

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

GOODWIN J. KNIGHT, Governor
HARVEY O. BANKS, Director of Water Resources
M. J. Shelton, Deputy Director of Water Resources

REPORT ON
WATERMASTER SERVICE IN
HAT CREEK AND BURNEY CREEK WATERMASTER SERVICE AREAS
SHASTA COUNTY, CALIFORNIA
1957 SEASON

Sacramento, California
April, 1958

TABLE OF CONTENTS

| | <u>Page</u> |
|---|-------------|
| SUBMISSION TO, AND ADOPTION BY DEPARTMENT OF WATER RESOURCES. . . | ii |
| ORGANIZATION. | iii |
| INTRODUCTION. | 1 |
| WATER SUPPLY. | 2 |
| Precipitation. | 2 |
| Stream Flow. | 3 |
| DISTRIBUTION OF WATER | 3 |
| Hat Creek. | 3 |
| Burney Creek | 6 |
| CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS. | 7 |

APPENDIX

A. Records of Water Supply and Use of Water

Table No.

| | |
|--|-----|
| A-1. Precipitation at Hat Creek Powerhouse Number 1. . . | A-1 |
| A-2. Daily Mean Discharge of Hat Creek at United States Geological Survey Gaging Station. . . | A-2 |
| A-3. Demand on Water Supply of Hat Creek During Upper Users Periods | A-3 |
| A-4. Demand on Water Supply of Hat Creek During Lower Users Periods | A-4 |

PLATE

1. Hydrograph of Hat Creek at United States Geological Survey Station

SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

I, William R. Gianelli, Chief, Water Rights Section, Department of Water Resources of the State of California, approve this "Report on Watermaster Service in Hat Creek and Burney Creek Watermaster Service Areas, Shasta County, California, 1957 Season".

/s/ W. R. Gianelli

Chief, Water Rights Section

I, Harvey O. Banks, Director of the Department of Water Resources of the State of California, approve and adopt this "Report on Watermaster Service in Hat Creek and Burney Creek Watermaster Service Areas, Shasta County, California, 1957 Season", as a report of the Department of Water Resources.

Witness my hand and the seal of the Department of Water Resources of the State of California this 30th day of April, 1958.

State of California
Department of Water Resources

/s/ Harvey O. Banks

HARVEY O. BANKS
Director

(SEAL)

ORGANIZATION

STATE DEPARTMENT OF WATER RESOURCES

Harvey O. Banks Director of Water Resources
M. J. Shelton Deputy Director of Water Resources

The activity covered by this report is under
the direction of

William R. Gianelli
Chief, Water Rights Section

This report was prepared under the supervision of

Orville L. Abbott
Supervising Watermaster

By

G. M. Vickroy
Assistant Hydraulic Engineer
and Watermaster

P. A. Towner Chief Counsel
Paul L. Barnes Chief, Division of Administration
Isabel C. Nessler. Coordinator of Reports

INTRODUCTION

This report presents the results accomplished during the twenty-eighth season of water distribution, in both the Hat Creek Watermaster Service Area and Burney Creek Watermaster Service Area. The report covers the period of water distribution during the 1957 season beginning May 1 and ending October 28.

The Hat Creek Watermaster Service Area was created by order of the Department of Public Works on September 11, 1929. A subsequent order entered March 26, 1942, extended the boundary of the service area to include certain newly determined water rights and to exclude others that are not subject to control by the watermaster.

As presently constituted, the Hat Creek Watermaster Service Area includes the water rights established by the decree entered May 14, 1924, in the case of Doyel vs. Massie, No. 5724, Superior Court, Shasta County, except those held in trust by the United States for certain Indians; by the decree entered May 7, 1935, in the case of Doyel vs. Wilcox, No. 7858, Superior Court, Shasta County; and by Licenses 1196 and 2083 issued on Applications 2878 and 4700, respectively.

The Burney Creek Watermaster Service Area was created by order of the Department of Public Works on September 11, 1929, to include all water rights determined in the decree entered January 30, 1926, in the case of Ednah M. Black vs. Martha B. Grinnell, et al., No. 5111, Superior Court, Shasta County,

California. A subsequent order dated March 28, 1942, excluded certain lands whereon need for watermaster service had ceased. Watermaster service has been provided during each irrigation season since the service areas were created and annual reports prepared to show the work accomplished during each season.

This report is presented under four headings as follows: Introduction, Water Supply, Distribution of Water, and Changes in Ownership of Lands and Water Rights. Appendix A contains precipitation data of Hat Creek Power House Number 1, water supply records of Hat Creek at the United States Geological Survey station, and demand on water supply during upper users and lower users periods. Plate one presents a hydrograph of Hat Creek at the United States Geological Survey station.

WATER SUPPLY

Slightly below normal precipitation during the winter months provided a water supply slightly below normal in both Hat Creek and Burnsey Creek throughout the 1957 irrigation season, however storms in May improved the situation considerably over what was anticipated earlier.

Precipitation

Monthly precipitation at Hat Creek Powerhouse Number 1, as compiled from records of the United States Weather Bureau is presented in Table A-1. The total precipitation for the 1956-1957 season was 15.36 inches, or about 89 per cent of the mean. The elevation of the station is 3,015 feet.

Stream Flow

The United States Geological Survey maintains a stream flow gaging station on Hat Creek, downstream from the Harvey Wilcox, Stevenson, Gray, Hall, and Shearin Ditches. The amount of water passing this gaging station plus the total amount being diverted by the above named ditches comprises the flow available for distribution on Hat Creek.

The record of flow of Hat Creek at the United States Geological Survey station, (which is referred to as Hat Creek near Hat Creek by records of that agency) for 1957 is presented in Table A-2. Daily mean discharges shown were obtained from preliminary records. Flow at this station, irrigation allotments, and total water requirements on the stream are shown graphically on Plate 1.

DISTRIBUTION OF WATER

The distribution of water in the Hat Creek and Burney Creek Service areas was carried out as established by past practices in accordance with the respective decrees and licenses for these creeks.

Hat Creek

Water rights in the Hat Creek Watermaster Service Area are grouped into four divisions by the Doyel vs. Massie decree as follows:

Schedule I which defines rights to use of water from Hat Creek by the upper users during their nine irrigation periods;

- Schedule II which defines minimum flow allotments from Hat Creek to upper users ditches during their nine minimum flow periods;
- Schedule III which defines rights to use of water from Hat Creek by the lower users during their nine irrigation periods;
- Schedule IV which defines minimum flow allotments from Hat Creek to lower users ditches during their nine minimum flow periods.

Additional allotments are allowed in this decree for reclaimed mud flow lands. Use of water is also allowed under the Doyel vs. Wilcox decree and under appropriative rights set forth in Licenses 1196 and 2083. Total demands on the water supply of Hat Creek during both upper users periods and lower users periods are shown in Tables A-4 and A-5.

Distribution during the 1957 season followed the methods and practices initiated in past seasons with little or no modification. All the diversions on Hat Creek were operated during the season except the ditches on the Stevenson upper ranch, which were washed out in the winter of 1937 and have not been replaced.

Rotation on Hat Creek commenced on May 1 at the beginning of the first upper users period and was continued throughout the season. Percentages of allotments delivered during each of the 18 irrigation periods were based on the amount of water remaining after deducting minimum flow requirements, fixed demand requirements, and measured channel losses, from the available water supply. The water available for distribution is the

summation of the flow passing the gaging station and measured diversions above that station. A summary of distribution during the season, determined as outlined above is presented in the following tabulation.

| Irrigation period | Dates | Per cent of allotments available | |
|-------------------|-------------|----------------------------------|-------------|
| | | Upper users | Lower users |
| 1. Upper | 5/1-5/11 | Surplus | |
| 2. Lower | 5/11-5/21 | | Surplus |
| 3. Upper | 5/21-5/31 | Surplus | |
| 4. Lower | 5/31-6/10 | | Surplus |
| 5. Upper | 6/10-6/20 | Surplus | |
| 6. Lower | 6/20-6/30 | | Surplus |
| 7. Upper | 6/30-7/10 | Surplus | |
| 8. Lower | 7/10-7/20 | | Surplus |
| 9. Upper | 7/20-7/30 | 95 | |
| 10. Lower | 7/30-8/9 | | 90 |
| 11. Upper | 8/9-8/19 | 90 | |
| 12. Lower | 8/19-8/29 | | 80 |
| 13. Upper | 8/29-9/8 | 90 | |
| 14. Lower | 9/8-9/18 | | 85 |
| 15. Upper | 9/18-9/28 | 90 | |
| 16. Lower | 9/28-10/8 | | 100 |
| 17. Upper | 10/8-10/18 | 100 | |
| 18. Lower | 10/18-10/28 | | 100 |

Burney Creek

As in past years, the various water users on Burney Creek expressed their preference for a continuous flow, and distribution was carried out on that basis. All the diversions on Burney Creek were in operation throughout the season except the Cayton Ditch which has been abandoned. The water formerly carried in that Ditch is now delivered to the Elling Ranch through the Elling Lower Ditch.

Until about June 1, available flow was sufficient to supply full allotments. Thereafter the flow gradually decreased until August 20, when water was available for about 35 per cent of the first priority allotments. During the remainder of the season the flow remained nearly constant, except for a slight increase during the latter part of September, when rains increased the flow.

A summary of distribution of water on Burney Creek during the 1957 season is presented in the following tabulation.

| Month | Per cent of allotment available | |
|-----------|---------------------------------|-----------------|
| | First priority | Second priority |
| May | Surplus | Surplus |
| June | 90 | 5 |
| July | 64 | 0 |
| August | 50 | 0 |
| September | 40 | 0 |

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

Changes in ownership of lands and water rights which will be included in the "Statement for Hat Creek Watermaster Service Area, County of Shasta, State of California, for 1958" are presented in the tabulation below.

No changes of ownership of lands and water rights occurred in the Burney Creek Watermaster Service Area subsequent to filing the 1957 statement for that area.

| Tract number | Name of water right owner appearing in 1957 statement | Name of water right owner to appear in 1958 statement | Amount of water in sec.-feet |
|--------------|---|---|------------------------------|
| 2-17-3 | Highley, Ted G. and Highley, Eloise M. | Rohenkohl, John W. | 0.10 |
| 2-7 | Bidwell, R. E. | Bibbens, George and Bibbens, Carol | 5.14 |
| 2-19-2 | Purdy, R. J. | Kaufenberg, Hazel M. | 0.065 |

APPENDIX A

RECORDS OF WATER SUPPLY AND USE OF WATER

| <u>Table No.</u> | | <u>Page</u> |
|------------------|--|-------------|
| A-1 | Precipitation at Hat Creek Powerhouse Number 1. Shasta County, California 1956-57 | A-1 |
| A-2 | Daily Mean Discharge of Hat Creek at United States Geological Survey Gaging Station | A-2 |
| A-3 | Demand on Water Supply of Hat Creek During Upper Users Periods | A-3 |
| A-4 | Demand on Water Supply of Hat Creek During Lower Users Periods | A-4 |

TABLE A-1

PRECIPITATION AT HAT CREEK POWERHOUSE NUMBER 1
SHASTA COUNTY, CALIFORNIA
1956-1957

In Inches

| Month | Mean precipitation | 1956-1957 precipitation |
|-----------|-----------------------|----------------------------|
| October | 1.30 | 2.42 |
| November | 1.82 | 0 |
| December | 2.53 | 0.91 |
| January | 2.45 | 2.07 |
| February | 2.91 | 1.83 |
| March | 1.92 | 2.19 |
| April | 1.55 | 1.39 |
| May | 1.20 | 2.13 |
| June | 0.80 | 0.70 |
| July | 0.16 | 0 |
| August | 0.15 | 0 |
| September | 0.44 | 1.72 |
| TOTALS | 17.23 | 15.36 |

TABLE A-2

DAILY MEAN DISCHARGE OF HAT CREEK
AT UNITED STATES GEOLOGICAL SURVEY GAGING STATION

May 1 to September 30, 1957

In Cubic Feet Per Second

| Day | May | June | July | August | September |
|-------------------------|--------|--------|-------|--------|-----------|
| 1 | 185 | 230 | 169 | 151 | 136 |
| 2 | 185 | 228 | 167 | 151 | 136 |
| 3 | 174 | 220 | 163 | 151 | 136 |
| 4 | 177 | 218 | 161 | 151 | 136 |
| 5 | 187 | 226 | 159 | 151 | 136 |
| 6 | 196 | 218 | 157 | 151 | 138 |
| 7 | 196 | 218 | 155 | 151 | 142 |
| 8 | 194 | 218 | 155 | 151 | 143 |
| 9 | 187 | 218 | 155 | 145 | 145 |
| 10 | 182 | 218 | 161 | 142 | 145 |
| 11 | 180 | 208 | 163 | 142 | 145 |
| 12 | 177 | 208 | 163 | 142 | 147 |
| 13 | 176 | 206 | 161 | 140 | 147 |
| 14 | 176 | 199 | 161 | 140 | 147 |
| 15 | 174 | 194 | 159 | 140 | 145 |
| 16 | 177 | 187 | 159 | 140 | 147 |
| 17 | 185 | 182 | 159 | 143 | 147 |
| 18 | 350 | 189 | 159 | 143 | 145 |
| 19 | 295 | 189 | 159 | 145 | 142 |
| 20 | 220 | 185 | 151 | 147 | 140 |
| 21 | 199 | 182 | 145 | 149 | 138 |
| 22 | 194 | 182 | 142 | 147 | 138 |
| 23 | 187 | 182 | 140 | 147 | 138 |
| 24 | 189 | 185 | 140 | 147 | 138 |
| 25 | 199 | 182 | 140 | 147 | 138 |
| 26 | 211 | 182 | 142 | 145 | 140 |
| 27 | 216 | 182 | 142 | 145 | 218 |
| 28 | 216 | 182 | 140 | 145 | 177 |
| 29 | 213 | 182 | 140 | 142 | 165 |
| 30 | 216 | 177 | 145 | 138 | 163 |
| 31 | 220 | --- | 149 | 138 | --- |
| Mean | 201 | 199 | 154 | 145 | 147 |
| Runoff, in acre-feet | 12,360 | 11,860 | 9,440 | 8,940 | 8,720 |

Total for period - 51,320 acre-feet.

TABLE A-3

DEMAND ON WATER SUPPLY OF HAT CREEK
DURING UPPER USERS PERIODS

In Cubic Feet Per Second

| Item and authority | : First : priority | : Second : priority | : Total |
|---|-----------------------|------------------------|---|
| DEMAND SUBJECT TO PRORATION | | | |
| Irrigation allotments - Schedule 1, Doyel vs. Massie decree | | | 103.500 |
| Irrigation allotment to Sullivan - Par.30 Doyel vs. Massie decree | | | 4.600 |
| Irrigation allotment to U.S.Forest Service as allowed by watermaster in agreement with Forest Ranger | | | 2.500 |
| Irrigation allotment for reclaimed mud flow lands Par. 22, Doyel vs. Massie decree | | | |
| Harvey W. Wilcox (Herman) 40.0 acres | | | 4.000 |
| Vint Stevenson 80.0 | | | 8.000 |
| Carrie K. Hall 5.0 | | | 0.500 |
| R. A. Wilcox (Ward Smith) 27.0 | | | 2.700 |
| Irrigation allotment for reclaimed mud flow lands allowed by watermaster to Harry M. Wilcox 8.0 acres | | | 0.800 |
| Irrigation allotment to Mrs. M. H. Shearin (Olmsted) Par. 5, Doyel vs. Wilcox decree (rotation head) | | | 1.920 |
| Irrigation allotment to Carrie K. Hall (Day) Application 4700, License 2083 | | | 2.50 |
| | Subtotals | | <u>128.520</u> <u>2.50</u> |
| FIXED DEMANDS | | | |
| Sawmill use for Carrie K. Hall (Day) - Par. 11, Doyel vs. Massie decree | | | 0.500 |
| Minimum flow allotments to lower users - Schedule IV, Doyel vs. Massie decree | | | 9.125 |
| Minimum flow allotment to Vernon March - Allowed by watermaster | | | 1.000 |
| Minimum flow allotments to Dunwoody & Grant- Par. 6, Doyel vs. Wilcox decree | | | |
| Dunwoody | | | 0.250 |
| Grant | | | 0.250 |
| Conveyance loss in Reiger Ditch-Par. 13, Doyel vs. Massie decree. Amount determined by measurements | | | 1.750 |
| Channel loss in Hat Creek. Amount determined by measurements | | | <u>14.000</u> |
| | Subtotal | | <u>26.875</u> |
| TOTALS | | | <u>155.395</u> <u>2.50</u> <u>157.895</u> |

TABLE A-4

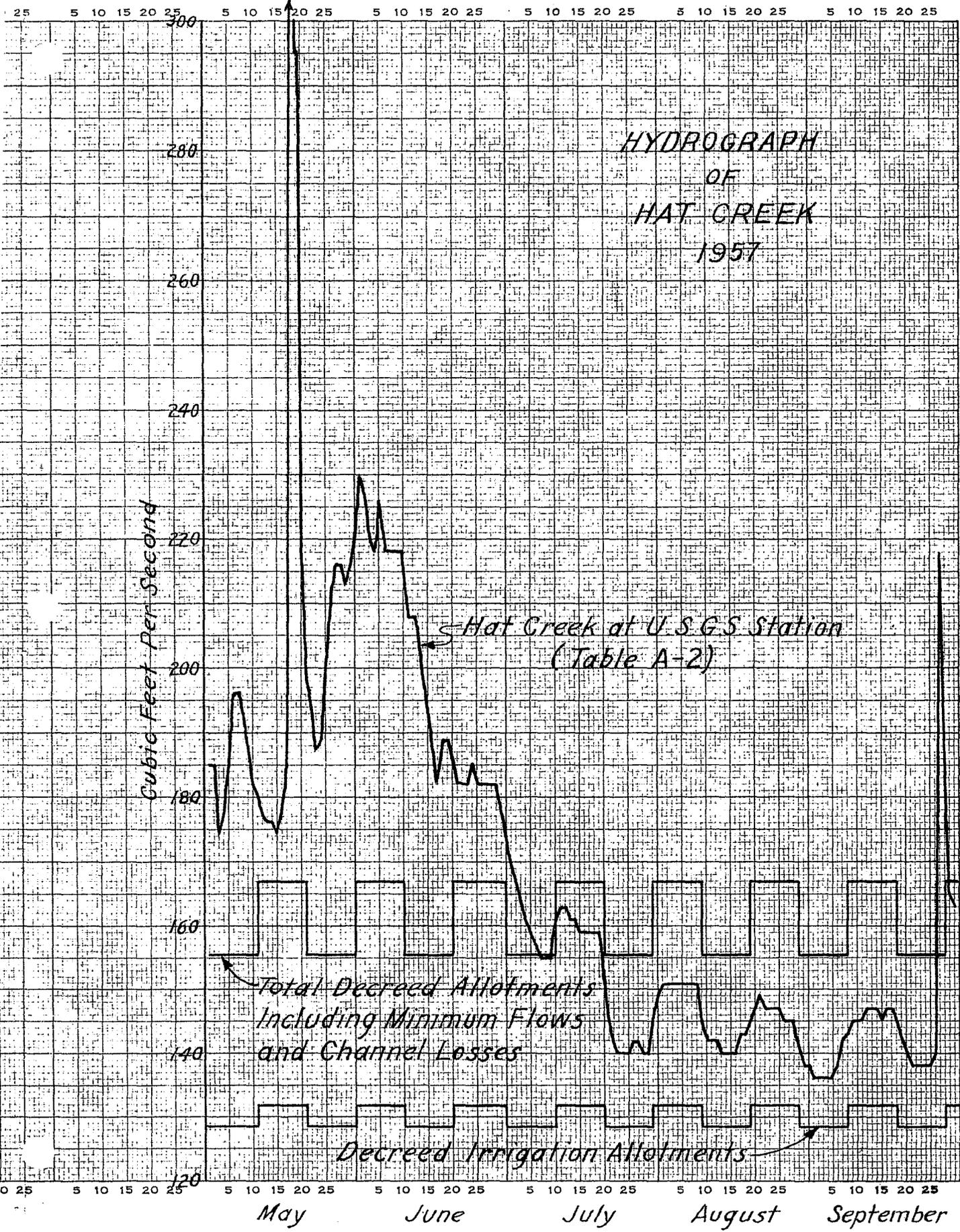
DEMAND ON WATER SUPPLY OF HAT CREEK
DURING LOWER USERS PERIODS

In Cubic Feet Per Second

| Item and authority | : 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 | | | 1.700 |
| Subtotals | | <u>132.200</u> | <u>1.700</u> |
| 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 allotments to Mrs. M. H. Shearin Olmsted - Par. 6, Doyel vs. Wilcox decree | | 0.250 | |
| Minimum flow allotments to Sullivan (Scott Kerns) allowed by watermaster | | 0.500 | |
| Minimum flow allotment to U.S. Forest Service by agreement with watermaster | | 1.750 | |
| Allowance for conveyance loss in Reiger Ditch Decree, Par. 13 and measurements | | 1.750 | |
| Channel loss in Hat Creek. Amount determined by measurements | | <u>20.000</u> | |
| Subtotal | | <u>34.875</u> | |
| TOTALS | | 167.075 | 1.700 |
| | | | 158.775 |

350 cfs.

PLATE 1



HYDROGRAPH
OF
HAT CREEK
1957

Cubic Feet Per Second

Hat Creek at U.S.G.S. Station
(Table A-2)

Total Decreed Allotments
Including Minimum Flows
and Channel Losses

Decreed Irrigation Allotments

May June July August September