DEPARTMENT OF PUBLIC WORKS

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DIVISION OF WATER RESOURCES

Edward Hyatt, State Engineer

REPORT ON WATER SUPERVISOR SERVICE ON LOWER SHASTA RIVER SISKIYOU COUNTY, CALIFORNIA DURING SEASON OF 1929

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By: A. S. Wheeler, Water Supervisor

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Sacramento, California

March 1930

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March 17, 1930

Mr. Edward Hyatt, State Engineer

Sacramento, California

Attention: Mr. Gordon Zander, Hydraulic Engineer.

Dear Sir:

Herewith is submitted a report covering the water supervisor service on Lower Shasta River in Siskiyou County, California, during the season of 1929.

This report includes a description of the regulation and distribution of the waters of the lower portion of Shasta River in accordance with an agreement entered into by the water users on this portion of the river on July 9, 1929 and a discussion of the results that were obtained.

Run-off records and other pertinent data are included together with an explanation of the cost of water supervision service and the sources from which such cost was met.

Respectfully submitted,

A S Wahlen

Water Supervisor

ASW:DJ

REPORT ON WATER SUPERVISOR SERVICE

ON

LOWER SHASTA RIVER

SISKIYOU, COUNTY, CALIFORNIA

DURING SEASON OF 1929

oOo

INTRODUCTION

A brief history of the case involving a determination of the relative rights of the various water users on Shasta River and its tributaries has been given in the "Report on Water Supply and Use of Water from Shasta River and Tributaries" dated July 1, 1925 and prepared by Harrison Smitherum, Assistant Hydraulic Engineer, under the direction of Gordon Zander, Hydraulic Engineer.

Subsequent to the above mentioned report a conference of the users on the lower portion of the river was held at Montague on July 9, 1929 at which time the users entered into an agreement for water supervisor service from July 10, 1929 to September 30, 1929. Although this agreement specified such dates for the service, by verbal understanding, the service was actually commenced on July 1, 1929.

The agreement provided for the appointment of a water supervisor, water conservation, elimination of wasteful use, distribution on the priority basis and quantities of water as set forth in the "Order of Determination in the Shasta River Adjudication Proceedings" and provided that the agreement would have no effect on any rights claimed or held by any party to the agreement.

The request for water supervision was prompted by a shortage in the water supply for 1929 and the alleged interference on the part of a late priority on the stream.

DISTRIBUTION OF WATER

(1) - Functions of Water Supervisor

The functions of the water supervisor included the distribution of the waters of Lower Shasta River in accordance with the terms of the agreement described in the "Introduction" to this report and the collection of hydrographic and other pertinent data.

In order to determine the net available supply a guaging station was established on the river near the Granada Irrigation District Pumping Plant and to determine the supply available to the extreme lower users the established U. S. Geological Survey Guaging Station at the Montague-Granada Highway bridge was used and an acoustic current meter was used to make the necessary measurements.

These two stations also provided a means of determining the return flow experienced on that section of the river between the stations and the results showed that such return flow considerably exceeded channel losses.

No return flow data was secured for the lower portion of the river.

Records were kept of the water supply from July 1st. to September 30, 1929.

(2) - ALLOTMENTS COMPARED WITH WATER SUPPLY

The priorities which were taken into consideration on the portion of Shasta River covered by the water supervisor service totaled 116.84 second feet with the average net available supply being 68% of this amount

as illustrated on Plate 2 of this report.

Although the average deficiency was considerable and heavy return flow and the inability on the part of several ditches to convey the full amount to which they were entitled enabled all other users to secure their full allotment with the exception of the Granada Irrigation District.

(3) - EFFICIENCY OF DISTRIBUTION

A fair degree of efficiency in the distribution of the water was experienced and the cooperation of the water users was an important factor in the results obtained.

Sudden fluctuations in the stream flow and the irregularity of the return flow operated somewhat against an accurate distribution.

RUN-OFF RECORDS

The usual and customary methods of securing run-off records were used and the results from the data collected are given in Tables 2 and 3 of this report and graphically shown in the Hydrograph on Plate 2.

To secure the records collected current meter measurements were made two or three times each week and the flow on intermediate days was estimated from staff guage readings.

Run-off records were kept at the lower guaging station as a check on upper diversions and for the purpose of assuring an adequate supply to the extreme lower users.

RETURN FLOW

Irrigation operations under the Shasta River Water Association system and on the Edson-Foulke Granada Ranch supplied most of the return flow.

Comparisons of the total diversions above the lower guaging station with the flow at that station indicated an average return flow of 8 second feet which was 55% of the supply available to the users below that point.

No records were kept which would determine the quantity of return flow in the balance of the river, however, from observation it appeared to the writer that the average flow in the river below the lowest user was about 6 second feet of which probably 75% was return flow.

PRECIPITATION

The precipitation at Mt. Shasta City and Montague for the seasonal year, October 1, 1928 to September 30, 1929, is compared with the average mean precipitation in Table 1 of this report and is graphically illustrated on Plate 1.

As shown in this table and on the plate the total precipitation for the seasonal year 1928-29 was only 70.1% of the total average maen and no precipitation was experienced during the last three months of the seasonal year.

During the six months period from November 1, 1928 to April 30, 1929 the precipitation was 61.8% of the total average mean.

On Plate 1 the average mean is shown in dark blue and the precipitation for the seasonal year of 1928-29 is shown in red and from this it will be noted that in December 1928 and June 1929 the precipitation was above normal, whereas during the balance of the seasonal year it was below normal.

USE OF WATER

Continuous records were kept of the distribution of the net available supply of water from July 1st. to September 30, 1929 and the results obtained are shown in Tables 4 to 19, inclusive, of this report which show the daily discharges of the several diversions involved.

In connection with certain of the diversions where electrically operated pumps were used and no log of their operation was kept the daily flow quantities shown represent the average daily flow determined by calculating by means of the usual formulas the efficiency of the pumping plant and the total quantity diverted each month from the electrical energy consumed.

The quantities diverted by diversions other than pumping plants were determined by occasional current meter measurements and the intermediate daily flow quantities were estimated from staff guage readings.

All of the G. W. King diversions are included in Table 11 for the reason that the condition of the ditches would not permit of a dependable measurement of the quantities flowing therein and it was accordingly estimated that these ditches would convey approximately 50% of their normal capacity at varying river stages and estimates of the total daily diversions were made on this basis.

It will be noted in Table 5, that the quantity flowing in the Granada Ranch Ditch, during a portion of the

season, exceeded the 11.9 second feet specified in the "Order of Determination". This additional flow in the ditch was due to the fact that the owners thereof claimed that certain riparian lands were served by this ditch and that an additional 6 second feet was desired for irrigation of those lands.

A heavy growth of moss in the above named ditch greatly reduced its capacity during the latter part of the season.

The areas irrigated under the several diversion systems during the period of water supervisor service have been estimated and tabulated in Table 20 of this report from which it will be noted that approximately 79% of the normally irrigated area was irrigated during 1929 and that the gross use during the water supervisor period was approximately one cubic foot per second to 66 acres.

CROPS

A survey of the crops in the lower portion of the Shasta Valley was made which covered the areas served by diversions included in this report.

The results show that the average yield was practically normal and in some instances above normal since due to the long growing season experienced in 1929 an additional cutting of alfalfa was made by a number of the water users.

A segregation of the crops and the acreage thereof was not made, however, it may be stated that the greater portion of the cultivated irrigated areas consisted of alfalfa and clover.

DISCUSSION OF RESULTS FOR 1929

The results obtained under water supervisor service during the 1929 season were satisfactory especially in view of the fact that sudden fluctuations in the stream flow rendered it difficult to maintain a constant flow to the extreme lower users.

These fluctuations were mainly caused by the variation in return flow experienced and varied from 1 to 6 second feet at the upper guaging station and from 1 to 10 second feet at the lower station, however, with the exception of four occasions a suffiecient flow was maintained to supply the extreme lower users with their specified quantities.

Within the area covered by water supervision there Was sufficient water available at all times to supply the upper users with the full amounts to which they were entitled with the exception of the Granada Irrigation District.

FINANCIAL STATEMENT

The water supervisor service for 1929 on Lower Shasta River was carried on in conjunction with water master service on Little Shasta River.

It was estimated that a sum of $200.00 would be required from the Lower Shasta River users to provide for the water supervision and this amount was fully subscribed and paid by the water users.

The total unit cost of the service per acre irrigated could not be determined since the service was combined with other duties by the water supervisor.

TABLE 1

CLIMATOLOGICAL DATA

Precipitation for Seasonal Year 1928-1929 Compared

With Mean Precipitation Mount Shasta City and

Montague 1889-1929

Month	Average Mean Mt. Shasta and Montague 1889-1929	Precipitation for Seasonal Year 1928-1929			
		Mt. Shasta (Sission)	Montague	Average Mt. Shasta and Montague	Per cent of Total Mean
October	1.33	1.15	0.58	0.87	3.8
November	4.85	5.75	2.08	3.91	17.2
December	2.65	5.60	2.03	3.82	16.8
January	2.26	1.20	0.47	0.84	3.7
February	3.87	3.30	1.31	2.30	10.1
March	2.28	3.10	0.24	1.67	7.3
April	2.74	2.20	0.83	1.52	6.7
May	0.97	0.15	0.27	0.21	0.9
June	0.46	1.55	0.18	0.82	3.6
July	0.18	0	0	0	0
August	0.20	0	0	0	0
September	0.98	0	0	0	0
Totals	22.77	24.00	7.99	15.96	70.1

TABLE 2

Continuous Records of Discharge

SHASTA RIVER

At Granada Irrigation District Pumps
1929

Day	July	August	September	
1	75	76	77	
2	75	76	77	
3	77	76	77	
4	79	75	77	
5	81	75	78	
6	81	75	78	
7	79	75	79	
8	76	75	79	
9	76	75	79	
10	75	75	81	
11	75	76	81	
12	75	76	81	
13	76	76	81	
14	76	79	81	
15	76	81	84	
16	76	81	88	
17	76	81	89	
18	76	81	89	
19	75	82	89	
20	75	82	89	
21	75	82	89	
22	76	82	90	
23	76	83	90	
24	79	83	90	
25	81	83	91	
26	81	81	91	
27	81	81	91	
28	79	81	91	
29	76	79	91	
30	76	79	91	
31	76	78	--	
Total Sec. Ft. Days	2386	2440	2539	3 Month Period
Mean Sec. Ft.	77	79	85	80
Max. Sec. Ft.	81	82	91	91
Min Sec. Ft.	75	75	77	75
Total Acre Ft.	4724	4831	5027	14585

TABLE 3

Continuous Records of Discharge

SHASTA RIVER

1929

At Montague - Granada Highway Bridge

Day	July	August	September	
1	18.	39.	16.	
2	17.	15.	20.	
3	17.	15.	17.	
4	16.	15.	16.	
5	15.	20.	16.	
6	14.	16.	16.	
7	17.	11.	19.	
8	26.	15.	18.	
9	17.	14.	18.	
10	12.	15.	19.	
11	15.	15.	20.	
12	11.	11.	39.	
13	8.	12.	28.	
14	13.	15.	25.	
15	14	16.	26.	
16	15.	15.	29.	
17	13.	12.	23.	
18	12.	13.	20.	
19	37.	38.	48.	
20	18.	19.	64.	
21	21.	17.	31.	
22	18.	14.	66.	
23	14.	14.	68.	
24	16.	9.	75.	
25	18.	11.	79.	
26	17.	12.	79.	
27	32.	20.	79.	
28	26.	16.	79.	
29	20.	14.	79.	
30	16.	13.	79.	
31	14.	18.	--	
Total Sec. Ft. Days	537.	499.	1211.	3 Month Period
Mean Sec. Ft.	17.	16.	40.	24.
Max. Sec. Ft.	37.	39.	79.	79.
Min Sec. Ft.	8.	9.	16.	8.
Total Acre Ft.	1063.	988.	2398.	4449.

TABLE 4

Continuous Records of Discharge

GRANADA IRRIGATION DISTRICT PUMPS

1929

Day	July	August	Sept.	
1	17.3	13.7	17.7	
2	22.4	13.7	17.7	
3	21.9	13.7	17.7	
4	21.9	13.7	17.7	
5	21.9	13.9	17.7	
6	21.9	17.7	17.7	
7	21.9	17.7	17.7	
8	21.9	17.1	17.7	
9	18.8	13.7	17.7	
10	17.3	13.7	17.7	
11	17.3	13.7	17.7	
12	17.3	20.9	17.7	
13	17.3	13.7	17.7	
14	13.0	13.7	17.7	
15	13.3	13.0	17.0	
16	13.3	19.3	19.7	
17	13.3	13.2	21.9	
18	12.2	13.7	21.9	
19	12.3	13.7	21.9	
20	13.3	17.1	18.7	
21	13.3	17.7	17.7	
22	17.3	17.7	9.0	
23	17.3	17.7	0	
24	17.3	17.2	0	
25	17.3	13.7	0	
26	20.7	13.7	0	
27	26.6	13.6	0	
28	19.3	17.7	0	
29	5.5	17.7	0	
30	13.3	17.7	0	
31	13.3	17.7	--	
Total Sec. Ft. Days	531.0	482.7	395.6	3 Month Period
Mean Sec. Ft.	17.1	15.6	13.2	15.3
Max. Sec. Ft.	26.6	20.9	21.9	26.6
Min. Sec. Ft.	5.5	13.0	0	0
Total Acre Ft.	1051.	962.	783.	2796.

TABLE 5

Continuous Records of Discharge

GRANADA RANCH DITCH

1929

Day	July	August	September	
1	11.	18.	10.	
2	11.5	18.	9.8	
3	12.	18.	9.7	
4	13.	18.	9.3	
5	14.5	17.7	9.	
6	15.5	17.5	8.6	
7	16.	17.3	8.1	
8	16.9	17.	8.1	
9	16.9	16.8	8.2	
10	16.9	16.8	8.3	
11	16.4	16.3	8.5	
12	16.	16.	8.3	
13	15.6	15.7	8.2	
14	15.1	15.4	8.2	
15	14.8	15.	8.2	
16	10.9	14.6	8.2	
17	18.	14.	8.	
18	18.	13.5	7.7	
19	18.	13.	7.5	
20	18.	12.3	7.3	
21	17.8	12.5	7.1	
22	17.8	12.8	7.	
23	17.7	13.2	7.5	
24	17.7	13.7	7.5	
25	17.7	13.3	7.5	
26	17.5	13.	7.5	
27	17.5	12.5	7.5	
28	17.9	12.	7.5	
29	18.	11.6	7.5	
30	18.	11.	7.5	
31	18.	10.5	--	
Total Sec. Ft. Days	500.6	456.8	243.3	3 Month Period
Mean Sec. Ft.	16.2	14.7	8.1	13.
Max. Sec. Ft.	18.	18.	10.	18.
Min. Sec. Ft.	10.9	10.5	7.	7.
Total Acre Ft.	991.	905.	482.	2288.

TABLE 6

Continuous Records of Discharge

EKSTROM PUMP

1939

No diversions during the months

of July, August and September.

TABLE 7

Continuous Records of Discharge

HUDSON and EDMONDS DITCH

1929

Day	July	August	September	
1	1.9	1.7	1.8	
2	1.8	1.8	2.3	
3	1.8	1.8	1.9	
4	1.6	1.8	1.8	
5	1.4	2.3	1.8	
6	1.2	2.0	1.8	
7	1.8	1.6	2.0	
8	2.2	1.8	1.9	
9	1.8	1.7	1.9	
10	1.7	1.7	2.2	
11	1.7	1.7	2.5	
12	1.6	1.4	2.8	
13	1.2	1.5	2.6	
14	1.4	1.7	2.7	
15	1.7	1.8	2.8	
16	1.5	1.7	2.4	
17	1.3	1.4	2.2	
18	1.3	1.8	2.7	
19	1.7	2.1	2.9	
20	1.9	2.0	2.6	
21	1.9	1.6	3.1	
22	2.1	1.6	3.1	
23	2.2	1.2	3.1	
24	2.1	1.4	3.1	
25	2.1	1.5	3.1	
26	1.9	1.6	3.1	
27	2.3	2.1	3.1	
28	2.3	1.9	3.1	
29	2.2	1.7	3.1	
30	1.9	1.6	3.1	
31	1.7	2.2	--	
Total Sec. Ft. Days	55.2	53.7	76.6	3 Month Period
Mean Sec. Ft.	1.8	1.7	2.6	2.0
Max. Sec. Ft.	2.3	2.3	3.1	3.1
Min. Sec. Ft.	1.2	1.2	1.8	1.2
Total Acre Ft.	109.	106.	152.	367.

TABLE 8

Continuous Records of Discharge

SCHROEDER (Enos) PUMP

1929

Day	July	August	September	
1	0.44	0.56	0.45	
2	0.44	0.56	0.45	
3	0.44	0.56	0.45	
4	0.44	0.56	0.45	
5	0.44	0.56	0.45	
6	0.44	0.56	0.45	
7	0.44	0.56	0.45	
8	0.44	0.56	0.45	
9	0.44	0.56	0.45	
10	0.44	0.56	0.45	
11	0.44	0.56	0.45	
12	0.44	0.56	0.45	
13	0.44	0.56	0.45	
14	0.44	0.56	0.45	
15	0.44	0.56	0.45	
16	0.44	0.56	0	
17	0.44	0.56	0	
18	0.44	0.56	0	
19	0.44	0.56	0	
20	0.44	0.56	0	
21	0.44	0.56	0	
22	0.44	0.56	0	
23	0.44	0.56	0	
24	0.44	0.56	0	
25	0.44	0.56	0	
26	0.44	0.56	0	
27	0.44	0.56	0	
28	0.44	0.56	0	
29	0.44	0.56	0	
30	0.44	0.56	0	
31	0.44	0.56	--	
Total Sec. Ft. Days	13.64	17.34	6.75	3 Month Period
Mean Sec. Ft.	0.44	0.56	0.23	0.41
Max. Sec. Ft.	0.44	0.56	0.45	0.56
Min. Sec. Ft.	0.44	0.56	0	0
Total Acre Ft.	27.	34.	13.	74.

TABLE 9

Continuous Records of Discharge

HUDSON and EDMONDS PUMP

1929

Day	July	August	September	
1	1.23	1.13	1.18	
2	1.23	1.13	1.18	
3	1.23	1.13	1.18	
4	1.23	1.13	1.18	
5	1.23	1.13	1.18	
6	1.23	1.13	1.18	
7	1.23	1.13	1.18	
8	1.23	1.13	1.18	
9	1.23	1.13	1.18	
10	1.23	1.13	1.18	
11	1.23	1.13	1.18	
12	1.23	1.13	1.18	
13	1.23	1.13	1.18	
14	1.23	1.13	1.18	
15	1.23	1.13	1.18	
16	1.23	1.13	1.18	
17	1.23	1.13	1.18	
18	1.23	1.13	1.18	
19	1.23	1.13	1.18	
20	1.23	1.13	1.18	
21	1.23	1.13	0	
22	1.23	1.13	0	
23	1.23	1.13	0	
24	1.23	1.13	0	
25	1.23	1.13	0	
26	1.23	1.13	0	
27	1.23	1.13	0	
28	1.23	1.13	0	
29	1.23	1.13	0	
30	1.23	1.13	0	
31	1.23	1.13	--	
Total Sec. Ft. Days	38.13	35.03	23.60	3 Month Period
Mean Sec. Ft.	1.23	1.13	0.79	1.05
Max. Sec. Ft.	1.23	1.13	1.18	1.23
Min. Sec. Ft.	1.23	1.13	0	0
Total Acre Ft.	75.	69.	47.	191.

TABLE 10

Continuous Records of Discharge

SHASTA RIVER WATER ASSOCIATION PUMPS

1929

Day	July	August	September	
1	32.8	29.3	32.8	
2	32.8	32.8	32.8	
3	32.8	32.8	32.8	
4	32.8	32.8	32.8	
5	32.8	32.8	32.8	
6	32.8	32.8	32.8	
7	32.8	32.8	32.8	
8	28.9	32.8	32.8	
9	22.9	32.8	32.8	
10	32.8	32.8	32.8	
11	32.8	32.8	32.8	
12	32.8	32.8	32.8	
13	32.8	32.8	32.8	
14	32.8	32.8	32.8	
15	32.8	32.8	32.8	
16	32.8	32.8	32.8	
17	32.8	32.8	32.8	
18	32.8	32.8	32.8	
19	32.8	24.2	32.8	
20	32.8	32.8	32.8	
21	32.8	32.8	32.8	
22	32.8	32.8	10.8	
23	32.8	32.8	10.8	
24	32.8	32.8	10.8	
25	32.8	32.8	0	
26	32.8	32.8	0	
27	32.8	32.8	0	
28	22.4	29.3	0	
29	32.8	32.8	0	
30	32.8	32.8	0	
31	32.8	32.8	--	
Total Sec. Ft. Days	992.6	1001.2	721.2	3 Month Period
Mean Sec. Ft.	32.1	32.3	24.0	29.8
Max. Sec. Ft.	32.8	32.8	32.8	32.8
Min. Sec. Ft.	22.4	24.2	0	0
Total Acre Ft.	1965.	1982.	1428.	5375.

TABLE 11

Continuous Records of Discharge

KING DIVERSIONS

1929

Day	July	August	September	
1	1.2	1.4	1.2	
2	1.2	1.2	1.3	
3	1.2	1.2	1.2	
4	1.1	1.2	1.2	
5	1.1	1.3	1.2	
6	1.1	1.2	1.2	
7	1.1	1.1	1.2	
8	1.3	1.2	1.3	
9	1.2	1.2	1.3	
10	1.1	1.2	1.3	
11	1.2	1.1	1.3	
12	1.1	1.1	1.5	
13	1.1	1.1	1.5	
14	1.2	1.2	1.4	
15	1.2	1.2	1.4	
16	1.2	1.2	1.5	
17	1.2	1.1	1.4	
18	1.1	1.3	1.3	
19	1.5	1.5	1.7	
20	1.3	1.3	1.4	
21	1.4	1.2	1.6	
22	1.3	1.2	1.7	
23	1.2	1.2	1.7	
24	1.2	1.1	1.7	
25	1.3	1.1	1.8	
26	1.3	1.2	1.8	
27	1.4	1.3	1.8	
28	1.3	1.2	1.8	
29	1.3	1.2	1.8	
30	1.2	1.2	1.8	
31	1.2	1.3	--	
Total Sec. Ft. Days	37.8	37.5	44.3	3 Month Period
Mean Sec. Ft.	1.2	1.2	1.5	1.3
Max. Sec. Ft.	1.5	1.5	1.8	1.8
Min. Sec. Ft.	1.1	1.1	1.2	1.1
Total Acre Ft.	75.	74.	88.	237.

TABLE 12

Continuous Records of Discharge

MAUZEY (Lucas) PUMP

1929

Day	July	August	September	
1	No Diversions	0.2	0.15	
2		0.2	0.15	
3		0.2	0.15	
4		0.2	0.15	
5		0.2	0.15	
6		0.2	0.15	
7		0.2	0.15	
8		0.2	0.15	
9		0.2	0.15	
10		0.2	0.15	
11		0.2	0.	
12		0.2	0.	
13		0.2	0.	
14		0.2	0.	
15		0.2	0.	
16		0.2	0	
17		0.2	0	
18		0.2	0	
19		0.2	0	
20		0.2	0	
21		0.2	0	
22		0.2	0	
23		0.2	0	
24		0.2	0	
25		0.2	0	
26		0.2	0	
27		0.2	0	
28		0.2	0	
29		0.2	0	
30		0.2	0	
31		0.2	--	
Total Sec. Ft. Days		6.2	1.5	3 Month Period
Mean Sec. Ft.		0.2	0.05	0.08
Max. Sec. Ft.		0.2	0.15	0.2
Min. Sec. Ft.		0.2	0	0
Total Acre Ft.		12.	3.	15.

TABLE 13

Continuous Records of Discharge

WEBB BROS. PUMPS

1929

The semi-diesel engine which was used to operate this plant was sold and the plant was operated only a few hours for the purpose of testing the engine.

A small electrically driven pump was operated at intervals for the purpose of irrigating flower gardens, a vegetable garden and a few fruit trees but no record of its operation was obtained.

TABLE 14

Continuous Records of Discharge

LEWIS DITCH

1929

Day	July	August	September	
1	.67	1.29	1.43	
2	.65	.60	1.71	
3	.65	.60	1.58	
4	.62	.60	1.43	
5	.58	.75	1.43	
6	.55	.71	1.43	
7	.65	.52	1.67	
8	.98	.63	1.62	
9	.65	.59	1.62	
10	.48	.63	1.67	
11	.59	.84	1.70	
12	.49	.65	1.75	
13	.35	.76	1.75	
14	.51	.85	1.75	
15	.55	.91	1.75	
16	.59	1.12	1.72	
17	.51	.83	1.72	
18	.48	.92	1.72	
19	1.05	1.70	1.68	
20	.71	1.53	1.68	
21	.83	1.41	1.68	
22	.69	1.41	1.64	
23	.57	.58	1.64	
24	.62	.81	1.6	
25	.70	.94	1.6	
26	.67	1.08	1.6	
27	1.21	1.42	1.6	
28	1.15	1.31	1.5	
29	1.11	1.27	1.5	
30	.73	1.12	1.5	
31	.57	1.64	--	
Total Sec. Ft. Days	21.16	30.02	48.67	3 Month Period
Mean Sec. Ft.	.68	.97	1.62	1.09
Max. Sec. Ft.	1.21	1.7	1.75	1.75
Min. Sec. Ft.	.35	.52	1.43	.35
Total Acre Ft.	42.	59.	96.	197.

TABLE 15

Continuous Records of Discharge

LEMOS PUMPS

1929

Day	July	August	September	
1	0.8	0	0	
2	0.63	0	0.8	
3	0	0	0.63	
4	0	0	0	
5	0	0.8	0	
6	0	0.63	0	
7	0	0	0	
8	0.8	0	0	
9	0.63	0	0.8	
10	0	0	0.63	
11	0	0	0	
12	0	0.8	0	
13	0	0.63	0	
14	0	0	0	
15	0.8	0	0	
16	0.63	0	0.8	
17	0	0	0.63	
18	0	0	0	
19	0	0.8	0	
20	0	0.63	0	
21	0	0	0	
22	0.8	0	0	
23	0.63	0	0	
24	0	0	0	
25	0	0	0	
26	0	0.8	0	
27	0	0.63	0	
28	0	0	0	
29	0.8	0	0	
30	0.63	0	0	
31	0	0	--	
Total Sec. Ft. Days	7.15	5.72	4.29	3 Month Period
Mean Sec. Ft.	0.23	0.18	0.14	0.18
Max. Sec. Ft.	0.8	0.8	0.8	0.8
Min. Sec. Ft.	0	0	0	0
Total Acre Ft.	14.	11.	9.	34.

TABLE 16

Continuous Records of Discharge

FLOCK UPPER DITCH

1929

Day	July	August	September	
1	10.6	11.	8.7	
2	9.5	7.5	10.5	
3	9.5	7.5	9.5	
4	8.4	7.5	8.6	
5	7.7	10.7	8.6	
6	6.6	8.5	8.6	
7	9.5	6.6	10.8	
8	11.	7.4	10.8	
9	9.5	6.6	10.8	
10	5.5	7.7	10.8	
11	7.4	7.7	10.8	
12	5.6	4.5	10.8	
13	4.3	5.6	10.8	
14	6.	7.6	10.8	
15	6.5	8.4	10.8	
16	7.6	7.3	10.8	
17	6.	5.3	10.8	
18	5.5	6.	10.8	
19	11.	10.5	10.8	
20	10.6	10.6	10.8	
21	11.	9.5	10.8	
22	10.6	6.6	10.8	
23	6.5	6.6	10.8	
24	8.5	5.	10.8	
25	10.5	5.5	10.8	
26	9.5	5.7	10.8	
27	11.	10.6	10.8	
28	11.	8.3	10.8	
29	11.	6.5	10.8	
30	8.4	6.	10.8	
31	6.6	10.6	--	
Total Sec. Ft. Days.	266.9	235.4	313.7	3 Months Period
Mean Sec. Ft.	8.6	7.6	10.5	8.9
Max. Sec. Ft.	11.	11.	10.8	11.
Min. Sec. Ft.	4.3	5.	8.6	4.3
Total Acre Ft.	529.	466.	621.	1616.

TABLE 17

Continuous Records of Discharge

ANTONIO DITCH

1929

Day	July	August	September	
1	4.5	5.5	4.3	
2	4.4	4.2	5.2	
3	4.4	4.2	4.4	
4	4.3	4.2	4.3	
5	4.2	4.3	4.3	
6	4.	4.3	4.3	
7	4.4	3.	4.8	
8	5.3	4.2	4.5	
9	4.4	4.	4.5	
10	3.3	4.2	4.9	
11	3.8	4.2	5.1	
12	3.	3.	5.1	
13	2.7	3.3	5.1	
14	4.	4.2	5.1	
15	4.1	4.3	5.1	
16	4.2	4.2	5.1	
17	4.	3.3	5.1	
18	3.8	4.	5.1	
19	5.3	5.5	5.1	
20	4.5	5.2	5.1	
21	5.3	4.4	5.1	
22	4.5	4.1	5.1	
23	4.	4.1	5.1	
24	4.2	2.9	5.1	
25	4.5	3.	5.1	
26	4.4	3.3	5.1	
27	5.5	5.2	5.1	
28	5.3	4.3	5.1	
29	5.1	4.1	5.1	
30	4.3	4.	5.1	
31	4.	4.5	--	
Total Sec. Ft. Days	133.7	128.2	147.5	3 Month Period
Mean Sec. Ft.	4.3	4.1	4.9	4.4
Max. Sec. Ft.	5.5	5.5	5.2	5.2
Min. Sec. Ft.	2.7	2.9	4.3	2.7
Total Acre Ft.	265.	254.	292.	811.

TABLE 18

Continuous Records of Discharge

FLOCK LOWER DITCH

1929

The method of operation at this diversion did not permit of measurements of the quantity diverted.

The amount apportioned this ditch in accordance with the "Order of Determination" was 0.25 c.f.s. and it appeared that this amount was diverted at all times and probably an amount somewhat in excess.

Based on 0.25 c.f.s. for the 92 days of water supervision service the total quantity diverted was as follows:

Total second feet days . . . . . 23.

Total acre feet. . . . . 45.

TABLE 19

Continuous Records of Discharge

SHELLY PUMP

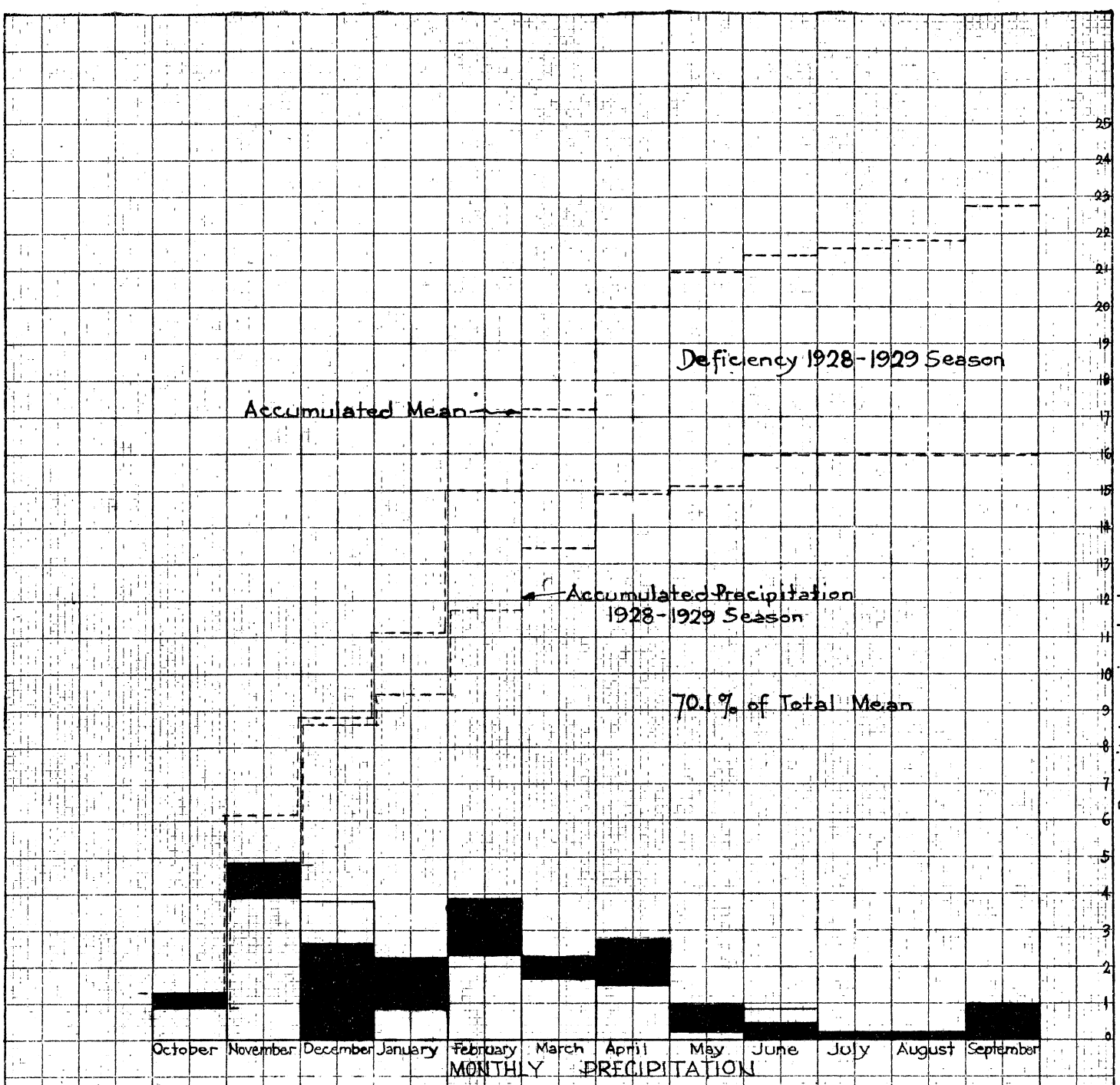
1929

Day	July	August	September	
1	1.46	1.26	1.44	
2	1.46	1.26	1.44	
3	1.46	1.26	1.44	
4	1.46	1.26	1.44	
5	1.46	1.26	1.44	
6	1.46	1.26	1.44	
7	1.46	1.26	1.44	
8	1.46	1.26	1.44	
9	1.46	1.26	1.44	
10	1.46	1.26	1.44	
11	1.46	1.26	1.44	
12	1.46	1.26	1.44	
13	1.46	1.26	1.44	
14	1.46	1.26	1.44	
15	1.46	1.26	1.44	
16	1.46	1.26	1.44	
17	1.46	1.26	1.44	
18	1.46	1.26	0	
19	1.46	1.26	0	
20	1.46	1.26	0	
21	1.46	1.26	0	
22	1.46	1.26	0	
23	1.46	1.26	0	
24	1.46	1.26	0	
25	1.46	1.26	0	
26	1.46	1.26	0	
27	1.46	1.26	0	
28	1.46	1.26	0	
29	1.46	1.26	0	
30	1.46	1.26	0	
31	1.46	1.26	--	
Total Sec. Ft. Days	45.56	39.06	24.48	3 Month Period
Mean Sec. Ft.	1.46	1.26	0.82	1.18
Max. Sec. Ft.	1.46	1.26	1.44	1.46
Min. Sec. Ft.	1.46	1.26	0	0
Total Acre Ft.	90.	77.	49.	216.

TABLE 20

Use of Water in 1929 from Lower Shasta River

Ranch	Acres Irrigated		Gross Diversion Acre Feet 1929	Acres Irrigated per Second Ft 1929
	Normal	1929		
Granada Irrigation District	2379.5	1585	2796	94
Edson-Foulke Granada Ranch	1019.8	800	2288	62
Schroeder, C. H.	87.3	45	74	94
Hudson and Edmonds	217.4	215	558	76
Shasta River Water Association	3854.8	3292	5375	104
King, G. W.	137.9	90	237	69
Mauzey, F. J.	56.1	15	15	88
Lewis, George	46.8	46	197	43
Lemos, George	16.9	15	34	83
Antonio Ditch Users	173.1	172	811	39
Flock, George	13.1	13	97	25
Flock, Henry	210.2	210	1209	29
Payot, Charles O.	61.1	58	355	32
Shalley, Manuel	73.7	115	216	83
Totals	8347.7	6671	14362	66



PRECIPITATION
FOR
SEASONAL YEAR 1928-1929
COMPARED WITH MEAN PRECIPITATION
MT. SHASTA CITY & MONTAGUE
1889-1929

Monthly average mean 1889—1929
Average— Mt. Shasta City and Montague 1928-1929

PLATE 1

CODEX BOOK CO., INC., NEW YORK, N. Y.
20 DIVISIONS PER INCH, NO. 318

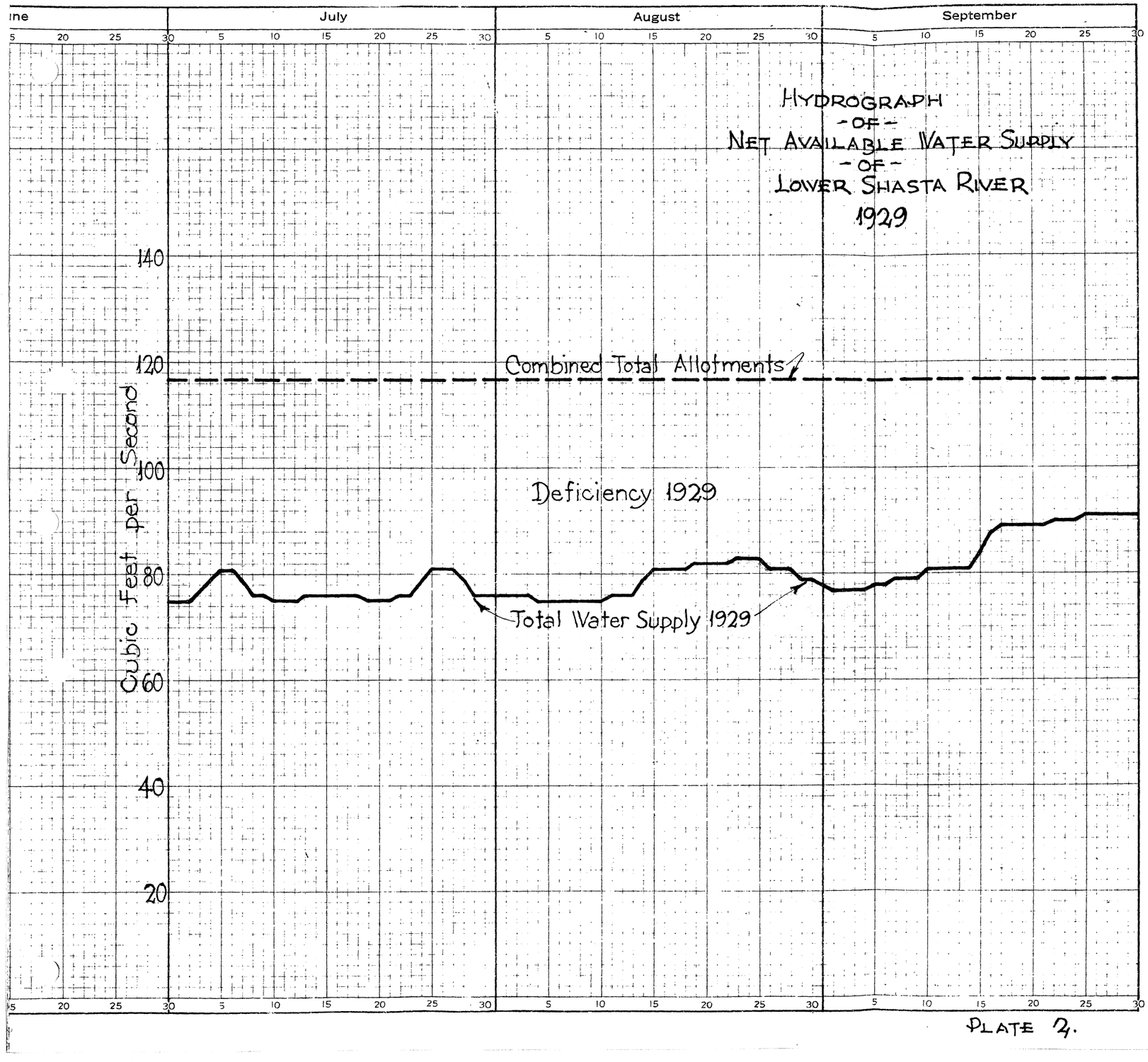

HYDROGRAPH
-OF-
NET AVAILABLE WATER SUPPLY
-OF-
LOWER SHASTA RIVER
1929
Combined Total Allotments
Deficiency 1929
Total Water Supply 1929
Cubic Feet per Second
140
120
100
80
60
40
20
ne
July
August
September
5
20
25
30
5
10
15
20
25
30
5
10
15
20
25
30
5
10
15
20
25
30

PLATE 2.