

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

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

REPORT ON
WATER MASTER SERVICE
ON
HAT CREEK
SHASTA COUNTY, CALIFORNIA
1941 SEASON

BY

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DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

December 10, 1942

Mr. Harold Conding
Deputy State Engineer
Sacramento, California

Attention: Mr. Gordon Zander
Supervising Hydraulic Engineer

Dear Sir:

Submitted herewith is the annual report covering water master service on Hat Creek, Shasta County, California for the 1941 season.

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

W. A. Alexander prepared this report under the supervision of the undersigned.

Respectfully submitted,

HS:CS

HARRISON SMITHKUM
Senior Hydraulic Engineer

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REPORT ON
WATER MASTER SERVICE
ON
HAT CREEK
SHASTA COUNTY, CALIFORNIA
DURING SEASON OF 1941

INTRODUCTION

The Hat Creek Water Master District was created by order of the Division of Water Resources under date of September 11, 1929 to embrace the water rights on Hat Creek as established by the decree of the Superior Court, Shasta County, California, in the case of David Doyel, et al vs. Harvey Massie, et al. entered May 14, 1924.

Water master service in the Hat Creek Water Master District was carried on throughout the 1941 season in accordance with the "Distribution of Water" procedure contained in sections 37 to 37f, inclusive, of the Water Commission Act. Such service extended over the period from May 1 to October 18, 1941.

Harrison Smitherum administered the distribution of water within the district from May 1 to June 10. Subsequent to that date, W. A. Alexander and G. M. Vickroy, Deputy Water Masters, carried on the mechanics of distribution for the periods from June 10 to October 1 and October 1 to 18, respectively, under the supervision of Harrison Smitherum.

WATER SUPPLY

Precipitation

The record of precipitation kept at Hat Creek Power House No. 1, as compiled from publications of the U. S. Weather Bureau, is given in Table 1. A comparison of the precipitation for the 1940-41 season with the mean for the 20 seasonal years of record is shown.

Stream Flow

The U. S. Geological Survey maintains and operates a gaging station on Hat Creek below Old Station and downstream from the Harvey Wilcox, Gray, Stevenson and Hall ditches. The flow at the gaging station plus the total amount of water being diverted by the above named ditches gives the flow of Hat Creek above all diversions, or the amount of water available for distribution; The record of the daily discharge of Hat Creek at the station, as compiled by the U. S. Geological Survey, has been corrected by adding the total discharge of the ditches above the station. The resultant record of the daily discharge of Hat Creek above all diversions is presented in Table 2.

A graphical presentation of the available water supply as compared to the demands thereon is shown on Plate 1.

DISTRIBUTION

General

Distribution during the 1941 season was in accordance with the provisions of the Doyel v. Massie and Doyel v. Wilcox decrees. When surplus water was available additional water was distributed to E. E. Day and C. E. Startt under Application 4700, License 2083 and Application 2878

License 1196, respectively. Rotation was commenced with the Lower Users period beginning on July 30. This is the 10th scheduled rotation period. A summary of the distribution for the 1941 season is given in Table 3.

Measuring Devices

The old wooden measuring devices on the ditches diverting from Hat Creek are gradually being replaced by concrete Parshall Measuring Flumes. This has been of considerable aid in facilitating the mechanics of water distribution.

A 4.0 foot concrete Parshall Measuring Flume was installed in the Reiger Ditch in October, 1941.

Parshall Measuring Flumes should be placed in the Hall Ditch, New Hawkins Ditch, Brown Upper Ditch, Ellen Brown - W. W. Brown Ditch, and Henry Lonquist Lower Ditch.

TABLE #1

PRECIPITATION AT HAT CREEK, SHASTA COUNTY, CALIFORNIA, ELEVATION 3010 FEET - 1921-1941 (1)

MONTHLY, SEASONAL AND AVERAGE AMOUNTS IN INCHES

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Seasonal
1940-41	3.20	2.57	3.63	3.53	5.92	1.13	2.15	2.27	0.47	0.38	0.43	0.27	25.95
1942-43													
Total to date:	25.12	34.44	49.28	46.60	59.24	36.50	29.64	25.12	13.84	3.03	2.37	9.50	334.68
20 Year Mean	1.26	1.72	2.46	2.33	2.96	1.82	1.48	1.26	0.69	0.15	0.12	0.48	16.73

(1) See 1931 and 1940 Water Master Reports for previous records.

TABLE #2

Daily Discharge in Cubic Feet per Second
HAT CREEK ABOVE DIVERSIONS
May 1 to September 30, 1941

Day	May	June	July	Aug.	Sept.
1	165	239	205	156	138
2	172	237	210	154	138
3	180	229	208	152	138
4	176	234	201	152	138
5	205	239	201	150	138
6	210	234	203	150	138
7	205	237	201	150	143
8	234	224	196	147	143
9	227	229	194	141	143
10	229	244	194	141	143
11	251	257	196	141	143
12	279	265	194	141	143
13	247	271	192	141	143
14	229	250	194	141	143
15	234	239	189	141	143
16	239	239	185	141	143
17	252	234	180	141	143
18	229	255	178	141	142
19	210	250	176	141	142
20	220	250	174	141	142
21	242	240	172	141	142
22	265	230	167	141	142
23	271	220	161	141	142
24	268	210	154	141	142
25	279	205	152	141	142
26	271	205	152	141	142
27	247	205	150	141	142
28	239	205	147	141	142
29	234	205	145	141	142
30	232	205	154	138	142
31	232		156	138	
Total	7179	6986	5581	4448	4247
Mean	232	233	180	143	141
Run-off in: Acre-Feet	14240	13860	11070	8820	8420

Total run-off 153 day period 56,410 Acre-Feet.

TABLE #3

SUMMARY OF DISTRIBUTION ON HAT CREEK - 1941 SEASON

Irrigation Period	Dates	Average flow of Hat Creek above all Diversions	Average combined Diversions in cu. ft. per second	Channel Loss		Average Irrigation Delivery			
				Cu. Ft. Per Second	Per Second	Cu. Ft. Per Second	Per Second	Per Cent of Full Allotment	
				Upper Users	Lower Users	Upper Users	Lower Users	Upper Users	Lower Users
1	5/1 - 5/11								Surplus
2	5/11 - 5/21								Surplus
3	5/21 - 5/31								Surplus
4	5/31 - 6/10								Surplus
5	6/10 - 6/20	220							Surplus
6	6/20 - 6/30	200							Surplus
7	6/30 - 7/10	190							Surplus
8	7/10 - 7/20	185							Surplus
9	7/20 - 7/30	170							Surplus
10	7/30 - 8/9	141	121		20		106		80
11	8/9 - 8/19	141	124	14		114		89	
12	8/19 - 8/29	138	118		20		103		78
13	8/29 - 9/8	143	127	14		116		91	
14	9/8 - 9/18	142	121		21		107		81
15	9/18 - 9/28	142	126	14		115		90	
16	9/28 - 10/8	142	121		21		107		81

NOTE: From May 1 to July 30 the water supply was in excess of demands and water passed the lower most diversion.

MARCH 15 20 25 APRIL 5 10 15 20 25 MAY 5 10 15 20 25 JUNE 5 10 15 20 25 JULY 5 10 15 20 25 AUGUST 5 10 15 20 25 SEPTEMBER 5 10 15 20 25

HYDROGRAPH OF HAT CREEK 1941

Cubic Feet per Second

220
200
180
160
140
120
100
80

Total requirements, including minimum flow and channel losses

Irrigation allotments

MARCH 15 20 25 APRIL 5 10 15 20 25 MAY 5 10 15 20 25 JUNE 5 10 15 20 25 JULY 5 10 15 20 25 AUGUST 5 10 15 20 25 SEPTEMBER 5 10 15 20 25

