STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

PUBLICATION OF THE
DIVISION OF WATER RESOURCES
EDWARD HYATT, STATE ENGINEER

REPORT ON

WATER MASTER SERVICE

ON

HAT CREEK

SHASTA COUNTY, CALIFORNIA

FOR THE SEASON OF 1934

By

J. W. McPartland
Deputy Water Master

Sacramento, California

March 1935

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3. Water Deliveries on Hat Creek - 1934 Season.
4. Estimated Crop Yields on Typical Lands Irrigated from Hat Creek - 1934 Season.

PLATE:

1. Hydrograph of Hat Creek showing Water Supply above all Diversions in 1934.

EDWARD HYATT, STATE ENGINEER
CHIEF OF DIVISION

FRANK F. MERRIAM
GOVERNOR OF CALIFORNIA

EARL LEE KELLY
DIRECTOR

STATE OF CALIFORNIA

Department of Public Works

SACRAMENTO

DIVISION OF WATER RESOURCES
PUBLIC WORKS BUILDING

LETTER OF TRANSMITTAL

March 6, 1935

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California.

Dear Sir:

Attention: Mr. Gordon Zander
Supervising Hydraulic Engineer

There is submitted herewith a report covering the water master service on Hat Creek in Shasta County, California, during the period May 1st to October 18, 1934.

The methods and practices followed in the distribution of the waters of Hat Creek in accordance with the decree entered in the case of Doyel vs. Massie and a discussion of the results that were obtained.

Run-off records and other pertinent hydraulic data are included.

Respectfully submitted,

J. W. McPartland
Deputy Water Master

ORGANIZATION

Earl Lee Kelly	Director of Public Works
Edward Hyatt	State Engineer
Harold Conkling	Deputy State Engineer

GORDON ZANDER

Supervising Hydraulic Engineer

T. Russel Simpson	Senior Hydraulic Engineer
Harrison Smitherum	Senior Hydraulic Engineer
J. W. McPartland	Deputy Water Master
G. M. Vickroy	Deputy Water Master

GENERAL DESCRIPTION OF WORK

Water master service was conducted on Hat Creek during the 1934 season in accordance with the provisions of the decree in the case of Doyel vs. Massie.

The field work was commenced on May 1st 1934 by T. R. Simpson and G. M. Vickroy. On June 9th, J. W. McPartland assumed the duties of water master and was relieved by Harrison Smitherum on September 9th until October 10th, which terminated the duties of the water master.

All diversions from Hat Creek were opened during the 1934 season.

The water supply during the 1934 season was such that an average of about 44 per cent total allotments were delivered.

Mr. L. H. Sullivan who was arrested on July 31, 1933 for violations of Section 37b of the Water Commission Act, was retried on an appeal May 15, 1934 before a jury in the Superior Court of Shasta County and was acquitted of the charge.

On August 30, 1934 a radio stream flow indicator was installed on Hat Creek just above Doyel's Bridge, for the purpose of indicating change of flow.

DISCUSSION OF RESULTS FOR THE SEASON

The precipitation at Hat Creek for the seasonal year October 1, 1933 to September 30, 1934, has been compared with the precipitation for the preceding twelve seasonal years in Table 1 of this report. The precipitation for the years 1925 and 1927 was considered nearly normal and as compared with these years the precipitation for 1934 was therefore about 71 per cent of normal.

Table 2 is a tabulation of the daily discharge of Hat Creek above all diversions during the 1934 season. The record was obtained by combining the flow at the United States Geological Survey gaging station with that of all diversions above the station.

Plate 1 of this report graphically shows the water supply of Table 2. The irrigation allotments and the gross demand on water supply including irrigation allotments, minimum flow requirements and channel losses, is also shown on Plate 1.

Table 3 shows the water deliveries on Hat Creek during the 1934 season expressed in cubic feet per second and in per cent of full allotments. The table also shows the average channel losses during each rotation period.

Table 4 is a tabulation of the Estimated Crop Yields on Typical Lands Irrigated from Hat Creek in 1934.

CONTROVERSIES

The controversies during the 1954 season on Hat Creek were few and of minor detail with all disputes being settled by the water master. Due to the construction of the Lassen-Shasta Highway, Hat Creek was by-passed for the construction of new bridges, some ditch changes were made and a part of Hahn Creek was changed to a new location.

With this work being done it made the distribution of water very difficult at times.

RECOMMENDATIONS

No measuring devices were installed or replaced during the 1934 season. The measuring devices on the Opdyke, Forest Service, A. Brown and Geissner ditches should be replaced with Parshall measuring flumes during the 1935 season.

FINANCIAL STATEMENT

Under the provisions of Section 37f of the Water Commission Act, all funds collected in a water master district are kept separate and placed in a fund to the credit of that district.

There is submitted on the following page a statement of the funds collected and expenditures during the period from March 1, 1934 to January 1, 1935 for the Hat Creek Water Master District.

FINANCIAL STATEMENT

HAT CREEK WATER DISTRICT FUND

JANUARY 1, 1935

RECEIPTS

Balance as of January 1, 1934	$257.20	
Contributed by State in 1934	450.00	
Contributed by Taxpayers (Jan.1/34 to Jan.1/35)	460.77	
	1,167.97	$1,167.97

DISBURSEMENTS
(Jan. 1/34 to Jan. 1/35)

Water Master Compensation	$772.09	
Water Master Travel Expense	339.56	
Contingencies		
	1,111.65	1,111.65

BALANCE . . . . . $ 56.32

TABLES

TABLE 1

PRECIPITATION DATA
HAT CREEK, SHASTA COUNTY - ELEVATION 3010 FEET
MONTHLY, SEASONAL AND AVERAGE AMOUNTS OF PRECIPITATION IN INCHES

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Seasonal
1921-22	0.30	0.47	3.82	0.85	6.41	2.13	0.38	1.91	1.40	0.	0.60	0.	18.27
1922-23	1.58	2.26	4.85	2.36	0.32	0.03	2.04	1.18	3.29	0.17	0.30	1.70	20.08
1923-24	1.16	0.37	1.46	1.30	1.31	1.04	0.73	T	T	0.	0.34	0.10	7.81
1924-25	2.28	1.40	1.99	1.01	4.12	1.12	1.37	1.98	1.49	0.09	0.18	1.86	18.89
1925-26	0.58	2.26	0.48	2.57	2.45	0.75	2.39	1.06	0	0.04	0.10	0.01	12.69
1926-27	1.18	4.41	0.88	1.63	4.70	1.77	2.89	2.01	0.63	T	T	0.29	20.39
1927-28	0.87	4.84	0.36	1.33	1.36	4.87	1.05	1.76	0.08	0.14	0.14	0.16	16.96
1928-29	0.50	2.69	2.64	0.92	1.65	1.17	1.85	0.05	1.52	0	0	0.10	13.09
1929-30	0.40	0	3.02	4.36	3.64	1.12	1.61	1.40	0.13	0	0	1.78	17.46
1930-31	0.26	0.73	0.31	2.24	1.59	1.13	0.26	0.98	0.44	0	0	0.09	8.03
1931-32	2.56	1.94	5.76	1.69	0.62	1.08	1.51	0.97	0.08	0.19	0	0	16.40
1932-33	0.65	0.90	2.27	3.01	0.32	2.81	1.25	1.71	0.19	0.06	0.10	0.19	13.46
1933-34	1.42	T	3.37	1.07	2.58	1.28	0.19	2.48	1.43	0.13	0.08	0.18	14.21
Totals	13.74	22.27	31.21	24.34	31.07	20.30	17.52	17.49	10.68	0.82	1.84	6.46	197.74
Mean 13-years	1.06	1.71	2.40	1.87	2.39	1.56	1.35	1.34	0.82	0.06	.14	.48	15.21

TABLE 2

DAILY DISCHARGE IN CUBIC FEET PER SECOND
OF HAT CREEK ABOVE ALL DIVERSIONS - 1934 SEASON

Day	May	Jun.	Jul.	Aug.	Sep.	
1	120	95	85	77	78	
2	118	94	85	77	78	
3	116	93	84	76	78	
4	111	92	82	77	77	
5	116	94	81	76	77	
6	118	95	81	78	77	
7	116	93	82	78	77	
8	115	92	82	77	74	
9	110	91	76	81	76	
10	110	96	79	80	76	
11	110	91	81	80	76	
12	112	95	81	80	77	
13	110	107	81	78	77	
14	107	95	80	77	77	
15	106	92	80	77	77	
16	104	90	79	77	76	
17	103	91	79	77	76	
18	100	89	79	77	79	
19	99	89	79	74	78	
20	98	83	81	76	78	
21	104	85	81	76	78	
22	99	84	82	76	78	
23	97	84	81	76	80	
24	97	84	80	76	80	
25	97	84	78	76	80	
26	98	85	78	76	81	
27	98	83	78	76	81	
28	98	83	78	76	76	
29	99	82	78	80	76	
30	100	86	76	78	76	
31	97		77	78		
Total Sec. Feet Days	3283	2697	2484	2398	2325	153 Day Period
Mean Sec. Feet	106	90	80	78	77	86
Maximum Sec. Feet	120	107	85	81	81	120
Minimum Sec. Feet	97	82	76	74	74	74
Total Acre Feet	6510	5348	4926	4755	4610	26149

TABLE 3

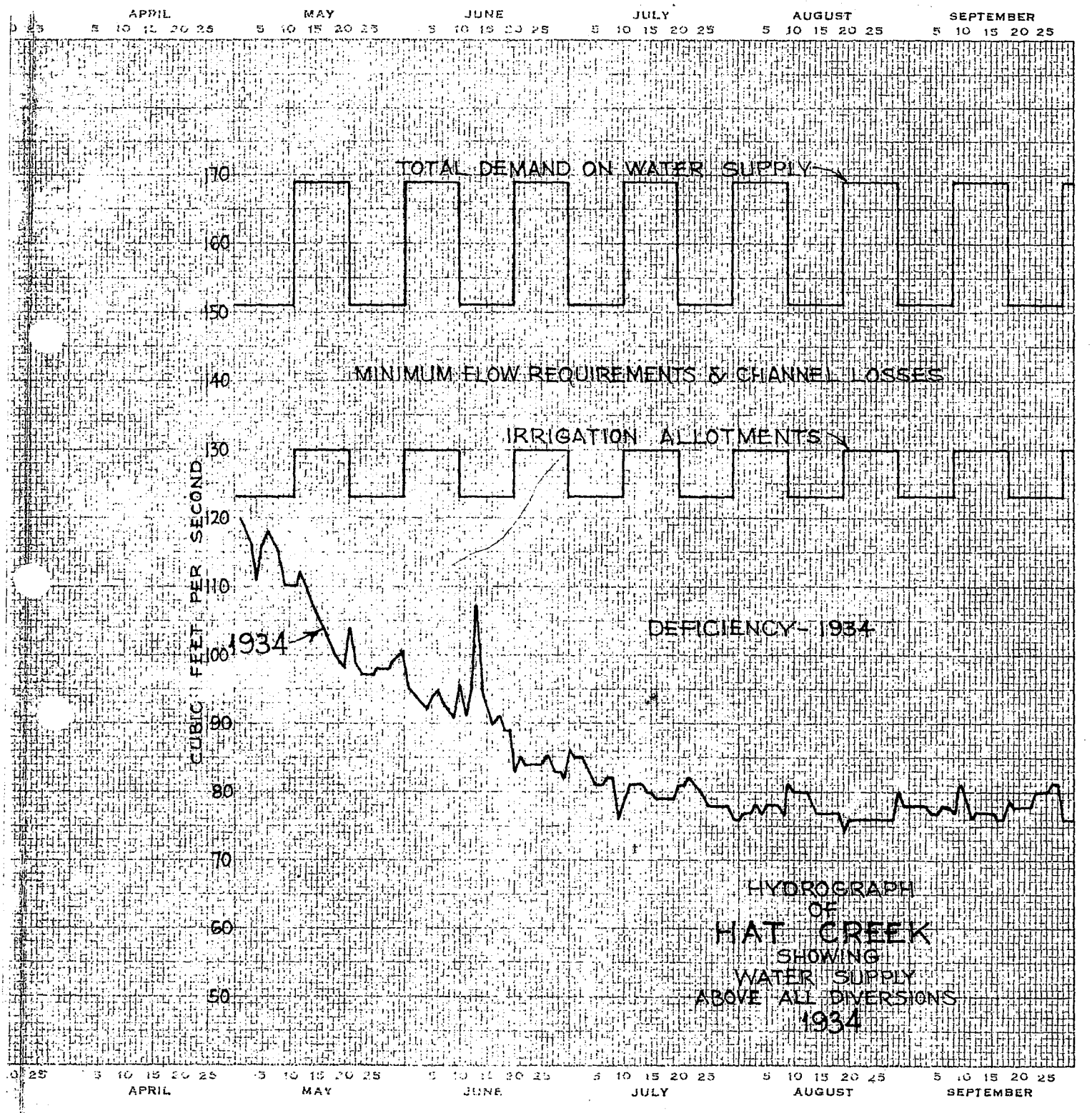
WATER DELIVERIES ON HAT CREEK - 1933 SEASON

Irrigation period	Dates	Average flow of Hat Cr. above all diversions	Average combined Diversions cu.ft. per Sec.	Channel Loss Cu. Ft. per Sec.		Average Irrigation Delivery: Cubic Feet per Second		Average Irrigation Delivery: Per cent of Full Allotment	
				Upper Users	Lower Users	Upper Users	Lower Users	Upper Users	Lower Users
1	5/1 - 5/11	115	96	19		83		67	
2	5/11 - 5/21	105	86		19		72		55
3	5/21 - 5/31	99	87	12		74		60	
4	5/31 - 6/10	94	79		15		65		50
5	6/10 - 6/20	94	81	13		68		55	
6	6/20 - 6/30	84	73		11		59		45
7	6/30 - 7/10	82	66	16		53		44	
8	7/10 - 7/20	80	62		18		48		37
9	7/20 - 7/30	80	62	18		49		40	
10	7/30 - 8/9	77	62		15		48		37
11	8/9 - 8/19	78	62	16		49		40	
12	8/19 - 8/29	76	60		16		46		35
13	8/29 - 9/8	78	62	16		49		40	
14	9/8 -- 9/18	76	56		20		42		32
15	9/18 - 9/28	79	62	17		49		40	
16	9/28 - 10/8	80	60		20		46		35
17	10/8 - 10/18	80	62	18		49		40	
Mean		86	69	16	17	58	53	47	41

TABLE 4

ESTIMATED CROP YIELDS ON TYPICAL LANDS
IRRIGATED FROM HAT CREEK - 1954

Owner	Crop	Acres	Total Yield		Yield per Acre	
			Sacks	Tons	Sacks	Tons
W. W. Brown	Alfalf Hay	80.0		160.0		2.0
	Grain Hay	10.0		15.0		1.5
	Meadow Hay	6.0		7.0		1.2
	Potatoes	0.5	15			
B. Giessner	Meadow Hay	56.0		60.0		1.1
	Barley	10.0	105		10	
O. Giessner	Alfalfa Hay	8.0		25.0		3.0
	Grain Hay	5.0		20.0		4.0
	Meadow Hay	70.0		70.0		1.0
	Barley Hay	6.0	36		6	
	Wheat	11.0	70		6	
W. P. Hall	Alfalfa Hay	35.0		45.0		1.2
S. Kerns	Alfalfa Hay	20.0		35.0		1.7
S. Lonquist	Alfalfa Hay	45.0		100.0		2.2
	Grain Hay	11.0		16.0		1.4
H. Lonquist	Alfalfa Hay	90.0		200.0		2.2
	Oat Hay	10.0		20.0		2.0


APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
TOTAL DEMAND ON WATER SUPPLY
MINIMUM FLOW REQUIREMENTS & CHANNEL LOSSES
IRRIGATION ALLOTMENTS
CUBIC FEET PER SECOND
170
160
150
140
130
120
110
100
90
80
70
60
50
1934
DEFICIENCY - 1934
HYDROGRAPH
OF
HAT CREEK
SHOWING
WATER SUPPLY
ABOVE ALL DIVERSIONS
1934