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, hereby submit the within contained report entitled "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1949 Season".

/s/ L. C. Jopson
Supervising Hydraulic Engineer

I, Gordon Zander, Principal Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, hereby approve the within contained report entitled "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1949 Season".

/s/ Gordon Zander
Principal Hydraulic Engineer

I, A. D. Edmonston, State Engineer and Chief of the Division of Water Resources, Department of Public Works of the State of California, hereby approve and adopt the within contained report entitled "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1949 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 MAY, 1951

DEPARTMENT OF PUBLIC WORKS

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

ORGANIZATION

C. H. Purcell . . . . . Director of Public Works

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

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Gordon Zander . . . Principal Hydraulic Engineer

This report was prepared under the direction of

L. C. JOPSON
Supervising Hydraulic Engineer

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INTRODUCTION

The Surprise Valley Watermaster Service Area as created January 10, 1939, and as supplemented and revised December 31, 1941, includes the water rights on Mill Creek, Soldier Creek, Pine Creek, Cedar Creek, Deep Creek, Owl Creek, Rader Creek, Eagle Creek and Emerson Creek in Surprise Valley. The titles and numbers of the various court decrees defining the various rights are set forth in "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1947 Season".

Distribution of water in accordance with Part 4, Division 2 of the Water Code was begun on March 19 and terminated on September 30. The service was administered by William G. Brigance, Deputy Watermaster, under the supervision of Leslie C. Jopson, Supervising Hydraulic Engineer.

WATER SUPPLY

Precipitation

Monthly and seasonal precipitation at the U. S. Weather Bureau Station at Cedarville, California is shown in Table 1. The total seasonal precipitation for the 1948-49 season was 95 per cent of normal.

Table 2 is a tabulation of the results of precipitation during the winter months as determined by water content of the existing snow on April 1. These data compiled from records of the California Cooperative Snow Surveys, shows the snowfall to be approximately 118 per cent of the computed 59-year normal.

Stream Flow

Stream flow measuring stations, equipped with automatic water stage recorders, were maintained on the various streams within the service area as follows:

Mill Creek above diversions - rated section.

Soldier Creek above diversions - rated section.

Pine Creek above North and South Channels - two 3-foot Parshall Flumes.

Cedar Creek above diversions - rated section.

North Deep Creek above diversions - rated section.

South Deep Creek below Espil Ditch - rated section.

Owl Creek below Allen-Arreche Ditch - rated section.

Rader Creek above Parshall Flume division structure - four Parshall Flumes.

Eagle Creek One-half mile below mouth of canyon - rated section.

Emerson Creek above diversions - rated section.

The records of daily discharge for these stations, with the exception of the Pine Creek station, are presented in Tables 3, 4, 6, 7, 8, 10, 11, 13, and 15. Table 5 is a record of the flow at the Pine Creek station plus diversions made above the station. Daily discharge records for Deep Creek are given in Table 9, which is the sum of Tables 7 and 8 plus the diversion of the Espil Ditch. Total daily discharge of Rader Creek above diversions is given in Table 12. Table 14 is a tabulation of the daily discharges of Eagle Creek above all diversions.

DISTRIBUTION OF WATER

Distribution on the various streams within the service area was in accordance with the allotments and priorities set forth in the respective decrees determining the rights thereon. The flows available for distribution from each stream were determined from the measured discharge at the respective measuring stations. A discussion of the distribution on the various streams in the service area follows.

Mill Creek

Prior to April 15, the available flow from Mill Creek was sufficient to supply only first, second, and a portion of third priority rights. After that date, there was a surplus of water until about June 3. Thereafter the flow diminished steadily until about August 1, when the available supply was sufficient to satisfy only first and second priority rights. By the end of September, diversions were limited to first priority allotments. The percentages of allotments delivered are presented in the following tabulation:

MILL CREEK

Priority	Percentages of Allotments Delivered					
	April	May	June	July	August	September
1st	100	100	100	100	100	98
2nd	100	100	100	98	59	24
3rd	84	91	63	5	0	0
4th	53	73	17	0	0	0

Soldier Creek

First and second priority allotments utilized the entire flow of the creek until about April 1. From then until the middle of May there was sufficient flow to satisfy all allotments. Due to the normal decrease in stream flow, only first priority rights received water after the first of August. A tabulation of the percentages of allotments delivered to all priorities is shown in Table 16.

Pine Creek

There was insufficient water in Pine Creek on March 20 to start the rotation provided in the decree, and Edgar Harris and Robert McCulley were allowed to divert the entire flow until April 2. From that date until May 23 two rotation cycles were completed. Thereafter, Edgar Harris and Robert McCulley received all available water until June 9, at which time the flow was 1.6 c.f.s. W. S. Ausman diverted the entire flow for the remainder of the season.

Cedar Creek

The water supply of Cedar Creek was ample to satisfy all rights during the major portion of April. Thereafter the flow dropped, except for an eight day flush in the Middle of May, so that after June 14 only the first priority right received water.

The Thoms Creek Ditch was opened the first of May and diverted intermittently until the middle of June. Rediversion was made in accordance with existing ownership. The percentages of allotments delivered from Cedar Creek are presented in the following tabulation:

CEDAR CREEK

Priority	Percentages of Allotments Delivered					
	April	May	June	July	August	September
1st	100	100	87	27	9	7
2nd	87	78	14	0	0	0
3rd	57	25	0	0	0	0
4th	57	17	0	0	0	0

Deep Creek

During April and May, water was available for all priorities in varying amounts with some water wasting prior to May 1. An excess of water was present during most of April. Shortly after the first of June the entire discharge of Deep Creek was diverted by the upper ditches, with rotation becoming necessary on the Company Ditch about July 1. Deliveries during the 1949 irrigation season were as follows:

DEEP CREEK

Priority	Percentages of Allotments Delivered					
	April	May	June	July	August	September
1st	100	100	58	14	9	9
2nd	89	94	17	0	0	0
3rd	83	49	7	0	0	0
4th	73	26	3	0	0	0
5th	73	14	3	0	0	0

Owl Creek

The flow of Owl Creek increased from sufficient water to supply domestic and first two irrigation allotments on April 1 until the middle of April when there was a surplus above requirements which continued throughout May. After the first of June a steady decrease occurred until the middle of July. By the end of September only domestic water was available. The following tabulation gives the percentages of allotments delivered.

OWL CREEK

Priority	Percentages of Allotments Delivered					
	April	May	June	July	August	September
1st	100	100	100	100	100	100
2nd	100	100	100	100	100	100
3rd	100	100	100	100	100	100
4th	100	100	100	100	100	100
5th	100	100	100	100	100	100
6th	100	100	100	100	100	99
7th	100	100	100	100	94	78
8th	100	100	100	52	11	3
9th	93	100	100	15	6	0
10th	83	100	98	5	3	0
11th	78	100	93	1	3	0
12th	69	100	80	0	3	0
13th	58	100	67	0	2	0
14th	51	92	64	0	0	0
15th	43	85	61	0	0	0
16th	37	83	60	0	0	0
17th	30	80	53	0	0	0
18th	30	80	53	0	0	0
19th	11	74	36	0	0	0
20th	0	68	13	0	0	0
21st	0	68	7	0	0	0

Rader Creek

During the first five weeks of the season the flow of Rader Creek was sufficient to fill the first, second and portions of the third and fourth priority rights. After the first of May the flow increased, rising to a peak by the middle of the month at which time there was a surplus of water which continued until about June 1. Thereafter the flow decreased until after the first of August when water was available for only the first priority and a portion of the second priority rights.

The McCulley-Hudspeth Ditch was opened May 20 and was used continuously until the end of June after which time it remained closed for the remainder of the season.

The percentages of allotments delivered from Rader Creek are presented in the following tabulation:

RADER CREEK

Priority	Percentages of Allotments Delivered					
	April	May	June	July	August	September
1st	100	100	100	100	90	91
2nd	100	100	100	100	19	20
3rd	69	87	67	8	0	0
4th	10	64	22	0	0	0
5th	0	54	11	0	0	0
6th	0	46	2	0	0	0
7th	0	23	0	0	0	0

Eagle Creek

Prior to the middle of April there was less than 4.50 c.f.s. available from Eagle Creek for the third priority class rights. After April 15 the flow increased and all third priority owners thereafter participated in the use of water until the first of July. Fourth priority users received water during the major portion of the period prior to July 1. The flow decreased until by the first of September there was only sufficient water to supply first priority users.

The percentages of allotments delivered from Eagle Creek are presented in the following tabulation:

EAGLE CREEK

Priority	Percentages of Allotments Delivered					
	April	May	June	July	August	September
1st	100	100	100	100	96	80
2nd	80	100	100	98	18	0
3rd	49	85	80	15	0	0
4th	14	65	52	0	0	0

Emerson Creek

The flow of Emerson Creek was sufficient to fill only first and second priority rights prior to the middle of April. Except for about nine days in April, fourth priority users did not receive water until May 9. Subsequent to that date all priorities received water until the first of June, at which time the flow began a steady decline. After the middle of July only first priority rights were served. Deliveries during the 1949 irrigation season were as follows:

EMERSON CREEK

Priorities	Percentages of Allotments Delivered					
	April	May	June	July	August	September
1st	100	100	100	100	89	72
2nd	97	100	71	10	0	0
3rd	27	82	11	0	0	0
4th	16	53	1	0	0	0

CONTROVERSIES

Hays-Wilson Ditch

A controversy developed over the basis for the right of Marion Steward to maintain a pipe from the Hays-Wilson Ditch out of Rutherford Creek. Mr. Steward contends there was a written agreement between the previous owner of the ditch and himself granting the right for a fee of one dollar a year and containing a clause granting to him the sole right to terminate the contract.

Mr. Gorzell, the present owner, contends he has the right to terminate the contract and wishes to do so. It would appear the only hope of a settlement lies in litigation.

Heryford Ditch and Owl Creek

The annual floods on Owl Creek normally cause a one week interruption in delivery of water, create several days work for a bulldozer, and deposit large amounts of gravel on otherwise valuable land. The water right owners have under consideration a structure to control the high flows in order to protect themselves from the above damages. Inquiry is being made into sources of possible financial aid in the project.

During the high flow from Owl Creek, the Heryford Ditch filled with gravel, which necessitated cleaning the ditch. In the process of removing the gravel, Mr. Berryessa loosened the bottom seal and greatly increased the loss due to seepage. Therefore it was found that one cubic foot per second was needed in order to accomplish delivery of stockwater until such time as the ditch bottom reseals itself.

McCulley-Hudspeth Ditch

The controversy between W. H. Dollarhide and L. F. Cockrell outlined in "Report on Watermaster Service in Surprise Valley Watermaster Service Area, Modoc County, California, 1948 Season" over Mr. Dollarhide's use of the McCulley-Hudspeth Ditch from Rader Creek has been dissolved. W. H. Dollarhide rebuilt his dam and is now diverting through his own ditch.

RECOMMENDATIONS

In order to improve the efficiency of distribution new division structures are needed in the Company Ditch from Soldier Creek and the Sharp and Messier Ditch from South Deep Creek. New diversion structures are needed on the Company Ditch from Cedar Creek and on diversions from the lower portion of Eagle Creek.

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 Surprise Valley Watermaster Service Area, County of Modoc, State of California, for 1949", and which have been included in the 1950 statement for said service area, are listed in the following tabulation:

Tract	Name of Water Right Owner Appearing in 1949 Statement	Name of Water Right Owner as Changed in 1950 Statement	Amount of Water c.f.s.
3	Hobbs, Roy	Odbert, W. A. and Odbert, Josephine	1.00
41	Jones, Mary J.	Jones, Estate of Mary J.	0.08
51	Toney, George W. and Toney, Mary J.	Toney, Mervin R. and Heard, Minnie T.	1.16
62	Petterson, J. W. and Gardner, M. H.	Gardner, M. H. and Gardner, Mary	0.77
63	Petterson, J. W. and Gardner, M. H.	Gardner, M. H. and Gardner, Mary	0.87
76	Hill, W. E.	Hill, W. E. and Hill, Leila F.	2.45
85	Lane, Carl W. and Lane, Georgia E.	Hill, Daniel Elmer; Hill, Buela M.; Hill, Ervin E.; and Hill, Marian	3.00
87	Horton, Kenneth D. and Horton, Ruth A.	Larson, Stanley and Larson, Eunice	1.00
88	Horton, Kenneth D. and Horton, Ruth A.	Larson, Stanley and Larson, Eunice	0.90
94	Bordwell, W. B.	Bordwell, R. O.	0.85
95	Parke, H. E. and Parke, Ruth A.	Parke, H. E. and Parke, Estate of Ruth A.	0.80
96	Morrison, J. E. and Morrison, Daisy O.	Morrison, Estate of J. E. and Morrison, Daisy O.	2.08
124	Cockrell, Lewis F.	Cockrell, Lewis F. and Cockrell, Ferne E.	1.65
125	Cockrell, Lewis F.	Cockrell, Lewis F. and Cockrell, Ferne E.	1.35
133	Roberts, Reginald B. and Roberts, Hazel N.	Reeves, Robert R. and Reeves, Lucile M.	0.08
134	Sheftel, Jack and Nolan, Charles	Bare Ranch Cattle Company	2.35

Tract	Name of Water Right Owner Appearing in 1949 Statement	Name of Water Right Owner as Changed in 1950 Statement	Amount of Water c.f.s.
135	Sheftel, Jack and Nolan, Charles	Bare Ranch Cattle Company	1.00
136	Sheftel, Jack and Nolan, Charles	Bare Ranch Cattle Company	5.00
138	Ytzaina, Pete	Nolan, Charles A. and Nolan, Allie V.	0.18
151	Cambron, Jennie M. and Stevens, Frankie C.	Stevens, Frankie C. and Stevens, Charles	0.18
153	Millsap, Mrs. S. J.	Elliott, Harold E. and Elliott, Hazel	0.025
154	Slinkard, W. N. and Slinkard, Gertie	Dachner, Otto G. and Dachner, Charlotte	0.025
155	Elliott, Hazel	Elliott, Harold E. and Elliott, Hazel	0.025
163	Sheftel, Jack and Nolan, Charles	Bare Ranch Cattle Company	3.15
172	Cook, Ernest E. and Cook, Alta	Ward, Ray L. and Ward, M. Justine	0.60
175	Minto, Robert S.	Minto, Robert K. and Minto, Eldora G.	1.51
176	Cook, Ernest E. and Cook, Alta	Ward, Ray L. and Ward, M. Justine	2.00
185	Henderson, Grady W. and Henderson, Margie Lee	Sebastian, Tony and Sebastian, Marguerette	5.15

TABLE 1

PRECIPITATION AT CEDARVILLE, CALIFORNIA
Elevation 4,675 Feet

Month	Normal Precipitation Inches	Precipitation 1948-49 Inches	Per Cent of Mean
October	1.03	1.01	98
November	1.50	0.97	65
December	1.52	2.66	175
January	1.77	1.20	68
February	1.58	1.60	101
March	1.44	0.56	39
April	0.97	0.08	8
May	0.99	2.56	259
June	0.71	0.17	24
July	0.25	0.00	0
August	0.16	0.76	475
September	0.50	0.21	42
Total	12.42	11.78	95

Data compiled from records of U. S. Weather Bureau.

TABLE 2

SNOW SURVEY DATA - UPPER PIT RIVER AREA
April 1st Measurement

Year	Water Content of Snow - Inches			
	Eagle Peak Elev. 7,500	Blue Lake Ranch Elev. 7,300	Cedar Pass Elev. 7,200	Adin Mountain Elev. 6,500
1940	15.6	6.4	14.7	4.3
1941	13.8	8.4	17.9	11.3
1942	14.7	11.7	19.3	13.9
1943	23.7	15.3	25.8	13.2
1944	13.5	8.5	12.3	9.4
1945	22.2	15.8	22.4	15.8
1946	21.2	16.2	22.9	16.2
1947	6.4	5.3	10.3	4.4
1948	14.4	10.1	15.7	9.9
1949	19.1	16.7	22.0	16.9
Computed 59-year Normal	18.7	11.5	20.6	14.2
Per cent of Normal	102%	145%	107%	119%

Data compiled from records of California Cooperative Snow Surveys.

TABLE 3

Daily Discharge in Cubic Feet per Second
MILL CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	7.2	22	58	7.2	3.1	2.7
2	7.2	22	40	6.9	3.0	2.7
3	8.3	22	29	6.2	3.0	2.6
4	10.2	19.4	28	5.9	3.0	2.6
5	12.4	17.8	25	5.3	3.0	2.6
6	14.2	18.6	25	5.3	3.0	2.6
7	16.6	20	25	5.3	2.9	2.6
8	23	23	25	5.0	2.9	2.5
9	25	26	22	4.8	2.9	2.5
10	26	36	22	4.8	2.9	2.5
11	51	51	22	4.6	2.9	2.5
12	58	61	19.4	4.3	2.9	2.5
13	26	47	18.6	4.1	2.8	2.5
14	23	118	16.6	4.1	2.8	2.5
15	23	132	14.7	3.9	2.8	2.5
16	26	121	13.3	3.9	2.8	2.4
17	29	100	12.9	3.9	2.8	2.4
18	54	79	12.9	3.9	2.8	2.4
19	54	68	17.2	3.9	2.8	2.4
20	33	54	13.8	3.9	2.8	2.4
21	36	43	12.4	3.7	2.8	2.3
22	51	36	11.5	3.7	2.8	2.2
23	58	33	10.6	3.7	2.8	2.1
24	40	36	9.8	3.6	2.8	2.0
25	36	36	9.1	3.6	2.8	1.9
26	36	36	8.7	3.6	2.7	1.9
27	36	36	8.3	3.6	2.7	1.8
28	29	33	7.9	3.4	3.3	1.7
29	23	58	7.6	3.4	2.9	1.6
30	20	51	7.6	3.3	2.8	1.6
31		61		3.3	2.7	
Total Sec. Feet Days	892.1	1,516.8	553.9	136.1	89.0	69.5
Mean Sec. Ft.	30	49	18.5	4.4	2.9	2.3
Runoff in Ac. Ft.	1,770	3,010	1,100	270	177	138.

Total runoff of 183 day period - 6,460 acre-feet.

TABLE 4

Daily Discharge in Cubic Feet per Second
SOLDIER CREEK ABOVE DIVERSIONS
MARCH 19 TO SEPTEMBER 30, 1949

Day	March	April	May	June	July	August	September
1		3.8	22	17.1	2.9	1.2	1.0
2		4.3	20	11.9	2.7	1.2	1.0
3	NO	4.8	17.1	10.5	2.6	1.2	1.0
4		5.7	16.7	9.9	2.5	1.2	1.0
5		5.7	16.7	9.6	2.5	1.2	1.1
6		6.6	18.1	9.3	2.3	1.2	1.1
7		11.6	20	8.3	2.2	1.2	1.0
8		21	22	7.8	2.0	1.2	1.0
9		18.1	24	7.4	2.0	1.2	1.0
10		22	31	7.1	1.9	1.2	1.0
11		28	31	6.9	1.8	1.2	1.0
12	RECORD	34	29	6.5	1.7	1.2	1.0
13		28	31	6.3	1.6	1.2	1.0
14		25	33	6.1	1.6	1.2	.98
15		28	34	5.9	1.5	1.2	.98
16		34	25	5.7	1.5	1.2	1.0
17		35	21	5.4	1.5	1.2	1.0
18		41	18.1	5.4	1.5	1.2	1.0
19	2.2	41	18.6	8.0	1.5	1.2	1.0
20	2.2	38	18.1	7.0	1.5	1.1	.98
21	2.0	41	15.8	6.1	1.4	1.1	1.0
22	1.6	45	15.3	4.7	1.4	1.1	1.0
23	1.3	47	13.6	3.3	1.3	1.1	1.0
24	1.2	41	12.9	3.2	1.3	1.0	1.0
25	1.1	35	12.2	3.0	1.3	1.0	1.2
26	1.6	33	11.9	3.0	1.3	1.0	1.2
27	4.3	29	11.3	3.0	1.3	.98	1.3
28	4.0	25	10.5	3.2	1.3	1.5	1.4
29	4.0	19.7	12.2	3.3	1.2	1.2	1.4
30	3.8	16.7	12.2	3.0	1.2	1.1	1.4
31	3.4		15.8		1.2	1.1	
Total Sec. Feet Days	*32.7	768.0	610.1	197.9	53.5	36.08	32.04
Mean Sec. Ft.	*2.5	26	19.7	6.6	1.7	1.2	1.1
Runoff in Ac. Ft.	*64.9	1,520	1,210	393	106	71.6	63.6

* 13-Day Period
Total runoff of 196 day period - 3,430 acre-feet.

TABLE 5

Daily Discharge in Cubic Feet per Second
PINE CREEK ABOVE DIVERSIONS
MARCH 20 TO SEPTEMBER 30, 1949

Day	March	April	May	June	July	August	Sept.
1		3.6	7.2	5.9	0.28	0.07	0.05
2		4.1	7.5	4.1	.27	.07	.05
3		4.2	6.7	3.5	.25	.07	.05
4		5.7	7.0	2.8	.24	.07	.05
5		8.5	6.7	2.5	.20	.06	.06
6		11.7	6.4	2.4	.19	.06	.06
7	NO	15.2	6.4	2.3	.18	.06	.05
8		17.8	6.4	2.2	.17	.06	.05
9		21	5.9	1.8	.17	.05	.05
10		21	8.5	1.5	.16	.05	.05
11		28	10.0	1.3	.16	.05	.05
12		36	7.7	1.1	.15	.05	.05
13	RECORD	30	8.1	.96	.14	.04	.05
14		27	12.4	.90	.14	.04	.04
15		19.1	15.2	.84	.13	.04	.04
16		21	10.2	.78	.13	.04	.05
17		22	7.9	.72	.12	.04	.05
18		28	6.0	.68	.11	.04	.05
19		24	6.0	1.1	.10	.04	.05
20	2.0	19.1	6.8	.84	.10	.04	.04
21	1.8	19.1	5.5	.40	.10	.04	.05
22	1.4	17.4	4.7	.35	.10	.04	.05
23	1.1	15.4	4.1	.33	.10	.04	.05
24	1.0	13.2	3.6	.30	.10	.04	.05
25	.90	10.1	3.2	.29	.10	.04	.06
26	1.4	10.1	2.8	.29	.10	.03	.06
27	4.1	8.4	2.4	.29	.09	.03	.08
28	3.8	8.1	2.3	.30	.09	.08	.10
29	3.8	7.0	2.5	.33	.08	.06	.10
30	3.6	6.1	3.3	.29	.08	.06	.10
31	3.2		6.6		.08	.06	
Total Sec. Feet Days	*28.1	481.9	200.0	41.39	4.41	1.56	1.69
Mean Sec. Ft.	*2.3	16.1	6.5	1.4	0.14	0.05	0.06
Runoff in Ac. Ft.	*55.7	956	397	82.1	8.75	3.09	3.35

* 12 Day Period
Total runoff of 195 day period - 1,510 acre-feet.

TABLE 6

Daily Discharge in Cubic Feet per Second
CEDAR CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	8.6	15.7	18.3	2.8	0.78	0.38
2	9.4	16.7	15.2	2.7	.72	.38
3	9.7	16.2	13.4	2.5	.72	.35
4	11.6	15.7	12.2	2.4	.66	.35
5	12.6	15.7	10.7	2.3	.60	.32
6	15.2	15.2	9.9	2.0	.54	.32
7	20	14.7	9.1	1.9	.48	.35
8	31	15.7	8.1	1.7	.45	.42
9	32	14.7	7.7	1.5	.45	.38
10	32	16.7	7.1	1.3	.45	.38
11	36	14.7	6.5	1.3	.42	.35
12	42	14.2	5.9	1.3	.42	.35
13	41	16.7	5.3	1.3	.42	.32
14	36	17.8	5.2	1.2	.42	.32
15	35	27	4.9	1.2	.38	.32
16	38	25	4.5	1.2	.38	.32
17	36	29	4.2	1.1	.38	.32
18	41	25	4.2	1.1	.35	.32
19	48	24	4.9	1.0	.35	.32
20	38	29	4.1	1.0	.32	.32
21	35	25	3.9	1.0	.32	.32
22	36	22	3.8	.97	.29	.32
23	33	20	3.5	.97	.29	.32
24	27	18.3	3.5	.91	.29	.32
25	22	14.7	3.5	.91	.29	.38
26	20	12.6	3.4	.91	.26	.38
27	21	11.9	3.3	.84	.26	.42
28	21	11.3	3.2	.84	.78	.45
29	18.3	13.8	3.2	.84	.48	.45
30	15.7	13.8	3.0	.78	.42	.45
31		21		.78	.42	
Total Sec. Ft. Days	822.1	553.8	195.7	42.55	13.79	10.70
Mean Sec. Ft.	27	17.9	6.5	1.4	0.44	0.36
Runoff in Ac. Ft.	1,630	1,100	388	84.4	27.4	21.2

Total runoff of 183 day period - 3,250 acre-feet.

TABLE 7

Daily Discharge in Cubic Feet per Second
NORTH DEEP CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	7.4	6.3	13.8	1.5	0.59	0.74
2	7.4	7.0	10.8	1.5	.51	.66
3	7.7	6.3	9.6	1.5	.51	.66
4	8.7	6.3	8.7	1.3	.59	.59
5	11.6	6.0	7.7	1.3	.59	.59
6	13.1	6.0	7.0	1.3	.51	.59
7	17.7	6.0	6.3	1.2	.51	.59
8	18.4	6.7	6.0	1.1	.51	.59
9	19.2	6.3	5.4	.96	.51	.59
10	20	6.7	4.8	.85	.51	.59
11	22	7.4	4.5	.85	.51	.51
12	24	7.4	4.2	.85	.51	.51
13	22	8.7	3.7	.85	.44	.59
14	20	13.1	3.5	.85	.44	.59
15	18.4	20	3.2	.85	.44	.59
16	20	14.6	3.2	.85	.44	.66
17	21	11.6	3.2	.85	.44	.66
18	24	7.7	3.0	.85	.44	.59
19	24	7.4	3.2	.85	.44	.59
20	15.4	7.7	2.6	.85	.44	.59
21	10.8	7.0	2.4	.74	.44	.59
22	11.6	7.0	2.4	.66	.44	.59
23	14.6	7.0	2.2	.66	.44	.59
24	13.1	7.0	2.2	.59	.44	.59
25	9.1	6.7	2.0	.59	.44	.59
26	8.2	6.7	1.8	.59	.44	.51
27	11.6	6.7	1.8	.59	.44	.59
28	9.6	7.0	1.7	.59	.96	.66
29	7.4	7.7	1.7	.59	.74	.66
30	6.0	9.1	1.5	.59	.74	.66
31		11.6		.59	.74	
Total Sec. Ft. Days	444.0	252.7	134.1	27.79	16.14	18.10
Mean Sec. Ft.	14.8	8.2	4.5	0.90	0.52	0.60
Runoff in Ac. Ft.	881	501	266	55.1	32.0	35.9

Total runoff of 183 day period - 1,770 acre-feet.

TABLE 8

Daily Discharge in Cubic Feet per Second
SOUTH DEEP CREEK BELOW ESPIL DITCH
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	6.7	16.1	16.1	1.6	0.83	0.72
2	6.7	16.1	14.4	1.5	.83	.72
3	7.7	15.3	12.0	1.4	.83	.66
4	9.2	14.4	11.3	1.4	.83	.66
5	11.3	13.6	9.9	1.3	.83	.66
6	12.7	13.6	9.2	1.3	.77	.66
7	14.4	14.4	8.2	1.3	.77	.66
8	18.1	15.3	7.7	1.3	.77	.77
9	18.1	16.1	6.3	1.2	.77	.77
10	17.0	16.1	6.3	1.2	.77	.77
11	17.0	18.1	5.6	1.1	.77	.77
12	23	19.2	5.2	1.1	.77	.77
13	21	18.1	4.6	1.1	.72	.77
14	23	17.0	4.1	1.1	.72	.77
15	25	43	3.4	1.1	.72	.77
16	31	25	3.1	1.1	.72	.77
17	31	19.2	3.1	1.0	.72	.83
18	31	18.1	3.2	1.0	.72	.77
19	21	21	3.4	.99	.72	.72
20	31	19.2	2.7	.99	.66	.72
21	34	17.0	2.5	.99	.66	.72
22	46	16.1	2.3	.99	.66	.66
23	50	16.1	2.1	.99	.66	.66
24	31	12.7	2.0	.99	.66	.66
25	25	12.0	1.9	.94	.72	.72
26	23	11.3	1.8	.94	.72	.72
27	23	10.6	1.7	.88	.72	.88
28	21	9.9	1.6	.88	1.1	.88
29	18.1	12.0	1.6	.88	.88	.88
30	16.1	12.0	1.6	.88	.83	.88
31		13.6		.83	.77	
Total Sec. Feet Days	663.1	512.2	158.9	34.27	23.62	22.31
Mean Sec. Ft.	22	16.5	5.3	1.1	0.76	0.74
Runoff in Ac. Ft.	1,320	1,020	315	68.0	46.8	44.3

Total runoff of 183 day period - 2,810 acre-feet.

TABLE 9

Daily Discharge in Cubic Feet per Second
NORTH DEEP AND SOUTH DEEP CREEKS ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	14.1	22	30	3.1	1.4	1.5
2	14.1	23	25	3.0	1.3	1.4
3	15.4	22	22	2.9	1.3	1.3
4	17.9	21	20	2.7	1.4	1.2
5	23	19.6	17.6	2.6	1.4	1.2
6	26	19.6	16.2	2.6	1.3	1.2
7	33	20	14.5	2.5	1.3	1.2
8	37	22	13.7	2.4	1.3	1.4
9	38	22	11.7	2.2	1.3	1.4
10	38	23	11.1	2.0	1.3	1.4
11	40	26	10.1	2.0	1.3	1.3
12	48	27	9.4	2.0	1.3	1.3
13	44	27	8.3	2.0	1.2	1.4
14	44	31	7.6	2.0	1.2	1.4
15	44	64	6.6	2.0	1.2	1.4
16	52	40	6.3	2.0	1.2	1.4
17	53	31	6.3	1.8	1.2	1.5
18	56	26	6.2	1.8	1.2	1.4
19	46	28	6.6	1.8	1.2	1.3
20	47	27	5.3	1.8	1.1	1.3
21	45	24	4.9	1.7	1.1	1.2
22	58	23	4.7	1.6	1.1	1.2
23	65	23	4.3	1.6	1.1	1.2
24	45	19.7	4.2	1.6	1.1	1.2
25	35	18.7	3.9	1.5	1.2	1.3
26	32	18.0	3.6	1.5	1.2	1.2
27	35	17.3	3.5	1.5	1.2	1.5
28	31	16.9	3.3	1.5	2.1	1.5
29	26	19.7	3.3	1.5	1.6	1.5
30	22	21	3.1	1.5	1.6	1.5
31		25		1.4	1.5	
Total Sec. Feet Days	1,124.5	767.5	293.3	62.1	40.2	40.2
Mean Sec. Ft.	37	25	9.8	2.0	1.3	1.3
Runoff in Ac. Ft.	2,230	1,520	582	123	79.7	79.7

Total runoff of 183 day period - 4,610 acre-feet.

TABLE 10

Daily Discharge in Cubic Feet per Second
OWL CREEK BELOW ALLEN-ARRECHE DITCH
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	8.6	27	40	9.8	4.0	4.2
2	8.6	28	33	9.3	4.0	4.2
3	8.4	24	33	8.2	4.0	4.0
4	9.6	21	33	7.7	3.9	3.9
5	10.7	21	33	7.7	3.9	3.9
6	12.0	23	36	7.2	3.9	3.9
7	13.8	25	38	6.8	3.9	3.9
8	15.2	29	40	5.4	3.9	4.0
9	15.2	37	39	5.2	3.9	4.0
10	17.0	38	39	13.2	3.9	3.9
11	19.9	41	36	11.1	3.9	3.9
12	22	40	35	9.3	3.9	3.7
13	21	52	33	7.7	3.7	3.7
14	18.2	49	33	6.5	3.7	3.7
15	19.1	109	33	5.4	3.7	3.7
16	24	72	32	5.2	3.7	3.7
17	27	40	28	4.9	3.7	3.7
18	32	40	25	4.9	3.7	3.6
19	33	60	28	4.9	3.7	3.6
20	28	54	22	4.9	3.6	3.4
21	29	60	18.8	4.9	3.6	3.3
22	34	58	18.8	4.7	3.6	3.3
23	37	56	18.1	4.7	3.6	3.3
24	34	55	17.5	4.7	3.6	3.2
25	31	54	16.9	4.4	3.6	3.4
26	30	46	15.4	4.4	3.6	3.4
27	31	42	14.7	4.4	3.6	3.7
28	31	40	13.9	4.2	20	3.7
29	27	46	13.2	4.0	9.8	3.7
30	24	48	11.1	4.0	6.1	3.7
31		54		4.0	4.2	
Total Sec. Feet Days	671.3	1,389	827.4	193.7	141.9	111.3
Mean Sec. Ft.	22	45	28	6.2	4.6	3.7
Runoff in Ac. Ft.	1,330	2,760	1,640	384	281	221

Total runoff of 183 day period - 6,620 acre-feet.

TABLE 11

Daily Discharge in Cubic Feet per Second
RADER CREEK ABOVE PARSHALL FLUME DIVISION STRUCTURE
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	1.8	9.4	15.1	3.3	1.5	1.2
2	1.8	9.0	13.9	3.3	1.5	1.2
3	1.7	8.6	12.9	3.0	.75	1.2
4	2.0	8.3	12.2	2.8	.75	1.2
5	2.6	8.3	13.4	2.6	.80	1.2
6	2.8	7.9	15.7	2.6	.90	1.2
7	3.5	7.5	17.5	2.6	1.0	1.1
8	3.5	6.8	16.3	2.6	1.0	1.1
9	4.2	10.0	16.8	2.3	1.1	1.1
10	9.0	12.8	16.8	2.3	1.2	1.0
11	10.5	14.8	16.3	2.3	1.3	1.0
12	11.6	17.8	15.1	2.3	1.1	1.0
13	11.2	26	13.4	2.3	1.0	1.0
14	10.5	70	12.2	2.3	.90	1.0
15	9.0	56	11.7	2.2	.80	.83
16	10.8	57	11.1	2.2	.80	.83
17	10.8	35	9.9	2.2	.90	.83
18	10.8	30	9.3	2.2	1.0	.83
19	10.8	29	8.1	2.0	.90	.83
20	11.9	23	6.4	2.0	.80	.83
21	12.7	14.6	5.8	2.0	.80	.83
22	13.4	15.7	5.2	1.8	.80	.83
23	13.4	16.3	4.7	1.8	.80	.70
24	12.3	16.8	4.7	1.8	.90	.58
25	12.3	17.5	4.3	1.8	.80	.58
26	11.9	21	4.3	1.6	.80	.70
27	11.9	23	4.0	1.6	.80	1.0
28	10.8	22	4.0	1.6	2.6	1.1
29	10.5	21	4.0	1.6	1.4	1.1
30	10.1	18.0	3.7	1.5	1.2	1.1
31		16.3		1.5	1.2	
Total Sec. Feet Days	260.1	649.4	308.8	68.0	32.10	29.00
Mean Sec. Ft.	8.7	22	10.3	2.2	1.0	1.0
Runoff in Ac. Ft.	516	1,290	612	135	63.7	57.5

Total runoff of 183 day period - 2,670 acre-feet.

TABLE 12

Daily Discharge in Cubic Feet per Second
RADER CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	2.5	10.9	20	4.8	2.4	2.2
2	2.5	10.5	18.6	4.8	2.4	2.2
3	2.4	10.1	17.2	4.4	1.4	2.2
4	2.7	9.7	16.4	4.1	1.4	2.2
5	3.4	9.7	17.9	3.9	1.5	2.2
6	3.6	9.3	21	3.9	1.6	2.2
7	4.4	8.8	23	3.9	1.7	2.0
8	4.4	8.1	22	3.5	1.7	2.0
9	5.2	11.6	22	3.2	2.1	2.0
10	10.5	14.7	22	3.2	2.2	1.8
11	12.2	16.9	22	3.2	2.3	1.8
12	13.4	20	20	3.2	2.1	1.8
13	12.9	30	17.9	3.2	1.7	1.8
14	12.2	78	16.4	3.2	1.6	1.8
15	10.5	63	15.7	3.1	1.5	1.7
16	12.5	64	14.8	3.1	1.5	1.7
17	12.5	39	13.3	3.1	1.6	1.7
18	12.5	34	12.5	3.1	1.7	1.7
19	12.5	33	11.0	2.9	1.6	1.7
20	13.7	28	8.8	2.9	1.5	1.7
21	14.6	19.4	8.0	2.9	1.5	1.7
22	15.4	21	7.3	2.7	1.5	1.7
23	15.4	22	6.6	2.7	1.5	1.5
24	14.2	22	6.6	2.7	1.6	1.3
25	14.2	23	6.1	2.7	1.5	1.3
26	13.7	27	6.1	2.5	1.5	1.5
27	13.7	30	5.6	2.5	1.5	1.8
28	12.5	28	5.6	2.5	3.6	2.0
29	12.2	27	5.6	2.5	2.4	2.0
30	11.7	24	5.3	2.4	2.2	2.0
31		22		2.4	2.2	
Total Sec. Feet Days	304.1	774.7	415.3	99.2	56.5	55.2
Mean Sec. Ft.	10.1	25	13.8	3.2	2.8	1.8
Runoff in Ac. Ft.	603	1,540	824	197	112	109

Total runoff of 183 day period - 3,380 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, 1949

Day	April	May	June	July	August	September
1	2.6	16.7	32	11.1	3.0	2.4
2	2.7	17.0	29	10.6	2.8	2.3
3	2.7	14.5	26	10.4	2.8	2.2
4	3.0	13.7	28	9.9	2.8	2.2
5	3.8	13.4	34	9.6	2.7	2.2
6	4.5	13.7	39	9.0	2.6	2.1
7	6.1	14.8	44	8.1	2.7	2.0
8	6.3	16.4	45	7.1	2.8	2.0
9	7.3	21	43	6.6	2.8	2.0
10	9.2	31	44	6.4	2.8	2.0
11	11.1	39	43	6.4	2.9	2.0
12	12.6	48	39	6.3	2.7	2.0
13	12.3	55	36	5.9	2.6	2.0
14	12.6	54	34	5.8	2.5	2.0
15	14.0	55	34	5.3	2.4	1.9
16	16.7	56	32	5.2	2.4	1.9
17	19.6	51	27	5.0	2.4	1.9
18	24	41	22	4.8	2.4	1.9
19	26	37	20	4.6	2.3	1.9
20	24	34	17.6	4.6	2.2	1.9
21	22	28	17.0	4.6	2.2	1.9
22	31	27	17.3	4.5	2.2	1.9
23	38	30	20	4.3	2.2	1.8
24	32	36	19.2	4.1	2.2	1.8
25	27	41	18.0	3.6	2.2	1.8
26	26	46	17.0	3.4	2.2	1.8
27	26	48	15.1	3.3	2.2	2.0
28	24	48	14.0	3.3	4.2	2.1
29	21	44	12.9	3.2	2.7	2.1
30	17.3	38	12.1	3.1	2.5	2.1
31		35		3.0	2.5	
Total Sec. Feet Days	485.4	1,063.2	831.2	183.1	79.9	60.1
Mean Sec. Ft.	16.2	34	28	5.9	2.7	2.0
Runoff in Ac. Ft.	963	2,110	1,650	363	158	119

Total runoff of 183 day period - 5,360 acre-feet.

TABLE 14

Daily Discharge in Cubic Feet per Second
EAGLE CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	3.5	19.0	37	12.8	4.1	3.4
2	3.6	19.4	33	12.3	3.8	3.3
3	3.6	16.6	29	12.0	3.8	3.2
4	4.0	15.7	32	11.5	3.8	3.2
5	4.9	15.4	39	11.2	3.7	3.2
6	5.8	15.7	44	10.5	3.6	3.0
7	7.7	16.9	50	9.5	3.7	2.9
8	8.1	18.7	51	8.4	3.8	2.9
9	9.2	24	49	7.8	3.8	2.9
10	11.3	36	50	7.6	3.8	2.9
11	13.4	44	49	7.6	4.0	2.9
12	15.1	54	44	7.5	3.7	2.9
13	14.8	62	41	7.0	3.6	2.9
14	15.1	61	39	6.9	3.5	2.9
15	16.6	62	39	6.4	3.3	2.7
16	19.6	63	37	6.3	3.3	2.7
17	23	58	30	6.0	3.3	2.7
18	28	47	25	5.8	3.3	2.7
19	30	42	23	5.6	3.2	2.7
20	28	39	20	5.6	3.1	2.7
21	26	32	19.4	5.6	3.1	2.7
22	36	30	19.7	5.5	3.1	2.7
23	43	34	23	5.3	3.1	2.6
24	37	41	22	5.1	3.1	2.6
25	30	47	20	4.6	3.1	2.6
26	29	52	19.4	4.6	3.1	2.6
27	29	54	17.3	4.6	3.1	2.9
28	27	54	16.0	4.6	5.8	3.0
29	24	50	14.8	4.6	3.7	3.0
30	19.7	43	13.9	4.3	3.5	3.0
31		40		4.1	3.5	
Total Sec. Feet Days	566.0	1,206.4	946.5	221.2	110.4	86.4
Mean Sec. Ft.	18.9	39	32	7.1	3.6	2.9
Runoff in Ac. Ft.	1,120	2,390	1,880	439	219	171

Total runoff of 183 day period - 6,220 acre-feet.

TABLE 15

Daily Discharge in Cubic Feet per Second
EMERSON CREEK ABOVE DIVERSIONS
APRIL 1 TO SEPTEMBER 30, 1949

Day	April	May	June	July	August	September
1	6.8	17.5	21	5.3	2.0	1.7
2	6.8	17.5	19.1	5.3	1.8	1.5
3	6.8	15.8	17.1	5.0	1.7	1.4
4	7.3	14.7	15.3	4.6	1.8	1.4
5	8.0	14.1	15.3	4.1	1.8	1.4
6.	8.4	14.1	14.8	3.9	1.8	1.4
7	9.4	14.7	14.2	3.9	1.8	1.4
8	10.5	15.8	13.7	3.7	1.8	1.5
9	10.8	21	13.3	3.7	1.8	1.4
10	12.3	23	12.8	3.5	2.3	1.4
11	14.1	26	12.4	3.7	2.2	1.4
12	15.2	29	11.9	3.0	2.0	1.4
13	14.7	37	11.1	3.0	1.8	1.4
14	14.7	44	11.1	3.0	1.8	1.4
15	16.3	39	10.3	2.8	1.8	1.4
16	17.5	36	9.9	2.8	1.8	1.4
17	19.4	31	9.2	2.8	1.8	1.4
18	22	28	9.5	2.8	1.8	1.4
19	21	29	9.5	2.8	1.8	1.4
20	18.1	30	8.5	2.8	1.7	1.4
21	18.8	25	8.1	2.6	1.7	1.4
22	24	23	7.5	2.6	1.7	1.4
23	26	22	7.5	2.5	1.7	1.4
24	25	21	7.0	2.3	1.7	1.2
25	22	22	6.7	2.3	1.7	1.2
26	22	23	6.4	2.2	1.5	1.2
27	22	22	6.4	2.2	1.5	1.5
28	21	22	6.1	2.2	2.8	1.7
29	18.8	24	5.8	2.2	1.8	1.7
30	16.9	22	5.6	2.0	1.7	1.7
31		22		2.0	1.7	
Total Sec. Feet Days	476.6	745.2	327.1	97.6	56.6	42.9
Mean Sec. Ft.	15.9	24	10.9	3.1	1.8	1.4
Runoff in Ac. Ft.	945	1,480	649	194	112	85.1

Total runoff of 183 day period - 3,460 acre-feet.

TABLE 16

PERCENTAGE OF ALLOTMENTS DELIVERED FROM SOLDIER CREEK
March 19 to September 30, 1949

Period	Group Entitled to Water	Percentages of Allotments Delivered								Average Delivery to Surplus Rights c.f.s.
		First Priority	Second Priority	Third Priority	Fourth Priority	Fifth Priority	Sixth Priority	Seventh Priority	Eighth Priority	
March 19-April 1	Lower	89	23	0	0	0	0	0	—	0.0
April 1-April 11	Upper	100	84	100	37	33	50	27	20	0.3
April 11-April 24	Lower	100	100	100	100	100	100	100	—	15.9
April 24-May 4	Upper	100	100	100	100	100	100	86	79	6.6
May 4-May 17	Lower	100	100	100	100	90	100	100	—	6.1
May 17-May 27	Upper	100	100	100	90	51	40	32	10	0.1
May 27-June 9	Lower	100	100	99	56	8	0	0	—	0.0
June 9-June 19	Upper	100	99	10	9	0	0	0	0	0.0
June 19-July 1	Both	100	65	40	16	0	0	0	0	0.0
July	Both	83	12	0	0	0	0	0	0	0.0
August	Both	61	0	0	0	0	0	0	0	0.0
September	Both	56	0	0	0	0	0	0	0	0.0