STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

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

REPORT ON

WATER MASTER SERVICE WITHIN

SURPRISE VALLEY WATER MASTER DISTRICT

MODOC COUNTY, CALIFORNIA

FOR THE SEASON OF 1942

By

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Assistant Water Master
Sacramento, California

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EDWARD HYATT, STATE ENGINEER
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DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

October 19, 1942

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Attention: Mr. Gordon Zander
Supervising Hydraulic Engineer

Dear Sir:

The annual report covering water master service within the Surprise Valley Water Master District, Modoc County, California, during the 1942 season, is transmitted herewith.

The report covers a general description of the work and a summary of the distribution of water on each stream within the district. Records of precipitation, run-off and other pertinent data are included.

Respectfully submitted,

J. VICTOR SCAMMON

Assistant Water Master

Report on

Water Master Service Within

Surprise Valley Water Master District

Modoc County, California

For the Season of 1942

INTRODUCTION

Water master service was continued in the Surprise Valley Water Master District during the 1942 season in accordance with the provisions of Sections 4800 to 4369 inclusive Code 37a of the Water ~~Commission Act~~. The service was commenced for the season on March 19th, and was terminated on September 30th.

J. Victor Scammon, Water Master, Surprise Valley Water Master District, administered the distribution of water from the streams within the district during the entire period. Harrison Smitherum, Supervising Water Master, directed the work in the field.

WATER SUPPLY

Precipitation

Table 1 contains the precipitation data at Cedarville. The monthly and seasonal precipitation for the period of water master service in Surprise Valley and a comparison of the 1941-1942 1939-1940 seasonal precipitation with the 1894-1942 mean are shown in the table. The 1941-1942 records show the precipitation of that season as 98.3 per

cent of the mean.

Table 2 contains the results of the snow surveys made annually at the ~~three~~ four courses in the Upper Pit River watershed. Considering the two snow courses on the Warner Range, namely Eagle Peak and Cedar Pass, it is seen that the water content of the snow on these two courses was 73.5 per cent and 86.9 per cent respectively of their deduced normals. A mean between these two figures is 80.2 per cent.

Stream Flow

Measuring stations, equipped with water stage recorders, were maintained on the streams within the Surprise Valley Water Master District as listed below. The streams are listed geographically in order from north to south. As nearly as practicable each station is located above all diversions on the particular stream. On Pine Creek the measurements were made by means of two 4.0 foot Parshall Measuring Flumes installed at the point where the stream divides into the north and south channels. The other stations were rated by means of current meter measurements taken at various stages of the streams throughout the period of water master service. The records of discharge for the several streams within the district are presented in Tables 3 to 15, inclusive, submitted at the end of this report. The adequacy of the water supply to fill the requirements on the various streams is discussed for each stream under the chapter heading "Distribution of Water".

Mill Creek above diversions

Soldier Creek above diversions

Pine Creek above North and South Channels

Cedar Creek above diversions

North Deep Creek above diversions

South Deep Creek below Espil Ditch

Owl Creek below Allen-Arreche Ditch

Rader Creek above Parshall Flume Division Structure

Eagle Creek one-half mile below mouth of canyon

Emerson Creek above diversions.

DISTRIBUTION OF WATER

Distribution on the various streams within the district was in accordance with the allotments and priorities set forth in the respective decrees. The flows available for distribution were determined from the measured discharge at the measuring stations. A summary of the results accomplished and of any difficulties encountered on each separate stream is given below.

Mill Creek

The regulation of diversions from Mill Creek was made in accordance with the allotments and priorities set forth in the decree in the case of Warrens v. Wimer, No. 3024, Superior Court, Modoc County, dated December 19, 1931. The amounts of water available for distribution were determined from the flow at the measuring station on Mill Creek above all diversions. The record of daily discharge at this station for the 1942 season is submitted in Table 3 at the end of this report.

In April and May all demands for water were filled as many of the ranchers did not use water during those months. In June no shortage was felt. The third priority water was exhausted the latter part of July. The second priority rights received full allotments throughout the entire season, except for the last ten days in August and the last of September. Full allotments were available for the first priority rights throughout the season.

All ditches on Mill Creek were used during the season of 1942 with the exception of the Mill Ditch, Diversion 1, and the Larkin Ditch, Diversion 5.

Rutherford Creek had ample water to meet all requirements throughout the season. Fourth priority water for the Vernon place did not fail until July 30. The Bennett Collecting Ditch was not cleaned this year and as a result very little water was available for rediversion from Rutherford Creek.

Soldier Creek

The diversions from Soldier Creek were regulated in accordance with the provisions of the decree in the case of San Francisco Cattle Loan Co. v. Crampton, No. 2405, Superior Court, Modoc County, dated November 28, 1928, and additional appropriative rights initiated subsequent to said decree. The amounts of water available for distribution were determined from the flow at the measuring station on Soldier Creek above all diversions. The record of daily discharge at this station for the 1942 season is submitted in Table 4.

All ditches on Soldier Creek were opened in 1942, and all users exercised their full legal rights whenever water was available therefor. During May some water was available for the "additional appropriative rights".

Rotation was practised from March 19 until June 19, in accordance with the decree. Simpson Canyon and Daniels Canyon supplied 100 per cent allotment to the Daniel Ranch until June 1 so that no diversion from Soldier Creek was necessary for the Daniels right prior to that date. However, Simpson Canyon failed entirely about June 10 and the flow of

Daniels Canyon dropped from 1.50 c.f.s. on May 1 to 1.00 c.f.s. on June 4, making necessary an increasing diversion from Soldier Creek after June 4 to fill the Daniels allotment.

During the Lower Users first irrigation period water was not rotated between the two channels. The total flow was diverted into the West Channel during the entire period because of insufficient water for the East Channel.

Full allotments were available during most of the days in the remaining rotation periods except in the Lower Users final period when only 70 per cent allotments were available to fifth priority rights.

During the Upper Users first two rotation periods, there were full allotments available most of the time, with about 75 per cent of total allotments available in their third period. Some irrigation water was available to second priority rights even in the final period. After June 19 the creek continued to fail so that only 75 per cent of first priority was available in August.

A very good alfalfa seed crop was produced this year on lands irrigated from Soldier Creek and the amount of hay produced exceeded that of average seasons.

Pine Creek

The diversions from Pine Creek were regulated in accordance with the decree in the case of Gaustad v. McCulley, No. 3391, Superior Court, Modoc County, dated December 7, 1936. The amountsof water available for distribution were determined at the two Parshall Measuring Flumes on the North and South Channels of Pine Creek. The record of daily discharge at this station for the 1942 season is submitted in Table 5.

The water supply on Pine Creek was sufficient to complete the first and second rotations by April 28. The third rotation was commenced with all users, except Freeborn and Ledford. Each user received 30.0 acre-feet on this rotation which was in most cases all their land required. On June 8 the water was turned to Gaustad and McCulley for rotation until June 16 at which time the flow of Pine Creek, having dimished to 1.80 c.f.s., was turned into the Cressler Ditch for W. E. Hill. By June 28, the flow of Pine Creek was insufficient to reach the W. E. Hill Ranch and on that date the entire flow of the creek, except the Royce allotment, was turned to J. Freeborn.

Cedar Creek

Distribution on Cedar Creek was made in accordance with the water rights defined in the cases of Hill v. Acty, No. 2343, and Lighty v. Cook, No. 1206, Superior Court, Modoc County, and Agreement re Right of Jake Rechsteiner to water from Cedar Creek. Water was also distributed to two licensed appropriative rights initiated under the Water Commission Act procedure. Water diverted through the Cedar Pass Ditch from Thoms Creek into Cedar Creek, the rights to which are set forth in the North Fork Pit River Decree, No. 4074, Superior Court, Modoc County, dated December 14, 1939 and in the said Lighty v. Cook decree, was also distributed to the rightful owners. The amounts of water available for distribution were determined from measurements taken at a Parshall Measuring Flume on the Cedar Pass Ditch and at the measuring station on Cedar Creek above all diversions. The record of daily discharge at the Cedar Creek station for 1942, which includes the water diverted from Thoms Creek, is submitted in Table 6.

Water was available in varying amounts for all rights on Cedar Creek in 1942. The Cedar Pass Ditch from Thoms Creek was opened May 3. Because some users did not divert their full allotments, users in later priorities were given extra water. The Meyers (Acty) Ditch, Diversion 9, remained open throughout the month of April. Some water was wasted into the lake during the high flow period from May 5 to 15. Jake Reichsteiner was notified that he could use water several times during the high water period but did not do so. The Company Ditch was turned off on June 23. The Sizer Ditch, Diversion 3, was repaired during the early part of the season and was used for the first time since it was washed out in December 1937. Stock and garden water was available at the McCulley Ranch throughout the season.

Deep Creek

The diversions from Deep Creek were regulated in accordance with the water rights defined in the decree in the case of Tyeryar v. Benner, No. 3101, Superior Court, Modoc County, dated January 25, 1934. The amounts of water available were determined from measurements taken at the measuring stations on North and South Deep Creeks. The records of daily discharge for 1942 for North and South Deep Creeks are shown in Tables 7 and 8, respectively. A summation of the results for these two stations has been tabulated in Table 9.

During April many users did not use their full allotments which made water available for the third, fourth and fifth priorities. During the period of May 20 to June 1, A. L. Baty and other users allowed J. Stiner to use a head of water from North Deep Creek rather than to have it waste into Middle Alkali Lake. J. Stiner has no decreed right from Deep Creek and only on extremely good years can he obtain water from

Deep Creek.

The flow of Deep Creek was sufficient to reach all users entitled to first priority water throughout the season.

Owl Creek

The regulation of diversions from Owl Creek was made in accordance with the allotments and priorities set forth in the decree in the case of Cummins v. Allen, No. 2410, Superior Court, Modoc County, dated April 29, 1929. The amounts of water available for distribution were determined from measurements of the flow of Owl Creek taken at the measuring station below the Allen-Arreche Ditch. The record of daily discharge at this station is shown in Table 10.

All ditches on Owl Creek were open by May 19, 1942, with all users diverting their respective allotments.

The water master closed off ditches in the order of their priority on the following dates:

July 23	Allen-Arreche Ditch
July 29	Dalton Ditch
August 15	Malitz Ditch
August 19	Stiner Ditch
September 3	Ennis-Arreche Ditch

Garden and stock water was furnished the McClintock, Heryford, and Cummins Ranches throughout the season.

Rader Creek

The waters of Rader Creek were distributed in accordance with the water rights defined in the decree in the case of Powers v. Woodruff, No. 3626, Superior Court, Modoc County, dated June 4, 1937. The amounts

of water available for distribution were determined from measurements taken at the measuring station on Rader Creek above the Parshall Flume division structure. The record of daily discharge at this station for 1942 is submitted in Table 11. The summation of the flow at this station and the amounts of water diverted above is shown in Table 12.

Water was available to fill the demands of all priorities on Rader Creek until about July 5. By August 5, the water supply had failed so that about 2 per cent of third priority allotments was available, which is a very good supply for that time of year.

On May 20, the McCulley-Hudspeth Ditch was opened and regulated to divert one-seventh of the flow of the creek at the point of diversion. The amount diverted into the ditch on said date was 2.2 c.f.s. The ditch was closed July 23 when the water failed to reach the place of use. On August 14, the main creek below the concrete division structure, consisting of four Parshall Measuring Flumes, was closed off for the season and Powers' water was delivered by way of the Powers-Miura Ditch.

Stock water was available throughout the season for Woodruff, Minto, Powers, and Miura.

Hay crops were good on all ranches and Mr. Minto harvested a very good alfalfa seed crop this fall.

Eagle Creek

Regulation of the ditches diverting from Eagle Creek was made in accordance with the allotments and priorities set forth in the decree in the case of Harris v. Adams, No. 3284, Superior Court, Modoc County, dated November 5, 1937. The amounts of water available for distribution were determined from measurements taken at the measuring station on Eagle Creek. The record of daily discharge at this station for the 1942 season

is shown in Table 13. A record of daily discharge above all diversions has been compiled by adding the quantities diverted above the measuring station to the amounts shown in Table 13. This compilation is submitted in Table 14.

The flow of Eagle Creek was low until May 20, when the high snow began melting due to warm weather. Prior to that date only a partial supply of water was available for third priority rights, but with continued warm weather all priorities were receiving full allotments by June 1. This condition prevailed until July 14. During April, the flow was very uneven, requiring almost daily regulation of third priority allotments.

The amount of water available to the Town Users through the Gee and Grider Ditches was sufficient throughout the season so that rotation was unnecessary between the Town Users, except as provided for in the decree. Copies of the schedules used when rotation is practiced are included in the "Report on Water Master Service, Surprise Valley Water Master District, 1940 Season".

The channel of Eagle Creek was cleaned for a distance of about 1,000 feet downstream from Old Channel, Diversion 8, sometimes called Murphy Ditch.

The E. B. Woodruff Ranch made no diversion from Eagle Creek during the 1942 season.

Emerson Creek

The ditches diverting from Emerson Creek were regulated in accordance with the allotments and priorities set forth in the decree in the case of Murphy v. Warren, No. 2840, Superior Court, Modoc County, dated March 25, 1930. The amounts of water available for distribution were determined from measurements taken at the measuring station on Emerson Creek.

The record of daily discharge at this station for 1942 is submitted in Table 15.

Water was available for all users from Emerson Creek for varying periods during the season. The highest flow occurred during the period from May 20 to 29, when the owners of fourth priority water rights were able to divert water. Third priority rights were supplied full allotments until June 15. The second priority rights were able to divert 100 per cent allotments until June 25 and partial allotments up to September 6. The first priority rights received full allotments throughout the season, except for a short period about August 25 when only 68 per cent of allotments was available. This represented the minimum delivery for the season. Sufficient water was available at all times to satisfy garden and stock-watering demands.

The operators on the Brown and Warrens ranches rotated in the use of their combined allotments during the irrigation season. The rotation was handled by these parties under the direction of the water master.

OWNERSHIP OF LANDS AND WATER RIGHTS WITHIN SURPRISE VALLEY WATER MASTER DISTRICT

Changes in Ownership

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for Surprise Valley Water Master District, County of Modoc, State of California for 1942" and which shall be included in the statement for said water master district for 1943, are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1942 Statement	Name of Water Right Owner to appear in 1943 Statement	Amount of water c.f.s.
12	Estate of Simon Bennett	Bide and Winnie Steward Lake City, California	* 1.67
18	Estate of Simon Bennett	Kennon and Ruth Heard Lake City, California	* 0.88
37	Estate of W. A. Odbert	W. A. Odbert, Jr.; W. R. Odbert; Lenore Parman; and Mrs. Jimmie Hill Lake City, California	0.16
58	Candice Irene Reynolds	Clarence E. and Emma Lucille Stopp, Lake City, California	0.30
69 & 73	Raymond and Stella Hill	Daniel Elmer and Buck M. Hill and Ervin E. and Marian Hill Cedarville, California	1.80
75	J. W. and Marjorie M. Cramton	Arnold A. and Charlotte M. Meyer, Cedarville, California	0.08
79	Marion W. Rinehart	Alex C. and Dorothy H. Ash Cedarville, California	2.50
84	Estate of H. E. Rinehart	Eva M. Rinehart Cedarville, California	0.80
90	Koenig Bros.	Ivan Robert Baty Cedarville, California	0.50
91	L. E. McCulley	Paul J. and Adele Balog and Erwin and Alice Trich Cedarville, California	5.00
109	W. I. and Mayme F. Allen	Sylvester E. Allen Cedarville, California	2.47
112	Estate of Mary Wade	Mary E. Street Cedarville, California	1.81
114	Estate of Walter M. Malitz	Harold R. and Abraham L. Malitz Cedarville, California	0.43

Tract No.	Name of Water Right Owner Appearing in 1942 Statement	Name of Water Right Owner to appear in 1943 Statement	Amount of water c.f.s.
117	Estate of Walter M. Malitz	Harold R. and Abraham L. Malitz Cedarville, California	1.07
133	David H. Grove, Sr.	W. Cockrell Eagleville, California	0.08
166	Charlie Lee Pabst	Ernest B. and Irene H. Grove Eagleville, California	4.40
173	Annie Connolly	J. R. and C. P. Morgan Eagleville, California	0.36

* The land and water rights of the Estate of Simon Bennett appurtenant to Tracts 12 and 18 have been divided as follows:

Total water right

Soldier Creek	2.15 c.f.s.
Mill Creek	0.40 c.f.s.
Total	2.55 c.f.s.

Division

Tract 12 - Bide and Winnie Steward

Soldier Creek	1.27 c.f.s.
Mill Creek	0.40 c.f.s.

Tract 18 - Kennon and Ruth Heard

Soldier Creek	0.88 c.f.s.

Names of Current Owners

Corrected to show the above changes, the name of the current owner of each property tract and appurtenant water right, as of September 30, 1942, embraced within the Surprise Valley Water Master District is set forth in Table 16, submitted at the end of this report.

TABLE 1

PRECIPITATION AT CEDARVILLE, CALIFORNIA, 1894-1942, ELEVATION 4,675 FEET

Monthly, Seasonal and Average Amounts in Inches

Season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Seasonal
1941-1942	.34	1.38	1.50	2.79	.58	1.29	.43	1.35	1.40	.73	.00	.16	11.95
Mean 1894-1942	.54	1.03	1.50	1.40	1.74	1.51	1.47	.91	.92	.67	.21	.16	12.14
1941-1942 in percent of total mean	2.8	11.4	12.3	23.0	4.8	10.6	3.5	11.1	11.5	6.0	.0	1.3	98.3

Note: See Surprise Valley Water Master Report for 1940 and Soldier Creek reports prior to 1940 for previous records.

TABLE 3

Daily Discharge in Cubic Feet per Second

MILL CREEK ABOVE DIVERSIONS

April 5 to September 30, 1942

Day	April	May	June	July	Aug.	Sept.
1		25.5	34.0	19.0	5.0	3.4
2		25.0	36.5	18.0	4.7	3.4
3		26.4	46.0	18.5	4.6	3.4
4		27.0	46.0	18.0	4.2	3.4
5	19.0	27.8	44.0	17.4	4.1	3.6
6	18.9	30.0	42.0	16.2	4.1	3.6
7	20.0	38.0	42.0	15.8	3.9	3.4
8	26.0	43.0	42.0	14.6	3.6	3.4
9	29.0	43.0	37.0	13.6	3.6	3.9
10	42.0	40.0	36.5	13.6	4.1	4.1
11	41.0	38.0	34.0	14.0	4.1	3.4
12	42.0	34.0	28.4	13.0	3.9	3.4
13	41.0	30.0	25.0	12.5	4.1	3.4
14	38.0	30.0	24.0	12.0	3.9	3.6
15	34.0	31.0	24.0	11.5	3.9	3.4
16	31.0	32.0	24.0	10.5	3.9	3.4
17	28.0	31.0	24.0	10.5	3.9	3.4
18	23.0	34.0	24.0	10.0	3.9	3.2
19	24.0	40.0	24.0	9.8	3.9	3.2
20	28.0	46.0	24.0	9.2	3.8	3.2
21	34.0	46.0	24.0	8.4	3.8	3.2
22	29.0	46.0	24.0	7.8	3.8	3.0
23	43.0	46.0	24.0	6.8	3.6	3.0
24	37.0	46.0	24.0	6.5	3.6	3.0
25	34.0	46.0	23.0	6.2	3.4	3.2
26	31.0	46.0	21.6	5.8	3.4	3.2
27	28.0	50.0	20.8	5.8	3.6	3.2
28	27.0	50.0	20.8	5.5	3.6	3.0
29	27.0	46.0	20.8	5.3	3.6	3.0
30	26.4	43.0	20.8	5.0	3.4	3.0
31		42.0		5.3	3.4	
Total	* 801.3	1178.7	885.2	346.1	120.4	100.0
Mean	* 26.7	38.0	29.5	11.2	38.8	3.3
Runoff in Acre-feet	* 1590	2340	1750	686	239	198

Total run-off 179 day period 6800 acre-feet

* 26 day period

TABLE 4

Daily Discharge in Cubic Feet per Second

SOLDIER CREEK ABOVE DIVERSIONS

March 18 to September 30, 1942

Day	March	April	May	June	July	Aug.	Sept.
1		18.5	14.4	24.2	6.2	1.8	1.4
2		21.0	14.4	28.0	5.5	1.9	1.4
3		24.0	14.4	34.0	5.2	1.9	1.4
4		20.0	15.1	32.5	4.9	1.9	1.4
5		18.7	19.2	30.4	4.6	1.8	1.4
6		20.0	22.4	28.0	4.3	1.8	1.4
7		24.0	34.0	24.4	4.0	1.7	1.3
8		24.0	34.0	24.4	3.8	1.7	1.5
9		24.0	30.0	21.5	3.5	1.6	1.6
10		40.0	24.8	20.0	3.3	1.7	1.6
11		31.5	22.1	18.0	3.3	1.7	1.6
12		33.0	20.0	16.5	3.1	1.7	1.5
13		29.0	20.0	16.5	3.1	1.6	1.4
14		22.5	24.0	16.0	2.9	1.6	1.4
15		20.5	24.8	15.4	2.9	1.6	1.4
16		19.0	24.0	14.0	2.9	1.6	1.4
17		16.5	24.0	12.8	2.9	1.6	1.4
18	9.0	16.0	30.0	11.4	2.6	1.5	1.4
19	9.0	20.0	34.0	10.6	2.6	1.5	1.4
20	9.0	25.0	32.5	9.4	2.5	1.4	1.4
21	9.0	31.5	31.4	9.0	2.3	1.4	1.3
22	9.0	27.0	30.1	8.1	2.5	1.4	1.3
23	8.8	22.5	29.2	7.9	2.3	1.4	1.3
24	8.4	20.0	28.0	7.7	2.1	1.5	1.3
25	8.4	16.5	32.5	11.6	2.0	1.5	1.3
26	8.6	16.5	26.8	13.2	2.0	1.5	1.3
27	8.8	16.4	25.2	9.4	2.0	1.6	1.3
28	9.0	16.4	28.0	7.4	1.9	1.6	1.3
29	13.0	19.2	27.0	6.9	1.9	1.6	1.3
30	18.0	16.4	24.8	6.2	1.8	1.5	1.4
31	18.0		24.0		1.8	1.4	
Total	* 146.0	669.6	785.1	495.4	96.7	50.0	41.8
Mean	* 10.4	22.3	25.3	16.5	3.1	1.6	1.4
Runoff in Acre-feet	290	1330	1560	983	192	99.2	82.9

Total run-off 191 day period 4540 acre-feet

* 14 day period

TABLE 5

Dailry Discharge in Cubic Feet Per Second

PINE CREEK
ABOVE NORTH AND SOUTH CHANNELS

March 19 to September 30, 1942

Day	March	April	May	June
1		8.5	11.0	5.7
2		10.0	13.2	5.4
3		10.7	15.0	6.6
4		13.4	9.1	5.4
5		12.0	10.4	4.7
6		13.1	10.2	4.1
7		12.4	11.0	3.8
8		20.0	10.4	3.2
9		24.0	7.5	2.8
10		22.4	7.2	2.5
11		24.8	6.6	2.2
12		48.0	6.6	1.8
13		37.2	7.5	1.6
14		16.0	7.7	1.5
15		14.0	8.1	1.0
16		15.0	13.2	
17		13.0	13.2	
18		14.3	13.2	
19	2.6	15.8	13.2	
20	2.5	18.2	13.2	
21	2.9	20.4	12.4	
22	2.9	20.8	7.7	
23	2.9	16.2	7.2	
24	2.9	13.2	5.9	
25	2.9	10.4	5.7	
26	2.8	10.0	5.7	
27	3.1	9.4	5.2	
28	3.6	9.4	7.0	
29	4.1	12.2	7.5	
30	5.4	11.4	6.1	
31	7.7		5.6	
Total	*46.3	496.2	283.5	**52.3
Mean	3.5	16.5	10.9	** 3.5
Run-off in Acre-feet	91.8	984	562	**104

Total run-off 85 day period 1740 acre-feet
* 13 day period
** 15 day period

TABLE 6

Daily Discharge in Cubic Feet per Second

CEDAR CREEK ABOVE DIVERSIONS

April 1 to September 30, 1942

Day	April	May	June	July	August	September
1	17.0	16.5	24.0	4.7	1.6	1.3
2	17.0	15.6	24.0	4.2	1.6	1.2
3	18.0	17.0	24.5	4.0	1.6	1.1
4	23.5	23.3	20.2	3.8	1.6	1.1
5	20.0	25.0	18.4	3.6	1.5	1.1
6	21.0	25.0	18.0	3.8	1.5	1.1
7	24.0	25.0	16.6	3.6	1.4	1.1
8	30.0	25.0	14.0	3.3	1.4	1.1
9	33.5	25.0	13.0	3.4	1.3	1.1
10	50.0	25.0	10.8	3.3	1.2	1.2
11	38.8	24.0	9.7	3.2	1.3	1.3
12	45.0	25.0	8.4	3.0	1.3	1.1
13	38.0	28.0	8.4	2.8	1.3	1.1
14	33.5	33.0	8.4	2.7	1.3	1.1
15	25.5	40.0	8.0	2.6	1.2	1.1
16	21.5	39.0	7.4	2.6	1.1	1.1
17	18.0	34.0	7.2	2.6	1.1	1.2
18	17.0	28.4	6.4	2.5	1.1	1.1
19	17.0	26.0	6.0	2.4	1.0	1.1
20	17.0	26.0	5.8	2.4	1.0	1.1
21	18.0	28.0	5.6	2.2	1.1	1.1
22	18.0	28.1	5.4	2.1	1.1	1.2
23	19.5	25.0	5.6	2.0	1.2	1.1
24	19.5	21.2	5.6	2.0	1.1	1.1
25	19.5	28.4	7.4	2.0	1.0	1.1
26	19.5	21.2	7.9	2.0	0.9	1.1
27	19.5	22.0	6.6	2.0	1.0	1.0
28	15.5	23.3	5.8	1.9	1.1	1.0
29	15.6	24.0	5.2	1.7	1.2	1.0
30	16.5	27.0	4.7	1.6	1.1	1.0
31		25.0		1.6	1.2	
Total	706.4	799.0	319.0	85.6	38.4	33.4
Mean	23.5	25.8	10.6	2.8	1.2	1.1
Run-off in acre-feet	1400.	1590	633	170	76	66

Total run-off 179 day period 3930 acre-feet

TABLE 7

Daily Discharge in Cubic Feet per Second

NORTH DEEP CREEK ABOVE DIVERSIONS

April 1 to September 30, 1942

Day	April	May	June	July	August	September
1	5.0	6.0	7.4	2.0	.6	.5
2	5.5	6.0	7.6	2.0	.7	.5
3	6.0	6.0	8.2	2.0	.7	.4
4	6.6	9.2	8.2	1.8	.7	.4
5	6.0	8.2	8.2	1.7	.7	.4
6	6.6	8.2	7.4	1.5	.7	.3
7	7.0	8.6	6.5	1.4	.7	.3
8	7.4	9.8	6.0	1.4	.7	.4
9	8.4	10.2	6.0	1.5	.7	.4
10	11.0	9.2	5.2	1.5	.6	.4
11	11.0	8.6	4.8	1.5	.6	.5
12	11.4	8.2	4.4	1.5	.6	.5
13	12.8	7.8	4.4	1.4	.6	.5
14	10.4	8.2	4.4	1.4	.7	.5
15	7.8	9.2	4.8	1.2	.6	.5
16	7.4	8.6	4.4	1.2	.6	.5
17	7.0	7.8	3.6	1.4	.6	.5
18	6.6	7.4	3.3	1.4	.6	.5
19	6.0	8.2	2.8	1.2	.5	.5
20	6.6	10.8	2.6	1.1	.5	.5
21	7.8	15.0	2.4	1.0	.5	.5
22	9.2	15.0	2.4	0.8	.5	.5
23	7.8	15.0	2.5	.7	.5	.5
24	6.6	14.2	2.6	.6	.5	.6
25	6.0	14.2	2.8	.5	.5	.6
26	5.7	10.8	2.8	.5	.5	.6
27	5.3	9.2	2.6	.5	.6	.7
28	4.9	9.8	2.0	.5	.6	.6
29	5.2	8.6	1.7	.6	.6	.6
30	5.6	8.2	1.9	.6	.6	.6
31		7.4		.6	.6	
Total	220.6	293.6	133.9	37.0	18.7	14.8
Mean	7.4	9.5	1.5	1.2	.6	.5
Run-off in acre-feet	437	582	266	73.4	37.1	29.3

Total run-off 183 day period 1420 acre-feet

TABLE 8

Daily Discharge in Cubic Feet per Second

SOUTH DEEP CREEK BELOW ESPIL DITCH

April 1 to September 30, 1942

Day	April	May	June	July	August	September
1	9.5	12.6	14.2	2.4	0.6	.6
2	11.5	12.6	13.6	2.1	.6	.5
3	13.6	13.4	14.0	2.0	.7	.5
4	14.6	14.8	13.6	1.9	.7	.5
5	12.3	14.0	13.2	1.8	.7	.5
6	12.2	13.6	13.0	1.6	.7	.6
7	13.2	14.4	12.6	1.5	.7	.6
8	14.0	14.8	11.4	1.4	.6	.6
9	19.0	14.8	10.3	1.3	.6	.6
10	21.0	14.0	9.2	1.2	.7	.6
11	21.0	13.0	9.0	1.2	.6	.6
12	21.0	13.0	8.7	1.2	.6	.6
13	21.0	12.0	8.7	1.2	.6	.6
14	19.0	13.0	8.2	1.1	.6	.6
15	16.8	15.2	7.5	1.0	.6	.5
16	14.8	15.5	6.8	1.0	.6	.5
17	13.0	14.4	6.3	1.1	.6	.5
18	11.8	14.0	6.3	1.0	.6	.5
19	12.2	14.0	6.3	1.0	.6	.5
20	13.2	14.4	6.3	.9	.5	.5
21	14.8	14.8	6.3	.9	.6	.5
22	14.8	14.8	6.3	.9	.5	.4
23	12.9	15.2	4.5	.8	.5	.4
24	11.2	15.2	3.5	.8	.5	.4
25	11.5	15.2	4.5	.8	.5	.4
26	11.5	15.5	5.0	.8	.5	.4
27	11.5	15.2	4.1	.7	.6	.4
28	9.2	15.2	3.2	.7	.6	.4
29	13.0	16.8	2.8	.6	.6	.4
30	13.0	16.0	2.6	.6	.6	.4
31		15.2		.6	.6	
Total	428.1	446.6	242.0	36.1	18.6	15.1
Mean	14.3	14.4	8.1	1.2	0.6	0.6
Run-off in acre-feet	849	886	480	71.6	36.9	29.9

Total run-off 183 day period 2350 acre-feet

TABLE 9

Daily Discharge in Cubic Feet per Second

NORTH AND SOUTH DEEP CREEK ABOVE DIVERSIONS

April 1 to September 30, 1942

Day	April	May	June	July	August	September
1	14.5	18.6	22.6	4.4	1.2	1.1
2	17.0	18.6	22.2	4.1	1.3	1.0
3	19.6	19.4	23.2	4.0	1.4	.9
4	21.2	24.0	22.8	3.7	1.4	.9
5	18.3	22.2	22.4	3.5	1.4	.9
6	18.8	21.8	20.4	3.1	1.4	.9
7	20.2	23.0	19.1	2.9	1.4	.9
8	21.4	24.6	17.4	2.8	1.3	1.0
9	27.4	25.0	16.3	2.8	1.3	1.0
10	32.0	23.2	14.4	2.7	1.3	1.0
11	32.0	21.6	13.8	2.7	1.2	1.1
12	32.4	21.2	13.1	2.7	1.2	1.1
13	33.8	19.8	13.1	2.6	1.2	1.1
14	29.4	21.2	12.6	2.5	1.3	1.1
15	24.6	24.4	12.3	2.2	1.2	1.0
16	22.2	24.1	11.2	2.2	1.1	1.0
17	20.0	22.2	9.9	2.5	1.2	1.0
18	18.4	21.4	9.6	2.4	1.2	1.0
19	18.2	22.2	9.1	2.2	1.1	1.0
20	19.8	26.2	8.9	2.0	1.0	1.0
21	22.6	30.8	8.7	1.9	1.1	1.0
22	24.0	30.8	8.7	1.7	1.0	.9
23	30.7	31.2	7.0	1.5	1.0	.9
24	17.8	30.4	6.1	1.4	1.0	1.0
25	17.5	30.4	7.3	1.3	1.0	1.0
26	17.2	27.3	7.8	1.3	1.0	1.0
27	16.8	25.4	6.7	1.2	1.2	1.1
28	14.1	26.0	5.2	1.2	1.2	1.0
29	18.2	26.4	4.5	1.2	1.2	1.0
30	18.6	25.2	4.5	1.2	1.2	1.0
31		23.6		1.2	1.2	
Total	658.7	752.2	380.9	73.1	37.2	29.9
Mean	21.9	24.2	12.7	2.4	1.2	1.0
Run-off in Acre-feet	1310	1490	755	145	73.6	59.3

Total run-off 183 day period 3830 acre-feet

TABLE 10

Daily Discharge in Cubic Feet per Second

OWL CREEK BELOW ALLEN-ARRECHE DITCH

April 1 to September 30, 1942

Day	April	May	June	July	Aug.	Sept.
1	25.0	16.4	31.2	33.0	6.4	3.3
2	25.0	15.5	35.0	32.8	5.8	3.2
3	25.0	15.0	44.2	31.2	5.4	3.0
4	18.0	15.0	42.4	30.4	5.4	2.8
5	6.8	15.5	47.0	29.8	5.2	2.8
6	6.8	19.5	47.5	27.2	5.0	2.8
7	8.5	26.0	47.0	24.4	4.8	2.8
8	28.0	29.0	47.5	22.0	4.8	2.8
9	29.0	29.8	50.0	19.5	4.6	2.8
10	36.0	26.6	49.4	19.0	4.6	2.8
11	35.0	25.0	48.6	17.8	4.4	2.8
12	33.0	23.5	47.8	15.4	4.2	3.0
13	32.0	22.8	47.5	13.0	4.0	2.7
14	31.0	22.0	47.8	11.0	4.0	2.6
15	30.0	23.5	47.8	10.8	3.7	2.6
16	29.0	26.0	47.8	10.8	3.7	2.5
17	28.0	23.5	47.8	10.3	3.5	2.2
18	26.6	26.0	47.8	9.2	3.4	2.8
19	29.0	32.0	41.8	8.7	3.3	2.7
20	32.5	37.2	38.5	8.4	3.4	2.6
21	36.6	38.8	38.4	7.7	3.5	2.6
22	36.0	45.0	38.4	7.5	3.5	2.6
23	31.8	44.0	37.2	7.5	3.4	2.2
24	31.0	45.0	37.2	8.4	3.3	2.2
25	31.0	45.0	36.6	7.7	3.4	2.2
26	27.0	39.6	36.6	7.5	3.4	2.3
27	25.0	38.8	35.6	7.0	4.0	2.3
28	23.0	37.2	35.0	6.5	3.9	2.3
29	22.0	35.8	34.2	6.4	3.9	2.4
30	19.5	18.3	33.6	6.5	3.7	2.4
31		29.8		6.5	3.4	
Total	795.1	887.1	1257.2	463.9	129.0	79.1
Mean	26.5	28.6	42.2	14.9	4.2	2.6
Runoff in Acre-feet	1580	1760	2510	920	256	157

Total run-off 183 day period 7180 acre-feet

TABLE 11

Daily Discharge in Cubic Feet per Second

RADER CREEK ABOVE PARSHALL FLUME DIVISION STRUCTURE

April 1 to September 30, 1942

Day	April	May	June	July	Aug.	Sept.
1	2.7	6.7	15.5	18.5	1.7	0.5
2	2.9	6.3	16.0	18.0	1.6	.5
3	3.6	5.9	18.5	17.5	1.8	.5
4	3.6	5.5	21.5	16.8	1.7	.5
5	3.6	5.2	26.0	16.0	1.5	.5
6	3.6	5.9	30.0	14.9	1.7	.5
7	3.8	7.2	30.5	13.0	1.7	.5
8	4.8	8.5	31.5	11.0	1.7	.5
9	5.2	9.0	30.0	10.0	1.7	.5
10	6.0	9.0	26.5	9.5	1.1	.6
11	7.0	8.5	25.0	8.40	1.2	.6
12	8.0	8.0	24.1	7.10	1.2	.5
13	9.0	8.0	23.3	6.30	1.1	.5
14	10.0	8.0	24.1	5.50	.8	.4
15	9.5	8.0	26.0	5.30	.8	.3
16	9.0	7.5	26.0	5.00	.8	.3
17	8.0	7.2	23.3	4.60	.7	.3
18	7.0	8.0	24.1	4.00	.6	.3
19	8.0	10.4	23.3	3.60	.7	.3
20	9.0	12.5	23.4	3.10	.9	.3
21	10.5	16.0	22.5	2.90	.7	.3
22	10.0	21.0	21.5	2.70	.6	.3
23	9.5	22.5	22.5	3.30	.5	.3
24	9.0	26.5	25.5	3.10	.5	.3
25	8.5	26.5	23.4	2.90	.5	.3
26	8.5	22.5	20.0	2.70	.5	.3
27	8.0	20.0	19.1	2.50	.7	.3
28	8.0	18.5	19.1	2.40	.7	.3
29	7.5	16.5	18.5	2.40	.9	.3
30	7.2	16.0	18.5	2.20	.8	.3
31		16.0		2.00	.7	
Total	211.0	377.3	699.2	227.20	32.1	11.9
Mean	7.0	12.2	23.3	7.32	1.0	0.4
Runoff in Acre-feet	418	748	1390	450	63.5	23.6

Total run-off 183 day period 3090 acre-feet

TABLE 12

Daily Discharge in Cubic Feet per Second

RADER CREEK ABOVE DIVERSIONS

April 1 to September 30, 1942

Day	April	May	June	July	Aug.	Sept.
1	3.2	7.2	18.7	22.2	2.2	1.0
2	3.4	6.8	19.3	21.6	2.1	.8
3	4.1	6.4	22.2	21.0	2.3	.8
4	4.1	6.0	25.6	20.2	2.2	.8
5	4.1	5.7	30.9	19.5	2.0	.8
6	4.1	6.4	35.6	18.0	2.2	.8
7	4.3	7.7	36.2	15.5	2.2	.8
8	5.3	9.0	37.4	13.4	2.2	.8
9	5.7	9.5	35.6	12.5	2.2	.8
10	6.5	9.5	28.2	11.7	1.6	.9
11	7.5	9.0	29.8	10.3	1.7	.9
12	8.5	8.5	28.7	9.8	1.7	.8
13	9.5	8.5	27.8	7.9	1.6	.8
14	10.5	8.5	28.7	7.0	1.3	.7
15	10.0	8.5	30.9	6.8	1.3	.6
16	9.5	8.0	30.9	6.4	1.3	.6
17	8.5	7.7	27.8	6.0	1.2	.6
18	7.5	8.5	28.8	5.3	1.1	.6
19	8.5	10.9	27.8	4.8	1.2	.6
20	9.5	13.0	27.9	4.2	1.4	.6
21	11.0	19.5	26.8	4.0	1.2	.6
22	10.5	25.1	25.6	3.6	1.1	.6
23	10.0	26.8	26.8	3.8	1.0	.6
24	9.5	31.5	30.4	3.6	1.0	.6
25	9.0	31.5	27.9	3.4	1.0	.6
26	9.0	26.8	23.9	3.2	1.0	.6
27	8.5	24.0	22.8	3.0	1.2	.6
28	8.5	22.2	22.8	2.9	1.2	.6
29	8.0	19.8	22.2	2.9	1.4	.6
30	7.7	19.3	22.2	2.7	1.3	.6
31		19.3		2.5	1.2	
Total	226.0	431.1	830.2	279.7	47.6	21.1
Mean	7.5	13.9	27.6	9.0	1.5	0.7
Runoff in Acre-feet	448	855	1650	555	94.2	41.9

Total run-off 183 day period 3640 acre-feet

TABLE 13

Daily Discharge in Cubic Feet per Second

EAGLE CREEK ONE-HALF MILE BELOW MOUTH OF CANYON

April 1 to September 30, 1942

Day	April	May	June	July	Aug.	Sept.
1	8.0	12.8	18.6	46.0	14.2	4.1
2	9.3	12.2	19.6	46.0	13.0	4.1
3	10.2	11.8	22.4	44.0	9.3	4.1
4	9.3	11.2	26.6	44.0	9.3	4.1
5	8.4	11.8	31.0	44.0	8.7	3.9
6	8.8	14.0	46.0	39.0	8.4	3.8
7	8.8	17.8	45.0	38.0	7.9	3.5
8	11.8	20.4	31.0	36.0	6.4	3.8
9	13.2	22.3	45.0	36.0	6.1	4.1
10	16.2	20.2	50.0	34.0	6.0	4.1
11	18.6	17.8	50.0	33.0	5.6	4.1
12	23.2	16.2	55.0	29.0	5.6	3.8
13	23.2	15.2	60.0	25.0	5.2	3.5
14	18.6	15.2	64.0	23.0	5.2	3.5
15	15.6	15.0	70.0	21.0	5.2	3.5
16	14.6	15.2	66.0	21.0	5.2	3.5
17	13.4	14.6	58.0	20.0	4.8	3.5
18	12.8	17.8	58.0	18.0	4.4	3.0
19	14.6	15.2	55.0	17.0	4.4	3.0
20	15.6	16.2	51.0	17.0	4.4	3.0
21	21.4	17.8	51.0	17.0	4.3	3.0
22	21.4	18.6	51.0	16.8	4.4	3.0
23	18.6	19.4	55.0	16.8	4.4	3.0
24	17.0	21.3	58.0	15.6	4.4	3.0
25	16.2	28.0	59.0	15.0	4.4	3.0
26	15.6	29.2	55.0	15.0	4.4	3.0
27	15.1	28.0	50.0	15.0	5.2	3.0
28	14.4	23.4	40.0	15.6	5.2	3.0
29	14.6	18.7	31.0	15.6	4.8	3.0
30	13.4	17.8	45.0	15.0	4.4	3.0
		17.0		14.2	4.3	
Total	441.9	552.1	1417.2	802.6	189.5	104.0
Mean	14.7	17.8	47.2	25.9	61.0	3.5
Runoff in Acre-feet	876.	1100.	2810.	1590.	376.	206.

Total run-off 183 day period 6960 acre-feet

TABLE 14

Daily Discharge in Cubic Feet per Second

EAGLE CREEK ABOVE DIVERSIONS

April 1 to September 30,1942

Day	April	May	June	July	Aug.	Sept.
1	9.7	14.5	20.3	47.7	15.8	4.6
2	11.0	13.9	21.3	47.7	14.6	4.6
3	11.9	13.5	24.1	45.7	10.4	4.6
4	11.0	12.9	28.3	45.7	10.4	4.6
5	10.1	13.3	32.7	45.7	9.8	4.4
6	10.5	15.7	47.7	40.7	9.5	4.3
7	10.5	19.5	46.7	39.7	9.0	4.0
8	13.5	22.1	32.7	37.7	7.5	4.3
9	14.9	24.0	46.7	37.7	6.7	4.6
10	17.9	21.9	51.7	35.7	6.6	4.6
11	20.3	19.5	51.7	34.7	6.2	4.6
12	24.5	17.9	56.7	30.7	6.2	4.3
13	24.9	16.9	61.7	26.1	5.7	4.0
14	20.3	16.9	65.8	24.1	5.7	4.0
15	18.3	16.7	71.8	22.1	5.7	4.0
16	16.3	16.9	67.8	22.1	5.7	4.0
17	15.1	15.3	59.8	21.1	5.3	4.0
18	14.5	19.5	59.8	19.1	4.9	3.5
19	16.3	16.9	56.7	18.1	4.9	3.5
20	17.3	17.9	52.7	18.1	4.9	3.5
21	23.1	19.5	52.7	18.1	4.8	3.5
22	23.1	20.3	51.7	17.9	4.9	3.5
23	20.3	21.1	56.7	17.9	4.9	3.5
24	18.7	23.0	59.7	16.7	4.9	3.5
25	17.9	29.7	60.7	16.1	4.9	3.5
26	17.3	30.9	56.7	16.1	4.9	3.5
27	16.8	29.7	51.7	16.1	5.7	3.5
28	16.1	25.1	41.7	16.7	5.7	3.5
29	16.3	20.0	32.5	16.7	5.3	3.5
30	15.1	19.5	46.7	16.1	4.9	3.5
31		18.7		15.3	4.8	
Total	493.5	603.2	1467.5	843.9	211.2	119.0
Mean	16.4	19.4	22.4	27.2	6.8	4.0
Runoff in Acre-feet	979.	1200.	2910.	1670.	419.	236.

Total run-off 183 day period 7410 acre-feet

TABLE 15

Daily Discharge in Cubic Feet per Second

EMERSON CREEK ABOVE DIVERSIONS

April 1 to September 30, 1942

Day	April	May	June	July	Aug.	Sept.
1	9.8	13.8	22.4	10.6	3.2	3.0
2	9.8	13.8	21.7	10.6	3.2	2.8
3	10.2	13.8	21.0	9.8	3.3	2.6
4	10.2	12.9	21.0	9.1	3.3	2.4
5	9.8	13.2	21.8	8.6	3.3	2.5
6	10.2	15.0	24.8	8.0	3.1	2.3
7	11.0	16.8	23.4	7.8	3.0	2.2
8	13.2	16.8	22.4	7.4	2.8	2.2
9	14.0	18.1	21.4	7.4	3.1	2.2
10	16.2	17.6	23.8	8.0	3.1	2.4
11	18.5	17.2	23.8	7.4	3.1	2.6
12	20.8	15.9	23.0	7.1	3.0	2.4
13	21.4	15.4	21.4	6.9	2.8	2.2
14	20.8	15.4	19.6	6.2	2.8	2.2
15	19.4	15.8	20.0	6.0	3.3	2.1
16	18.8	15.9	19.0	5.6	3.1	2.4
17	18.5	16.2	18.2	5.6	3.1	2.6
18	17.5	17.2	19.6	5.2	3.0	2.3
19	17.0	18.1	18.6	4.7	2.8	2.3
20	17.5	21.4	17.2	5.2	2.6	2.2
21	18.5	25.8	15.9	4.7	2.6	2.1
22	18.5	28.4	14.6	4.4	2.8	2.1
23	17.5	28.4	14.2	4.2	2.6	2.0
24	16.2	29.6	13.7	4.0	2.4	2.0
25	15.7	28.4	13.7	3.7	2.4	2.0
26	14.8	28.0	12.9	3.5	2.4	2.0
27	14.4	26.8	12.4	3.7	3.0	2.0
28	14.0	25.3	11.7	3.7	2.8	2.0
29	15.7	23.0	11.3	3.5	3.3	2.0
30	14.0	22.4	11.3	3.5	3.3	2.4
		22.0		3.3	3.0	
Total	463.9	608.4	555.8	189.4	91.6	68.5
Mean	15.5	19.6	18.5	6.1	2.9	2.3
Runoff in Acre-feet	920.	1210.	1100.	376.	182.	136.

Total run-off 183 day period 3920 acre-feet