STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

EARL WARREN, Governor

FRANK B. DURKEE, Director of Public Works

A. D. EDMONSTON, State Engineer

REPORT ON WATERMASTER SERVICE IN COW CREEK WATERMASTER SERVICE AREA

Shasta County, California

1951 SEASON

Sacramento, California
December, 1951

SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF PUBLIC WORKS

I, L. C. Jopson, Supervising Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, submit this "Report on Watermaster Service in Cow Creek Watermaster Service Area, Shasta County, California, 1951 Season".

/s/ L. C. JOPSON
Supervising Hydraulic Engineer

I, Gordon Zander, Assistant State Engineer, Division of Water Resources, Department of Public Works of the State of California, approve this "Report on Watermaster Service in Cow Creek Watermaster Service Area, Shasta County, California, 1951 Season".

/s/ GORDON ZANDER
Assistant State Engineer

I, A. D. Edmonston, State Engineer and Chief of the Division of Water Resources, Department of Public Works of the State of California, approve and adopt this "Report on Watermaster Service in Cow Creek Watermaster Service Area, Shasta County, California, 1951 Season", as a report of the Department of Public Works.

WITNESS my hand and the seal of the Department of Public Works of the State of California, this 25th day of April, 195 2.

DEPARTMENT OF PUBLIC WORKS

By /s/ A. D. EDMONSTON
A. D. Edmonston
State Engineer

SEAL

ORGANIZATION

Frank B. Durkee . . . . . Director of Public Works

A. D. Edmonston . . . . . State Engineer

Gordon Zander . . . Assistant State Engineer

This report was prepared under the direction of

L. C. JOPSON
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INTRODUCTION

The Cow Creek Watermaster Service Area was created by an order entered October 17, 1932 by the Division of Water Resources to include the water rights on Cow Creek, Cedar Creek and Oak Run Creek in Shasta County. A subsequent order entered January 21, 1938, enlarged the service area by including the more recently determined water rights on Clover Creek.

The water rights within the area were established by decrees of the Superior Court, Shasta County as follows:

For Cow Creek and Cedar Creek - Charles L. Lemm, et al. vs. John Rutherford, et al., No. 5804, entered April 29, 1932.

For Oak Run Creek - F. A. Colby, et al. vs. L. O. Strayer, et al., No. 5701, entered July 22, 1932, and

For Clover Creek - Millville Ditch Co. vs. Jesse Hufford, et al., No. 6904, entered October 4, 1937.

Watermaster service, as provided in Part 4 of Division 2 of the Water Code, extended from July 1 to September 30 in 1951.

G. M. Vickroy, watermaster, administered the distribution of water throughout the season under the supervision of P. E. Stephenson, Senior Hydraulic Engineer.

WATER SUPPLY

Precipitation

The monthly precipitation at the new station at Shasta Dam as compiled from records of the U. S. Weather Bureau is presented in Table 1 of this report. A comparison of the annual precipitation of 56.45 inches as shown on the table with the 60.50-inch normal at the abandoned nearby Kennett station indicates that the precipitation during the 1950-51 season was approximately 93 per cent of normal.

Stream Flow

Records of the discharge of North Cow Creek, Cedar Creek, Oak Run Creek and Clover Creek as determined for each stream by summation of the amounts of water diverted therefrom by the various ditches plus the flow in the stream below the lowermost ditch, are shown in Tables 2, 3, 4, and 5 respectively.

The records cover the period from July 1 to September 30, 1951, when regulation of diversions was necessary.

Hydrographs, plotted from the data contained in the above tables, together with graphs indicating the decreed allotments on the respective streams, are presented in Plates 1, 2, 3, and 4.

DISTRIBUTION OF WATER

Distribution during the 1951 irrigation season followed the methods and practices initiated in past seasons with little or no modification. The resulting distribution on each of the several streams was as follows:

North Cow Creek

The amounts of water available for distribution are set forth in Table 2 submitted at the end of this report.

Distribution during the 1951 irrigation season was made on a continuous flow basis throughout the entire season. Sufficient flow was available to supply 100 per cent allotments prior to about August 16. After this date the available flow gradually decreased to about 67 per cent of all allotments on September 12. Subsequent thereto and until the end of the season the flow of the stream remained nearly constant.

A summary of the distribution of water made during the 1951 irrigation season is set forth in the following tabulation:

Month	Average Discharge North Cow Creek c.f.s.	Per cent of Allotment Delivered 1st Priority
July	28.8	100
August	22.6	100
September	16.6	79

Cedar Creek

The amounts of water available for distribution are shown in Table 3. On July 1 the available water supply was sufficient to satisfy allotments, but gradually decreased to approximately 30 per cent of full allotment by September 11. Thereafter until September 30 the flow remained nearly constant.

A summary of the distribution of water made during the 1951 irrigation season is set forth in the following tabulation:

Month	Average Discharge Cedar Creek c.f.s.	Per cent of Allotment Delivered 1st Priority
July	2.39	79
August	1.55	51
September	0.92	30

Oak Run Creek

The amounts of water available for distribution during the 1951 season are shown in Table 4. Sufficient flow was available to supply 100 per cent allotments during the entire season.

A summary of the distribution of water made during the 1951 irrigation season is set forth in the following tabulation:

Month	Average Discharge Oak Run Creek c.f.s.	Per cent of Allotments Delivered 1st Priority
July	7.0	100
August	6.5	100
September	5.5	100

Clover Creek

The amounts of water available for distribution during the 1951 season, are shown in Table 5. Sufficient flow was available to supply 100 per cent allotments prior to August 1. After this date the available flow gradually decreased to about 78 per cent of all allotments on September 1. Thereafter until the end of the season the flow of the stream remained nearly constant.

A summary of the distribution of water made during the 1951 season is set forth in the following tabulation:

Month	Average Discharge Clover Creek c.f.s.	Per Cent of Allotment 1st Priority
July	25.9	100
August	21.1	88
September	18.8	78

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for Cow Creek Watermaster Service Area, County of Shasta, State of California for 1951", and which shall be included in the statement for said watermaster service area for 1952, are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1951 Statement	Name of Water Right Owner to Appear in 1952 Statement	Amount of water c.f.s.
4-39	Willard F. McMahon	Walter A. Junge and Peggy M. Junge	1.20
4-34			
4-35			
4-32	Paulina Strawn	Merrick Strawn and Robert Strawn	1.55
4-67	William Kessler	Harold V. Raymond	0.25
4-75	Robert E. Williams and Estelle I. Melton	Walter L. Melton and Corabelle Melton	0.02
4-28	Raymond O. Howell	J. L. Renfrow	1.07
4-13	John G. Turner	William Braby and Violet C. Braby	0.65

TABLE 1

PRECIPITATION AT SHASTA DAM

SHASTA COUNTY, CALIFORNIA

Elevation 1,084 feet

1950-1951

Month	1950-51 Precipitation Inches
October	17.38
November	0.98
December	9.51
January	10.13
February	9.48
March	2.47
April	2.36
May	3.68
June	0.00
July	0.00
August	0.03
September	0.43
Total	56.45

Compiled from records of U. S. Weather Bureau.

TABLE 2

Daily Discharge in Cubic Feet Per Second
NORTH COW CREEK
July 1 to September 30, 1951

Day	July	August	September
1	32.0	24.7	21.0
2	32.0	24.7	21.0
3	32.5	24.7	21.0
4	32.5	24.7	21.0
5	33.0	24.7	21.0
6	33.0	24.7	21.0
7	33.5	24.7	21.0
8	33.5	24.5	21.0
9	33.5	24.5	21.0
10	34.0	24.0	21.0
11	33.5	24.0	17.0
12	33.0	23.5	14.2
13	32.0	23.5	14.2
14	31.0	23.0	14.2
15	30.0	23.0	14.2
16	28.0	22.5	14.2
17	27.5	21.0	14.2
18	27.0	21.0	14.2
19	26.5	21.0	14.2
20	26.0	21.0	14.2
21	25.5	21.0	14.2
22	25.0	21.0	14.2
23	24.5	21.0	14.2
24	23.5	21.0	14.2
25	23.5	21.0	14.2
26	23.5	21.0	14.2
27	24.5	21.0	14.2
28	24.5	21.0	14.2
29	24.5	21.0	14.2
30	24.5	21.0	14.2
31	24.5	21.0	
Total Sec. Ft. Days	892.0	700.4	496.8
Mean Sec. Ft.	28.8	22.6	16.6
Total Ac. Ft.	1766	1387	984

Total runoff for 92 day period - 4137 acre-feet

TABLE 3

Daily Discharge in Cubic Feet Per Second
CEDAR CREEK
July 1 to September 30, 1951

Day	July	August	September
1	3.0	2.1	1.0
2	3.0	2.1	.99
3	2.9	2.1	.99
4	2.9	2.0	.97
5	2.8	2.0	.96
6	2.8	1.9	.95
7	2.7	1.9	.93
8	2.7	1.9	.93
9	2.6	1.8	.92
10	2.6	1.8	.92
11	2.5	1.7	.91
12	2.5	1.7	.91
13	2.4	1.7	.91
14	2.4	1.6	.91
15	2.4	1.5	.91
16	2.4	1.5	.91
17	2.3	1.5	.91
18	2.3	1.4	.91
19	2.3	1.4	.91
20	2.3	1.4	.91
21	2.3	1.3	.91
22	2.3	1.3	.91
23	2.2	1.3	.91
24	2.2	1.3	.91
25	2.2	1.2	.91
26	2.2	1.2	.91
27	2.2	1.1	.91
28	2.2	1.1	.91
29	2.2	1.1	.91
30	2.2	1.1	.91
31	2.2	1.1	
Total Sec. Ft. Days	76.2	48.1	27.8
Mean Sec. Ft.	2.45	1.55	0.92
Total Ac. Ft.	150.8	95.2	55.0

Total runoff for 92-day period - 301 acre-feet.

TABLE 4

Daily Discharge in Cubic Feet Per Second
OAK RUN CREEK
July 1 to September 30, 1951

Day	July	August	September
1	7.0	7.0	5.9
2	7.0	6.9	5.8
3	7.0	6.9	5.7
4	7.0	6.9	5.6
5	7.0	6.8	5.5
6	7.0	6.8	5.5
7	7.0	6.8	5.5
8	7.0	6.8	5.5
9	7.0	6.8	5.5
10	7.0	6.7	5.5
11	7.0	6.7	5.5
12	7.0	6.7	5.5
13	7.0	6.6	5.5
14	7.0	6.6	5.5
15	7.0	6.6	5.5
16	7.0	6.6	5.5
17	7.0	6.5	5.5
18	7.0	6.5	5.5
19	7.0	6.5	5.5
20	7.0	6.4	5.5
21	7.0	6.4	5.5
22	7.0	6.3	5.5
23	7.0	6.3	5.5
24	7.0	6.3	5.5
25	7.0	6.3	5.5
26	7.0	6.2	5.5
27	7.0	6.2	5.5
28	7.0	6.2	5.5
29	7.0	6.2	5.5
30	7.0	6.1	5.5
31	7.0	1.0	
Total Sec. Ft. Days	217.0	202.6	166.0
Mean Sec. Ft.	7.0	6.5	5.5
Total Ac. Ft.	430	401	329

Total runoff for 92 day period 1,160 acre feet

TABLE 5

Daily Discharge in Cubic Feet Per Second
CLOVER CREEK
July 1 to September 30, 1951

Day	July	August	September
1	28.6	24.0	18.8
2	28.4	23.8	18.8
3	28.2	23.6	18.8
4	28.0	23.4	18.8
5	27.8	23.2	18.8
6	27.6	23.0	18.8
7	27.4	22.9	18.8
8	27.2	22.7	18.8
9	27.0	22.5	18.8
10	26.8	22.3	18.8
11	26.6	22.1	18.8
12	26.5	21.8	18.8
13	26.3	21.6	18.8
14	26.1	21.4	18.8
15	25.9	21.2	18.8
16	25.7	21.0	18.8
17	25.5	20.8	18.8
18	25.3	20.5	18.8
19	25.1	20.3	18.8
20	24.9	20.1	18.8
21	24.7	19.8	18.8
22	24.5	19.7	18.8
23	24.5	19.6	18.8
24	24.4	19.5	18.8
25	24.4	19.4	18.8
26	24.3	19.3	18.8
27	24.2	19.2	18.8
28	24.2	19.0	18.8
29	24.1	19.0	18.8
30	24.1	18.9	18.8
31	24.0	18.9	
Total Sec. Ft. Days	802.3	654.5	564.0
Mean Sec. Ft.	25.9	21.1	18.8
Total Ac. Ft.	1588	1296	1,118

Total runoff for 92 day period - 4,002 acre feet

PLATE 1

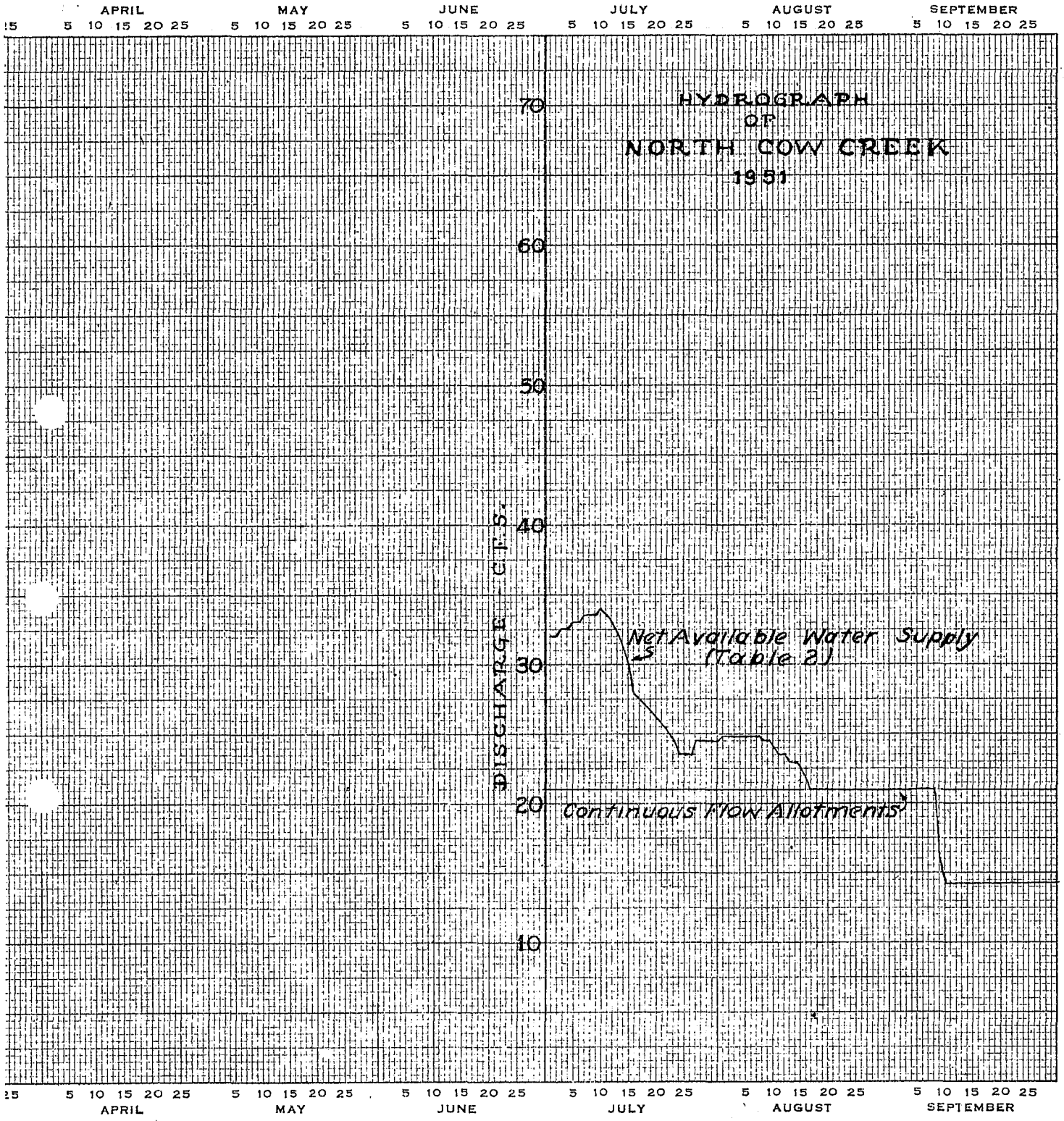

HYDROGRAPH
OF
NORTH COW CREEK
1951
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
70
60
50
40
30
20
10
DISCHARGE C.F.S.
Net Available Water Supply
(Table 2)
Continuous Flow Allotments

PLATE 2

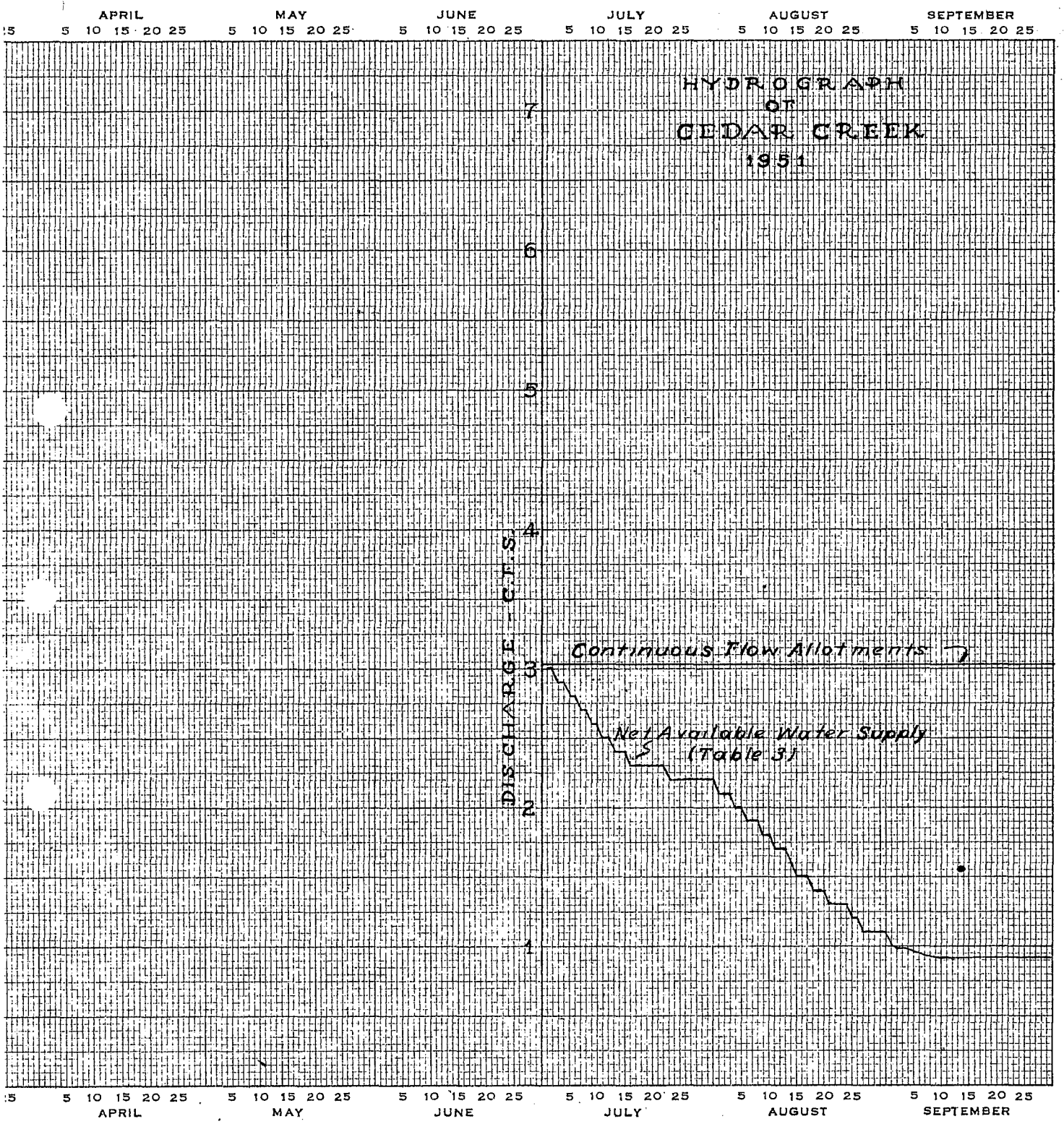

HYDROGRAPH
OF
CEDAR CREEK
1951
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
DISCHARGE - C.F.S.
7
6
5
4
3
2
1
Continuous Flow Allotments
Net Available Water Supply
(Table 3)

PLATE 3

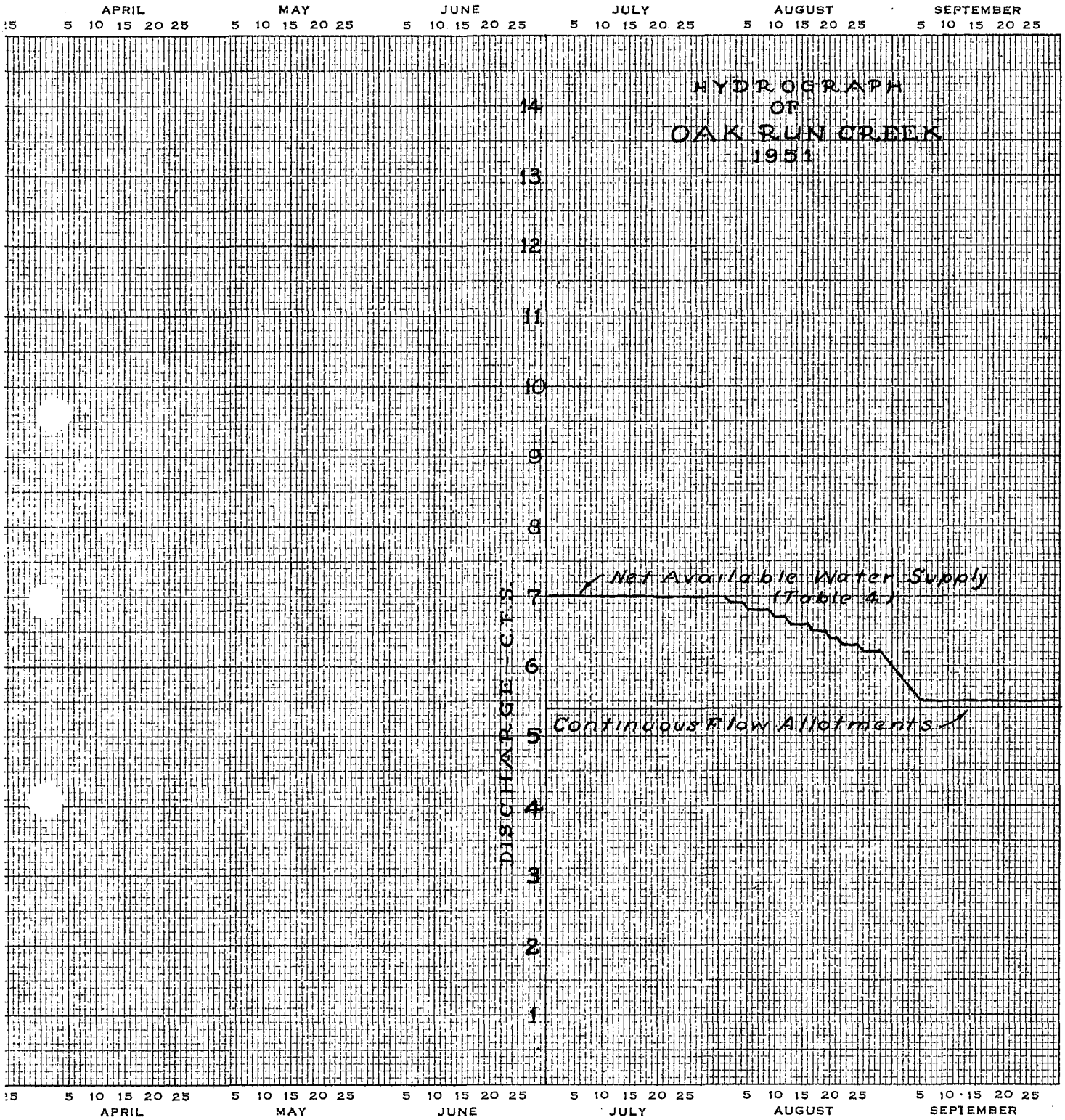
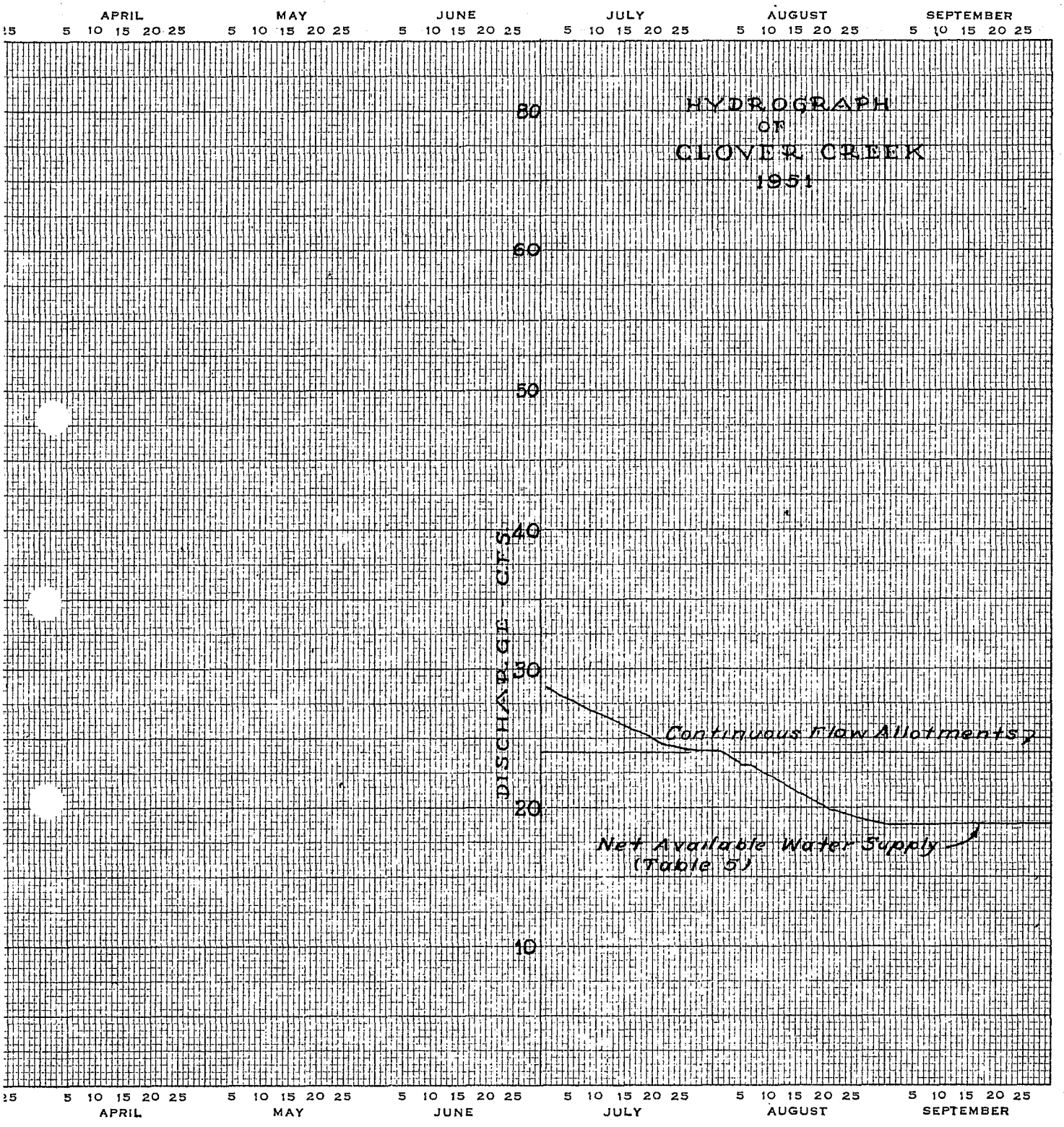

HYDROGRAPH
OF
OAK RUN CREEK
1951
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
DISCHARGE - C.F.S.
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Net Available Water Supply
(Table 4)
Continuous Flow Allotments

PLATE 4


HYDROGRAPH
OF
CLOVER CREEK
1951
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
80
60
50
40
30
20
10
DISCHARGE - CFS
Continuous Flow Allotments
Net Available Water Supply
(Table 5)