Course—Elev. 6500 Ft.																	
Date of Survey	3/27	3/27	3/24	3/27	4/1	4/17	3/26	4/7	4/8	3/31	4/7	3/31	4/2	3/31			
Depth of Snow-In.	13.3	6.1	30.0	37.6	0	45.9	47.2	37.4	61.4	17.5	10.8	24.6	32.1	30.4			
Water Content-In.	6.1	2.9	13.3	14.1	0	18.8	20.0	16.7	28.1	8.1	4.3	11.3	13.9	13.2			
Density—Percent	45.6	47.3	44.3	37.5	0	40.9	42.4	44.8	45.8	46.2	39.8	45.9	43.3	43.4			
Record Average-In.								11.5	13.3	12.8	12.0	12.0	12.1	12.2			
% of Record Aver.	53.0	25.2	115.6	122.5	0	163.7	174.0	145.2	211.3	63.3	35.8	94.1	114.9	108.2			

TABLE 2

PRECIPITATION—UPPER PIT RIVER STATIONS—1929 to 1943
MONTHLY, SEASONAL AND AVERAGE AMOUNTS IN INCHES

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Season
Jess Valley, Modoc County, California, Elev. 5,400 ft.													
1940-1941	1.95	2.31	1.62	1.28	3.02	0.48	0.77	2.89	2.39	0.20	1.90	1.13	19.94
1941-1942	1.48	1.71	3.10	1.66	1.57	0.94	2.34	3.44	1.02	0	0.24	0.15	17.65
1942-1943	0.33	2.60	3.25	3.00	2.69	1.76	2.68	1.31	1.76	0.71	0	0	20.09
14 Yr. Total	15.57	19.99	27.45	29.17	28.22	24.71	26.16	22.58	14.08	5.70	3.18	9.92	226.73
14 Yr. Record Mean	1.11	1.43	1.96	2.08	2.02	1.77	1.87	1.61	1.01	0.41	0.23	0.71	16.20
Alturas, Modoc County, California, Elev. 4,460 ft.													
1940-1941	2.00	1.05	2.73	1.35	2.13	0.68	0.51	1.59	0.86	0.02	1.16	0.50	14.58
1941-1942	1.40	1.83	2.98	2.16	1.84	0.59	1.37	1.71	0.94	0	0.56	0.20	15.58
1942-1943	0.35	2.51	1.97	3.68	1.81	1.39	1.72	0.70	0.29	0.27	0	0.03	14.72
14 Yr. Total	14.29	16.22	25.69	28.69	22.24	17.46	14.69	12.60	7.41	2.82	2.89	5.33	170.33
14 Yr. Record Mean	1.02	1.16	1.84	2.05	1.59	1.25	1.05	0.90	0.53	0.20	0.21	0.38	12.17
Lakeview, Lake County, Oregon, Elev. 4,759 ft.													
1940-1941	2.11	2.18	1.62	2.40	2.91	0.86	1.45	2.62	2.14	T	1.82	0.83	20.94
1941-1942	1.60	1.33	3.34	2.40	2.59	0.46	1.76	2.46	0.65	T	0.18	0.63	17.40
1942-1943	0.79	2.70	3.56	3.39	1.37	1.38	2.16	1.42	1.29	0.13	0	0	18.19
14 Yr. Total	15.13	16.68	27.22	25.71	25.51	19.96	18.78	16.56	11.54	2.02	2.87	7.35	189.33
14 Yr. Record Mean	1.08	1.19	1.94	1.84	1.82	1.43	1.34	1.18	0.82	0.14	0.21	0.52	13.52
Bieber, Lassen County, California, Elev. 4,200 ft.													
1940-1941	3.15	2.66	3.45	1.90	4.52	0.44	0.57	2.33	1.25	0.18	0.30	0.41	21.16
1941-1942	0.60	1.75	4.28	2.35	3.79	1.13	2.75	1.87	0.97	0	0.35	0.08	19.92
1942-1943	0.73	3.39	3.19	5.44	2.28	2.07	2.22	0.63	1.97	0.09	0	T	22.01
14 Yr. Total	19.20	20.49	39.11	37.83	38.88	27.98	19.73	17.95	8.06	2.30	0.99	6.31	238.83
14 Yr. Record Mean	1.37	1.46	2.79	2.70	2.78	2.00	1.41	1.28	0.58	0.16	0.07	0.45	17.05

For records prior to 1940-1941, see 1940 Report.

TABLE 3

DAILY DISCHARGE IN CUBIC FEET PER SECOND
SOUTH FORK PIT RIVER NEAR LIKELY
For Year Ending September 30, 1945

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	27	35	53	30	64	111	313	398	103	76	156
2	29	28	45	45	30	60	133	319	398	108	86	94
3	32	33	41	40	30	58	158	328	347	105	104	94
4	31	33	39	37	31	56	176	331	316	102	108	94
5	30	30	35	35	32	55	189	331	313	98	103	94
6	30	29	32	33	32	52	189	344	298	85	102	74
7	30	32	32	32	32	75	219	334	284	74	102	55
8	30	33	33	32	32	99	253	310	240	76	133	55
9	29	29	34	31	31	79	238	296	281	76	152	54
10	26	29	33	31	30	84	224	304	209	77	148	53
11	30	29	33	29	30	83	219	284	219	77	146	41
12	29	29	34	26	30	67	243	268	207	73	142	26
13	21	29	43	24	35	62	268	258	204	70	136	27
14	25	32	39	23	40	67	290	248	209	65	148	43
15	29	34	36	22	45	67	298	255	182	63	168	44
16	30	35	34	22	62	58	319	258	164	54	168	42
17	28	34	33	22	67	59	340	233	156	66	168	41
18	26	44	31	21	73	51	356	212	164	74	166	41
19	26	38	30	21	80	48	340	200	170	71	166	41
20	26	37	30	20	108	44	304	195	156	73	170	41
21	26	37	30	174	162	44	310	198	146	83	170	42
22	26	37	31	82	258	42	290	200	142	84	166	41
23	26	37	33	53	156	41	304	212	133	94	162	39
24	26	42	45	40	98	42	319	233	126	73	160	37
25	26	37	46	36	73	43	353	250	122	63	187	38
26	26	35	70	33	70	53	325	258	106	58	207	35
27	27	38	101	32	69	68	313	260	100	53	200	31
28	27	42	133	31	66	80	425	255	98	52	200	32
29	28	48	68	30		93	353	240	100	56	200	32
30	29	52	55	30		96	316	248	106	66	200	33
31	28		61	30		93		296		77	198	
Total	859	1047	1374	1170	1841	1993	8175	8268	6029	2345	4737	1570
Mean	27.7	34.9	44.3	37.7	65.8	64.3	272	267	201	75.6	153	52.3
Acre-Feet	1700	2080	2730	2320	3650	3950	16210	16400	11960	4650	9400	3110

TABLE 4

DAILY RELEASE IN CUBIC FEET PER SECOND
WEST VALLEY RESERVOIR
For Season Ending September 30, 1943

Day	June	July	August	Sept.
1			45.0	120.0
2			58.0	66.0
3			58.0	66.0
4			58.0	66.0
5			58.0	66.0
6			58.0	48.0
7			58.0	30.0
8			84.0	30.0
9			110.0	30.0
10			110.0	30.0
11			110.0	19.0
12			110.0	7.0
13			110.0	14.0
14			117.0	22.0
15			125.0	22.0
16			125.0	22.0
17		* 12.0	125.0	22.0
18		22.0	125.0	22.0
19		22.0	125.0	22.0
20		22.0	125.0	22.0
21		22.0	125.0	22.0
22		22.0	125.0	22.0
23		22.0	125.0	20.0
24		16.0	125.0	18.0
25		10.0	149.0	18.0
26		10.0	173.0	18.0
27		10.0	173.0	18.0
28		12.0	173.0	18.0
29		14.0	173.0	18.0
30		24.0	173.0	** 18.0
31		32.0	173.0	
Total		272.0	5581.0	936.0
Total Acre-Feet		540	7100	1860

Total Acre-Feet..... 9500

* Reservoir opened, storage 17,400 acre-feet

** Reservoir closed Oct. 20. Flow of West Valley Creek included in releases until Oct. 20.
Nov. 23, storage = 7511 acre-feet

WEST VALLEY RESERVOIR

SEASONAL OPERATION RECORD 1936 to 1943

	STORAGE ON HAND AS OF						Irrigation Release	Total ** Storage Differential
	Date First Obs.	Acre-Feet	Date Opened	Acre-Feet	Date Closed	Acre-Feet	Acre-Feet	Open and Close
1935	Work was started on construction of dam in August 1935 and was completed late in 1936.							
1936								
1937	May	8,000				0	7,000	
1938	Spilling		Aug. 3		Sept. 9		7,950	
1939			May 7		Aug. 22		11,680	
1940	May 30	16,620	May 30	16,620	Sept. 18	3,820	11,780	12,800
1941	April 13	17, 840	July 11	17,490	Sept. 10	10,700	7,050	6,790
1942	April 11	17,950	June 24	17,700	Sept. 18	8,050	9,490	9,650
1943	April 15	18,230	July 17	17,400	*Nov. 23	7,510	9,500	9,890

* Last observation of season closed Oct. 20.

** Includes all losses and accretions.

TABLE 5

TOTAL SEASONAL IRRIGATION WATER SUPPLY OF THE
SOUTH FORK OF PIT RIVER
APRIL 1 TO SEPTEMBER 30, 1943

	Apr.	May	June	July	Aug.	Sept.	Total
			Values in Acre-Feet				
U.S.G.S. Record	16,210	16,400	11,960	4,650	9,400	3,110	61,730
West Valley Reservoir	0	0	0	-540	-7,100	-1,860	-9,500
Consumption in Jess Valley	0	900	1,800	1,200	500	500	4,900
Full Natural Flow	16,210	17,300	13,760	5,310	2,800	1,750	57,130

WEST VALLEY

Reservoir spilling on April 1, 1943

No diversion through intake ditch from South Fork of Pit River into reservoir in 1943

No consideration is given to consumptive use above West Valley dam or diversion from Cedar Creek into Tule Lake Reservoir in the above table.

TABLE 6
COMPARISON OF RUNOFF IN ACRE-FEET DURING IRRIGATION SEASON
SOUTH FORK OF PIT RIVER ABOVE LIKELY
From 1929 to 1943

Year	April	May	June	July	Aug.	Sept.	Seasonal Total
			Acre-Feet				
1929*	3,930	7,480	4,180	1,160	664	714	18,128
1930*	6,410	7,750	2,950	956	830	1,160	20,056
1931*	2,200	1,580	721	474	658	626	6,239
1932*	7,440	19,600	9,160	2,370	1,390	1,040	41,000
1933	3,370	5,260	4,290	898	910	857	15,585
1934	3,250	2,020	2,210	658	615	649	9,400
1935	8,020	17,920	9,790	2,050	1,470	966	40,216
1936	11,700	12,640	6,360	1,640	1,360	1,280	34,980
1937**	2,840	8,380	4,500	3,000	5,830	920	25,470
1938**	10,960	29,700	11,840	3,020	7,950	3,100	66,570
1939**	5,600	5,790	4,630	3,410	5,570	855	25,855
1940**	5,260	8,610	5,000	4,150	6,540	1,680	31,240
1941**	4,100	13,650	6,220	3,520	6,990	1,660	36,140
1942**	9,400	17,640	12,400	3,410	8,490	2,320	53,660
1943**	16,210	16,400	11,960	4,650	9,400	3,110	61,730

Above data taken from the U.S.G.S. records of flow of the South Fork Pit River above Likely, California.

* Irrigation diversions above station were not regulated by watermaster.

** Includes storage release from West Valley Reservoir.

TABLE 7

SNOW SURVEY DEDUCTIONS

COMPARING FULL NATURAL RUNOFF, APRIL 1 TO JULY 31
SOUTH FORK OF PIT RIVER ABOVE LIKELY, TO PINE CREEK NEAR ALTURAS
IN RELATION TO SNOW WATER CONTENT, ON EAGLE PEAK APRIL 1

Year	Natural Flow Pine Creek Acre-Feet	Natural Flow So.Fk. Pit River Acre-Feet	Water Content Eagle Peak Inches
1919	5,955		
1920	6,675		
1921	10,260		
1922	7,780		
1923	5,110		
1924	5,110		
1925	7,920		
1926	6,199		
1927	10,080		
1928	7,640		
1929	5,495		
1930	5,894	24,000	11.0
1931	2,615	11,000	5.2
1932	10,300	44,500	18.7
1933	5,665	19,800	14.3
1934	5,453	13,400	3.3
1935	9,293	45,300	22.6
1936	9,300	38,300	22.1
1937	5,510	25,800	17.5
1938	12,890	64,800	23.6
1939	4,604	19,320	10.4
1940	6,796	23,500	15.6
1941	7,180	31,480	13.8
1942	9,880	45,780	14.7
1945	13,700	52,580	23.7
Total 14 Yr.	107,080	495,560	216.5
Total 25 Yr.	185,292		
14 Year Mean	7,648	35,397	15.5
25 Year Mean	7,412	34,305 *	15.0 *

* Computed

TABLE 8
DAILY DISCHARGE IN CUBIC FEET PER SECOND
FITZHUGH CREEK ABOVE CLARK RANCH
APRIL 9 TO SEPTEMBER 30, 1943

Day	April	May	June	July	August	September
1		32.0	36.0	8.8	1.8	1.1
2		30.0	28.0	7.2	1.6	1.3
3		29.0	22.5	6.2	1.5	1.3
4		27.0	20.0	6.0	1.5	1.1
5		25.0	18.5	5.5	1.4	1.1
6		24.0	17.5	5.4	1.4	1.3
7		23.0	15.0	5.0	1.5	1.4
8		22.0	14.0	4.8	1.6	1.3
9	36.0	20.0	13.0	4.5	1.4	1.3
10	32.5	19.0	14.0	4.6	1.0	1.3
11	28.5	15.0	17.0	4.6	1.1	1.4
12	30.0	12.5	16.5	4.2	1.5	1.5
13	32.5	10.0	17.0	4.0	1.0	1.6
14	40.5	8.5	17.5	3.8	2.1	1.6
15	42.5	10.0	16.0	3.8	2.2	1.6
16	45.5	14.0	15.0	3.8	2.2	1.6
17	40.5	10.8	14.5	3.6	2.3	1.6
18	39.0	9.3	14.0	3.4	2.5	1.6
19	36.0	8.5	13.5	3.4	2.3	1.6
20	34.5	9.9	13.5	3.2	2.3	1.6
21	32.5	9.9	13.5	3.2	2.3	1.6
22	28.5	8.7	13.8	2.7	2.5	1.6
23	30.0	8.5	13.0	3.2	2.2	1.5
24	28.5	9.3	12.5	2.7	2.1	1.4
25	32.5	11.0	13.0	2.0	1.8	1.4
26	36.0	13.0	12.5	1.8	1.6	1.5
27	39.0	14.0	11.2	1.2	1.4	1.5
28	120.	16.0	10.6	0.8	1.1	1.6
29	70.0	18.0	9.6	2.0	1.3	1.6
30	36.0	20.0	10.5	2.5	1.3	1.6
31		24.0		2.5	1.1	
Total	891.0	511.9	473.2	122.4	52.7	43.5
Mean	40.5	16.5	15.8	3.9	1.7	1.5
Runoff in Acre-Feet	1770	1020	939	243	105	86.3

TABLE 9
DAILY DISCHARGE IN CUBIC FEET PER SECOND
PINE CREEK NEAR ALTURAS AT POWER HOUSE
APRIL 9 TO SEPTEMBER 30, 1943

Day	April	May	June	July	August	September
1		70.0	130.	45.0	23.0	16.5
2		65.0	128.	47.5	23.0	12.5
3		63.0	127.	47.5	23.0	13.0
4		62.0	115.	45.0	22.5	13.0
5		60.0	104.	47.0	21.5	13.0
6		58.0	83.0	48.0	22.5	13.0
7		58.0	70.0	52.0	14.5	12.0
8		56.5	63.0	50.0	17.5	12.0
9	34.0	58.0	60.5	48.0	18.0	11.5
10	32.5	62.0	58.0	48.0	18.0	11.5
11	31.5	58.0	66.0	47.5	18.0	11.5
12	32.5	58.0	68.0	46.0	17.5	11.2
13	31.5	58.0	68.0	45.0	17.5	11.5
14	42.0	58.0	69.0	45.0	17.5	12.0
15	44.0	61.0	60.5	45.0	18.0	12.0
16	47.0	55.5	58.0	41.0	17.0	12.0
17	47.0	55.0	57.0	38.0	17.0	12.0
18	47.0	53.0	57.0	36.0	17.0	12.0
19	47.0	52.0	62.0	36.0	17.0	12.0
20	42.0	51.0	67.5	36.0	17.0	12.0
21	52.0	53.0	72.0	35.0	17.0	11.5
22	49.5	55.5	72.0	36.0	16.5	11.5
23	50.5	57.0	72.0	36.0	16.5	11.5
24	52.0	65.0	67.5	30.0	16.5	11.5
25	57.0	71.5	60.5	28.5	16.5	11.5
26	52.0	92.0	57.0	28.5	14.2	11.5
27	50.5	107.	52.0	27.5	13.0	11.5
28	125.	109.	46.0	27.5	13.0	11.5
29	78.5	111.	44.0	26.5	13.0	11.5
30	78.0	115.	45.0	26.1	13.0	11.5
31		125.		24.5	13.0	
Total	1123.0	2155.0	2159.5	1215.6	539.2	361.2
Mean	* 51.0	68.8	72.0	39.2	17.4	12.0
Runoff in Acre-Feet	*2230 **2700	4230	4280	2410	1070	716

* 22 day period

** Estimated monthly total

TABLE 10
COMPARISON OF AVERAGE SNOW WATER CONTENT ON
CEDAR PASS AND EAGLE PEAK, WITH APRIL 1 TO
JULY 31 PINE CREEK RUNOFF

Year	Runoff Acre-Feet	Average Water Content--Inches: Cedar Pass	Eagle Peak	Average
1919	5953			
1920	6675			
1921	10260			
1922	7780			
1923	5110			
1924	5100			
1925	7920			
1926	6199			
1927	10080			
1928	7640			
1929	5495			
1930	5894	15.0	11.0	12.0
1931	2615	8.0	5.2	6.6
1932	10300	19.8	18.7	19.2
1933	5665	16.3	14.3	15.3
1934	3453	0.9	3.3	2.1
1935	9293	21.1	22.6	21.8
1936	9300	26.2	22.1	24.1
1937	5510	21.6	17.5	19.6
1938	12890	25.2	23.6	24.4
1939	4604	10.5	10.4	10.4
1940	6796	14.6	15.6	15.1
1941	7180	17.9	13.8	15.8
1942	9880	19.3	14.7	17.0
1943	13700	25.8	23.7	24.7
14 Year Total	107,080	240.2	216.5	228.1
25 Year Total	185,292			
14 Year Mean	7,648	17.2	15.5	16.3
25 Year Mean	7,412	16.6 *	15.0 *	15.8 *

* Computed

TABLE 11
DAILY RELEASE IN CUBIC FEET PER SECOND
BIG SAGE RESERVOIR
MAY 23 TO SEPTEMBER 30, 1943

Day	May	June	July	August	September
1		9	9	9	90
2		9	9	9	90
3		9	9	9	90
4		9	9	9	90
5		9	9	39	90
6		9	9	68	90
7		9	9	68	90
8		9	9	68	90
9		9	9	68	90
10		9	9	68	90
11		9	9	68	90
12		9	9	68	90
13		9	9	68	90
14		9	9	68	90
15		9	9	68	89
16		9	9	80	89
17		9	9	92	89
18		9	9	92	47
19		9	9	92	6
20		9	9	92	6
21		9	9	92	6
22		9	9	92	6
23	* 9	9	9	91	6
24	9	9	9	91	6
25	9	9	9	91	6
26	9	9	9	91	6
27	9	9	9	91	6
28	9	9	9	91	6
29	9	9	9	91	6
30	9	9	9	91	6
31	9		9	91	
Total	81	270	279	2206	1646
Mean	9	9	9	71.2	54.9
Total Ac.-Ft.	161	536	553	4380	3260

Total for season 8890

* Reservoir opened

TABLE 12
BIG SAGE RESERVOIR
SEASONAL OPERATION RECORD - 1935-1943

Year	Storage on Hand As Of				Total Decrease	Irrigation Release	Net Losses
	Date	Ac.-Ft.	Date	Ac.-Ft.	Ac.-Ft.	Ac.-Ft.	Ac.-Ft.
1934	Apr. 24	6,400	July 7	500	5,900	4,325	1,025
1935	May 12	15,400	Sept. 15	6,300	9,100	3,750	5,350
1936	May 8	25,200	Sept. 6	12,900	12,300	6,850	5,450
1937	May 24	23,500	Sept. 6	9,600	13,900	8,270	5,630
1938	May 31	58,000	Sept. 30	43,000	15,000	6,860	8,140
1939	Apr. 2	53,000	Sept. 12	31,750	21,250	13,100	8,150
* 1940	May 9	51,700	Sept. 22	32,600	19,100	10,700	8,400
* 1941	Apr. 14	51,000	Sept. 7	39,000	12,000	7,270	4,730
* 1942	Apr. 20	64,500	Sept. 5	51,000	13,500	6,190	7,310
* 1943	May 23	77,000	Sept. 30	58,600	18,400	8,900	9,500

* Includes sale of water to Big Valley users.

1940	1100 Ac. Ft.
1941	800 Ac. Ft.
1942	300 Ac. Ft.
1943	500 Ac. Ft.

TABLE 13
DAILY DISCHARGE IN CUBIC FEET PER SECOND
PIT RIVER NEAR CANBY
For Year Ending September 30, 1943

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29.0	29	151	758	360	1300	836	932	214	95	90	101
2	27	22	162	686	305	1190	758	1020	340	62	69	62
3	32	21	151	504	300	1130	716	1020	499	47	56	51
4	24	21	144	355	305	1140	698	980	554	49	22	45
5	17	42	132	260	345	1230	722	914	604	42	25	44
6	38	69	113	205	375	1360	746	854	576	37	37	60
7	33	98	98	151	428	1580	740	788	576	38	38	122
8	21	98	95	140	444	1930	758	728	587	65	30	85
9	32	119	98	155	428	2370	770	700	582	223	26	129
10	33	107	101	162	375	2640	758	660	548	184	20	223
11	32	87	107	158	355	2670	764	620	494	101	12	166
12	30	95	110	155	310	2370	734	570	444	92	9.5	151
13	27	90	113	144	300	2240	698	540	422	104	11	139
14	27	104	116	119	330	2130	668	510	438	104	29	116
15	27	116	129	116	365	1960	650	480	385	107	35	82
16	18	98	136	113	395	1820	644	460	355	92	37	49
17	15	110	129	105	543	1600	662	440	340	72	65	49
18	12	125	116	100	758	1340	680	433	250	101	85	58
19	12	144	110	101	932	1170	704	433	210	67	82	62
20	33	184	101	85	1010	980	716	428	101	67	74	60
21	87	151	92	1020	1140	818	728	406	85	85	65	65
22	44	125	95	2820	1840	710	728	375	85	69	79	104
23	21	110	101	1740	2300	626	704	335	144	62	101	129
24	15	110	132	1550	2130	576	698	166	214	40	98	85
25	10	110	192	1230	1970	532	698	188	218	30	85	79
26	7.5	113	265	1320	1790	538	674	171	179	30	65	67
27	6.5	113	310	1030	1630	576	638	270	144	25	56	67
28	6	110	416	848	1470	626	692	155	104	26	49	60
29	89	116	538	656		746	686	98	101	25	60	56
30	132	132	728	538		866	758	60	101	20	92	54
31	60		812	450		878		78		67	101	
Total	997.0	2969	6093	17774	23233	41642	21426	15812	9894	2228	1703.5	2017
Mean	32.2	99.0	197	573	830	1343	714	510	330	71.9	55.0	87.2
Acre-Feet	1980	5890	12090	35250	46080	82600	42500	31360	19620	4420	3380	5190

Year Mean 401
Acre-Feet 290,400

Plate 2.

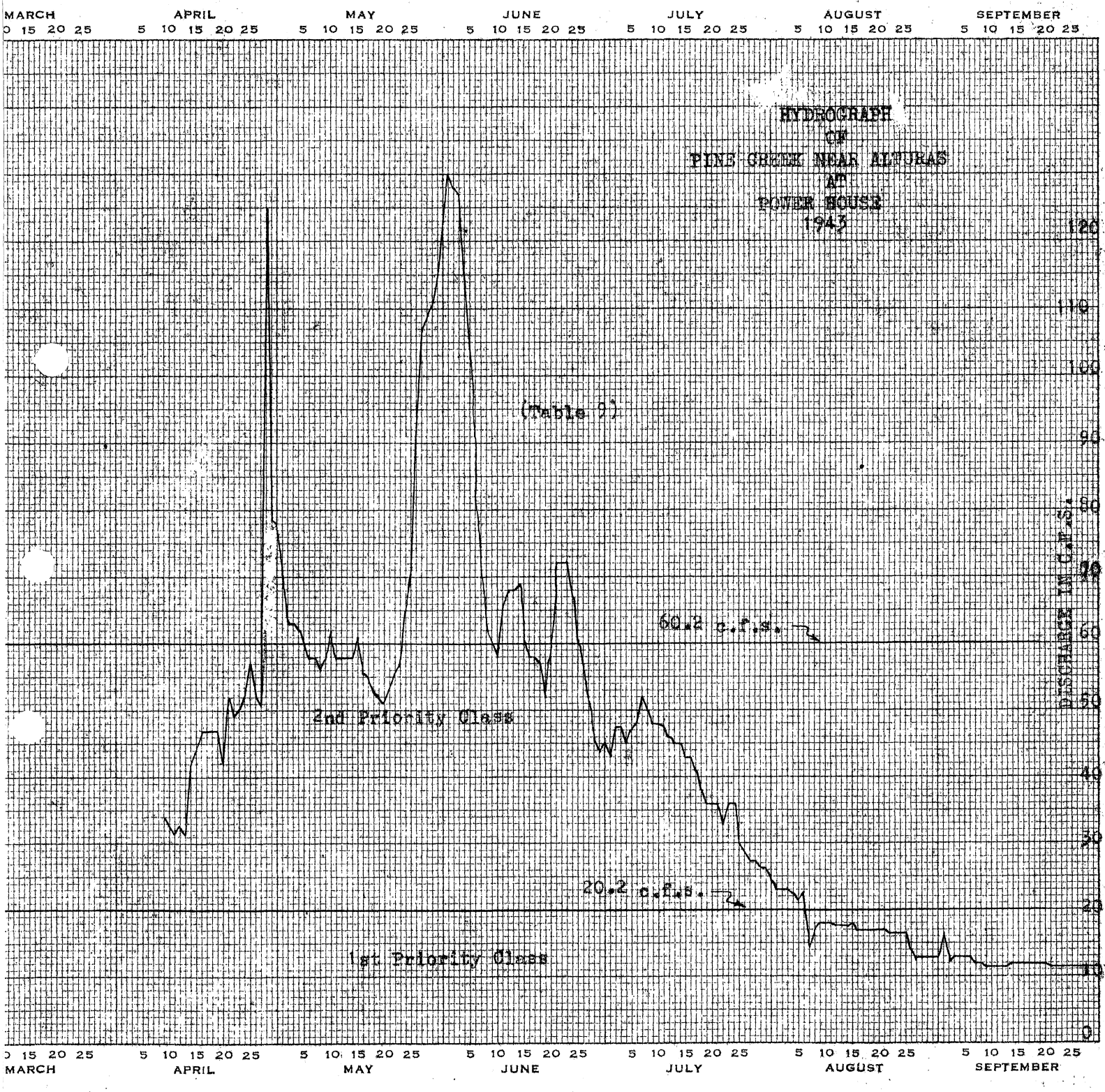
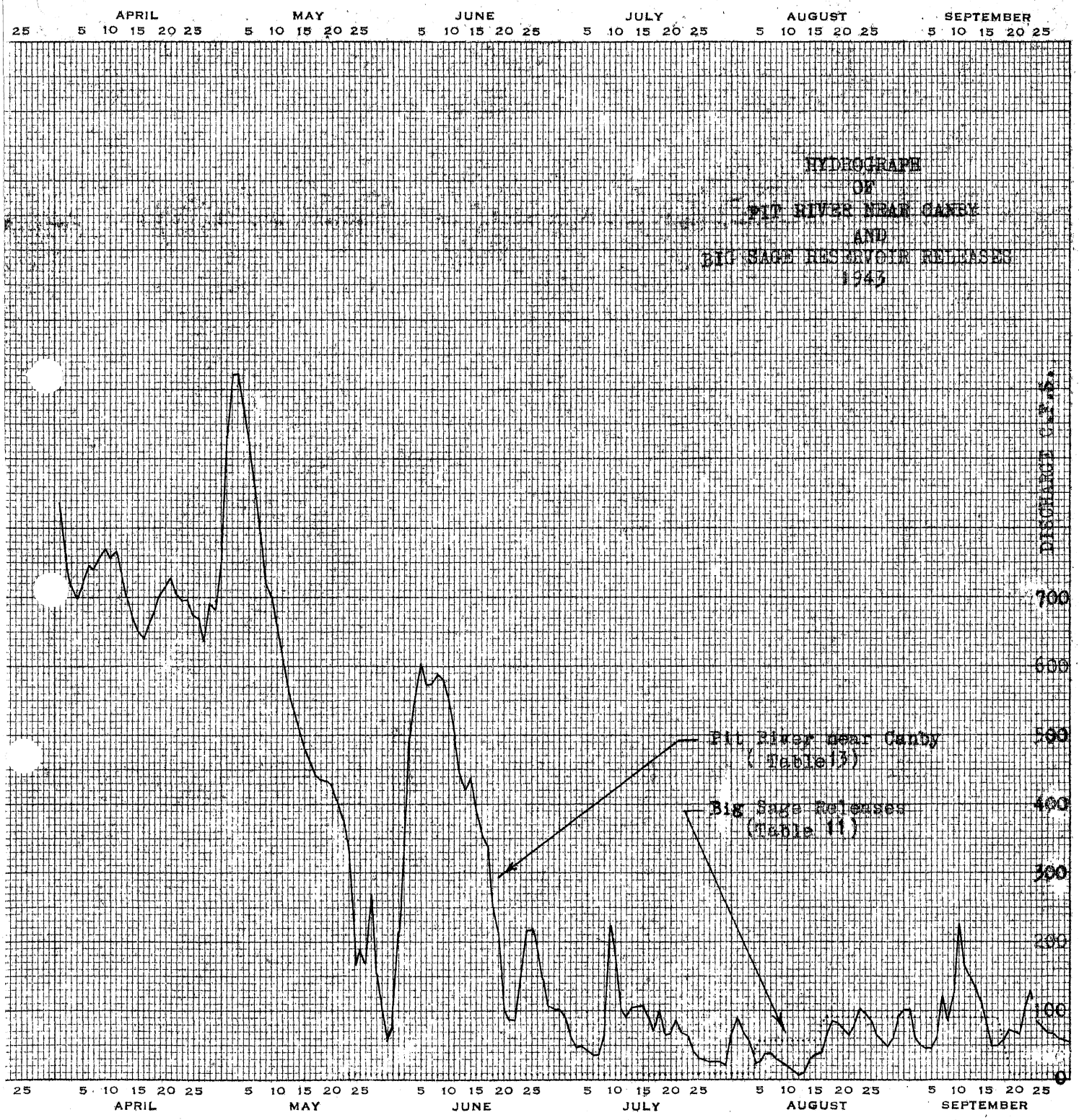

HYDROGRAPH
OF
PINE CREEK NEAR ALTURAS
AT
POWER HOUSE
1943
(Table 9)
2nd Priority Class
1st Priority Class
60.2 c.f.s.
20.2 c.f.s.
DISCHARGE IN C.F.S.
120
110
100
90
80
70
60
50
40
30
20
10
0
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25

PLATE 3


HYDROGRAPH
OF
PIT RIVER NEAR CANBY
AND
BIG SAGE RESERVOIR RELEASES
1943
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
25 5 10 15 20 25
DISCHARGE C.F.S.
700
600
500
400
300
200
100
0
Pit River near Canby
(Table 13)
Big Sage Releases
(Table 11)