STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

EARL WARREN, Governor

C. H. PURCELL, Director of Public Works

EDWARD HYATT, State Engineer

REPORT ON WATERMASTER SERVICE IN HAT CREEK WATERMASTER SERVICE AREA SHASTA COUNTY, CALIFORNIA

1945 SEASON

Sacramento, California

EDWARD HYATT, STATE ENGINEER
CHIEF OF DIVISION

EARL WARREN
GOVERNOR OF CALIFORNIA

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DIRECTOR

STATE OF CALIFORNIA
Department of Public Works
SACRAMENTO 5

DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

January 17, 1946

Mr. Gordon Zander
Principal Hydraulic Engineer
Sacramento, California

Attention: Mr. Harrison Smitherum
Supervising Hydraulic Engineer

Dear Sir:

Submitted herewith is the annual report covering water master service in the Hat Creek Watermaster Service Area, Shasta County, California for the 1945 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.

Respectfully submitted,

G. M. VICKROY
Watermaster

GMV:DY

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INTRODUCTION

The Hat Creek Watermaster Service Area was created by order of the Division of Water Resources under date of September 11, 1929. By order dated March 26, 1942 the boundaries of the service area were changed by excluding certain lands and water rights and by including others not defined at the time of the original order. As presently constituted the service area embraces the water rights on Hat Creek was established by the decree entered May 14, 1924, in the case of Doyel vs. Massie, Superior Court, Shasta County, No. 5724, excepting the Indian Lands and water rights appurtenant thereto; by the decree entered May 7, 1935, in the case of Doyel vs. Wilcox, Superior Court, Shasta County, No. 7858; and by Licenses 1196 and 2083 issued by the Division of Water Resources subsequent to entry of the said Doyel vs. Massie decree on Applications 2878 and 4700, respectively.

Watermaster service in the Hat Creek Watermaster Service Area was carried on throughout the 1945 season in accordance with Sections 4150 to 4178, inclusive, of the Water Code.

The distribution of water in the service area extended over the period from May 1 to October 18, 1945, with G. M. Vickroy in charge.

Harrison Smitherum was Supervising Watermaster.

WATER SUPPLY

Precipitation

Data on precipitation at Hat Creek Power House #1 as compiled from records of the U. S. Weather Bureau are presented in

Table 2.

The data indicates that the precipitation for the 1944-1945 season was 18.57 inches, or about 107 per cent of the mean for the 24 year period from 1921-1945. Of this total about 82.0 per cent fell during the period October 1 to April 1 as compared to the long time mean of about 75 per cent for the same period.

Stream Flow

The U. S. Geological Survey maintains a stream flow measuring station on Hat Creek with its location designated as near Hat Creek. This station is located below Old Station, and is downstream from the Harvey Wilcox, Stevenson, Gray, Hall and Shearin ditches. The flow at the measuring station plus the total amount being diverted by the above named ditches gives the flow available to meet the distribution requirements on Hat Creek.

The record of flow of Hat Creek for 1945, as compiled from unpublished records of the U. S. Geological Survey, is submitted in Table 2 of this report.

The average flow of Hat Creek above all diversions during each rotation period of the 1945 season is given in the third column of Table 5.

A comparison of the total available water supply and the water requirements on the stream including minimum flows, irrigation allotments and channel losses, is shown graphically on Plate 1.

DISTRIBUTION

During the 1945 season, the waters of Hat Creek were distributed in accordance with the provisions of the Doyel vs. Massie

and Doyel vs. Wilcox decrees and the two licenses hereinbefore mentioned. All the diversion facilities on the stream were operated during the season, excepting the ditches on the Stephenson Upper ranch which were washed out in the winter of 1937 and have not been replaced.

Rotation was commenced on May 1st at the beginning of the 1st Upper Users period. Rotation was continued throughout the season up to October 18 when Watermaster service was discontinued for the 1945 season; no controversies were had with or among the water users over the distribution during the 1945 season.

Tabulations of the amounts of water required to fill the demands on the available water supply during the Upper Users and Lower Users periods are presented in Tables 3 and 4, respectively.

OWNERSHIP OF LANDS AND WATER RIGHTS WITHIN HAT CREEK WATERMASTER SERVICE AREA

Changes in Ownership

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for Hat Creek Watermaster Service Area, County of Shasta, State of California for 1945" and which shall be included in the statement for said watermaster service area for 1946, are listed in the following tabulation.

Tract No.	Name of Water Owner Appearing in 1945 Statement	Name of Water Right Owner To Appear in 1946 Statement	Amount of Water cfs
2-3	Bertha Geissner	Oscar Geissner	6.25
2-27	Charles W. Gray and Ruby Hencratt	Helge Carl Hermann and Hazel Dean Hermann	0.56
2-20	Francis L. Frank and Elsie Frank	John Pavlovich and Ruth M. Pavlovich	0.50
2-24	J. J. Olmstead and Bernice Olmstead	Arthur L. Young and Annabelle A. Young	0.96

TABLE 1

PRECIPITATION AT HAT CREEK, POWER HOUSE NO. 1, SHASTA COUNTY, CALIFORNIA

Elevation 3115 Feet 1940 - 1945 (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
1941 - 42	0.74	1.51	5.82	3.81	5.86	1.40	3.82	1.61	0.13	0.01	0.41	0.37	25.49
1942 - 43	0.67	11.34	3.35	6.74	3.89	3.04	2.22	0.36	2.66	0.14	0.10	0.00	34.51
1943 - 44	1.00	0.92	1.07	2.31	3.07	1.35	2.30	0.45	1.37	0.15	0.13	0.05	14.17
1944 - 45	0.69	4.22	1.86	2.95	3.79	1.90	0.23	1.90	0.93	0.00	0.07	0.03	18.57
Totals 1921 to 1945	28.22	52.43	61.38	62.41	75.85	44.19	38.21	29.44	18.93	3.33	3.08	9.95	427.42
24 Year Mean	1.19	2.18	2.56	2.60	3.16	1.42	1.59	1.23	0.79	0.13	0.13	0.41	17.39

(1) See 1931 and 1944 Water Master Reports for previous records.

TABL 1

D__ly Discharge in Cubic Feet per __cond

HAT CREEK NEAR HAT CREEK

Year Ending September 30, 1945

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	126	142	128	126	128	126	130	193	184	150	130	117
2	126	136	128	126	136	126	126	210	181	148	128	117
3	126	148	125	128	136	126	128	218	181	148	128	117
4	126	159	130	130	138	125	128	221	181	142	128	113
5	126	140	136	128	138	126	128	218	181	140	128	111
6	126	136	137	130	134	128	130	226	179	136	130	111
7	126	134	132	132	134	128	132	226	177	134	128	111
8	128	134	128	130	142	126	130	221	174	134	128	118
9	128	140	132	130	134	126	128	210	177	138	125	121
10	128	136	132	130	132	126	128	257	179	142	121	121
11	128	134	134	128	134	128	130	234	174	144	120	121
12	128	136	130	132	136	132	128	223	179	142	121	121
13	130	134	125	134	140	132	125	205	181	140	121	123
14	128	132	126	132	140	134	125	198	174	140	120	123
15	128	132	128	134	132	130	128	190	165	138	121	123
16	128	134	132	130	132	128	132	234	163	138	121	123
17	128	132	132	126	130	125	134	228	163	136	121	123
18	128	130	128	126	128	125	136	193	165	134	120	123
19	128	130	134	130	130	128	140	181	167	134	125	123
20	128	130	152	126	132	132	144	172	177	130	128	123
21	130	130	144	121	128	132	150	172	179	125	126	123
22	130	132	150	121	130	134	150	172	179	123	125	121
23	130	132	142	121	128	132	150	170	172	121	125	121
24	130	130	140	121	128	128	156	172	167	121	123	121
25	130	128	132	121	126	130	156	165	181	121	125	121
26	130	128	128	121	126	128	152	163	177	121	125	121
27	130	128	130	123	125	130	154	161	167	121	125	120
28	130	128	128	123	126	130	161	163	161	121	123	118
29	130	130	126	123		130	167	165	159	123	120	120
30	132	128	126	126		130	179	181	156	126	118	120
31	161		125	128		132		181		130	118	
Total	4011	*4023	*4097	*3937	*3703	*3993	*4185	*6123	*5200	*4141	*3845	*3589
Mean	129	134	132	127	132	129	140	198	173	134	124	120
Run Off in A.F.	7960	7980	8130	7810	7340	7920	8300	12140	10310	8210	7630	7120

Total Run-off - 100,800 Acre-Feet

* Unpublished records of U.S. Geological Survey subject to revision.

TABLE 3

Demand on Water Supply

UPPER USERS PERIODS

Item and Authority	Amount of Water c. f. s. First Priority	Second Priority	Total
DEMANDS SUBJECT TO PRORATION			
Irrigation allotments - Schedule I, Doyel vs. Massie decree	103.50		
Irrigation allotment to Sullivan - Par. 30 - Doyel vs. Massie decree	4.60		
Irrigation allotment to U.S. Forest Service as allowed by water master in agreement with Forest Ranger	2.50		
Irrigation allotments for reclaimed mud flow lands- Par. 22, Doyel vs. Massie			
Harvey W. Wilcox (Herman) 40.0 acres	4.00		
Vint Stevenson 80.0	8.00		
Carrie K. Hall 5.0	.50		
R. A. Wilcox (Ward Smith) 27.0	2.70		
Irrigation allotment for reclaimed mud flow lands allowed by water master to Harry M. Wilcox 8.0 ac.	.80		
Irrigation allotment to Mrs. M. H. Shearin (Olmsted) Par. 5, Doyel vs. Wilcox decree (rotation head)	1.92		
Irrigation allotment to Carrie K. Hall (Day) - Application 4700, License 2083		2.50	
Total	128.52		
FIXED DEMANDS			
Sawmill use for Carrie K. Hall (Day) - Par. 11, Doyel vs. Massie decree	.50		
Minimum flow allotments to Lower Users - Schedule IV Doyel vs. Massie decree	9.125		
Minimum flow allotment to Vernon March - Allowed by water master	1.00		
Minimum flow allotments to Dunwoody & Grant - Par. 6, Doyel vs. Wilcox decree			
Dunwoody	.25		
Grant	.25		
Conveyance loss in Reiger Ditch - Par. 13, Doyel vs. Massie decree. Amount determined by measurements	1.75		
Channel loss in Hat Creek. Amount determined by Measurements.	14.00		
Total	26.875		
Grand Total	155.395	2.50	157.895

TABLE 4

Demand on Water Supply

LOWER USERS PERIODS

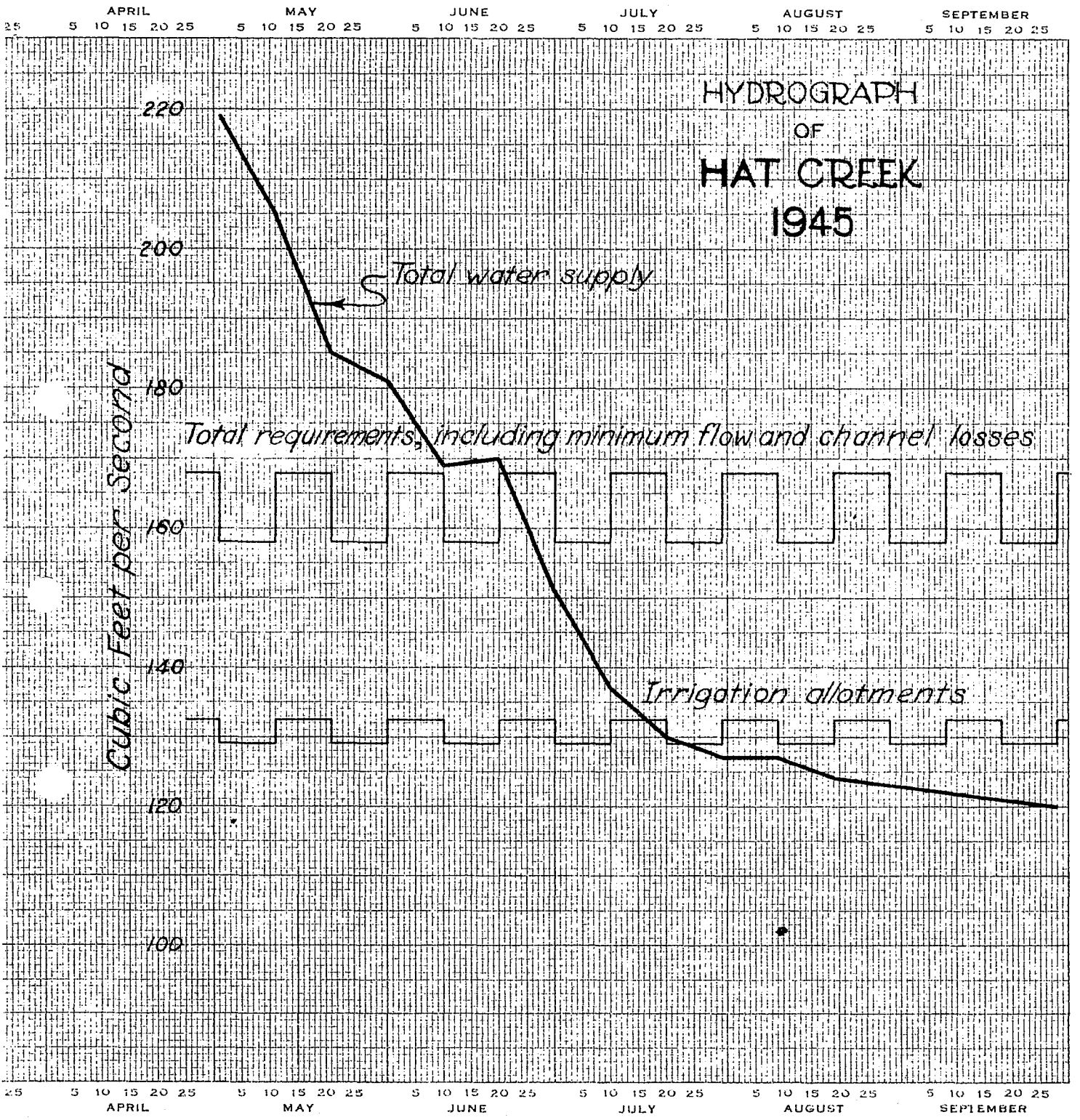
Item and Authority	Amount of Water c.f.s.		
	First Priority	Second Priority	Total
DEMANDS SUBJECT TO PRORATION			
Irrigation allotments - Schedule III Doyel vs. Massie decree	129.000		
Irrigation allotments to Grant and Dunwoody - Par.6 Doyel vs. Wilcox decree			
Grant	1.000		
Dunwoody	1.000		
Irrigation allotment for reclaimed mud flow lands Par. 22, Doyel vs. Massie			
R. E. Bidwell	1.200		
Irrigation allotment to W. W. Brown (Startt) Application 2878, License 1196		0.850	
Total	132.200		
FIXED DEMANDS			
Sawmill use for Carrie K. Hall (Day) Par. 11, Doyel vs. Massie decree	0.500		
Minimum flow allotments to Upper Users - Schedule II	10.125		
Minimum flow allotment to Mrs. M. H. Shearin, Olmsted)- Par. 6, Doyel vs. Wilcox decree	0.250		
Minimum flow allotment to Sullivan (Scott Kerns) allowed by water master	0.500		
Minimum flow allotment to U.S. Forest Service by agreement with water master	1.750		
Allowance for conveyance loss in Reiger Ditch Decree, Par. 13 and measurements	1.750		
Channel loss in Hat Creek, measurements	20.000		
Total	34.875		
Grand Total	167.075	0.850	167.925

TABLE 5

SUMMARY OF DISTRIBUTION ON HAT CREEK - 1945 SEASON

Irrigation Period	Dates	Average Flow of Hat Creek Above all Diversions	Average Combined Diversions in cu. ft. per Second	Channel Loss Cu. Ft. per Second		Average Irrigation Delivery			
						Cu. Ft. Per Second		Per Cent of Full Allotment	
				Upper Users	Lower Users	Upper Users	Lower Users	Upper Users	Lower Users
1	5/1 - 5/11	219							Surplus
2	5/11 - 5/21	205							Surplus
3	5/21 - 5/31	185							Surplus
4	5/31 - 6/10	181							Surplus
5	6/10 - 6/20	169							Surplus
6	6/20 - 6/30	170							Surplus
7	6/30 - 7/10	151	138	14		114		96	
8	7/10 - 7/20	137	122		20		107		82
9	7/20 - 7/30	130	117	14		103		82	
10	7/30 - 8/9	127	112		20		97		76
11	8/9 - 8/19	127	114	14		101		80	
12	8/19 - 8/29	124	109		20		84		74
13	8/29 - 9/8	123	110	14		97		78	
14	9/8 - 9/18	122	107		20		182		73
15	9/18 - 9/28	121	108	14		95		76	
16	9/28 - 9/30	120	105		20		80		71

PLATE 1


HYDROGRAPH
OF
HAT CREEK
1945
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
220
200
180
160
140
120
100
Cubic Feet per Second
Total water supply
Total requirements, including minimum flow and channel losses
Irrigation allotments