STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Harold Conkling, Chief of Division

REPORT

On

WATER MASTER SERVICE

On

SOLDIER CREEK AND TRIBUTARIES

MODOC COUNTY, CALIFORNIA

DURING SEASON OF 1928

By T. Russel Simpson, Assistant Hydraulic Engineer

Sacramento, California
April, 1929

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
SACRAMENTO

Division of Water Rights
401 Public Works Building

April 20, 1929

Mr. Harold Conkling,
Chief of Division of Water Rights
Sacramento, California

Dear Sir: Attention: Mr. Gordon Zander, Hydraulic Engineer

A report covering the water master service on Soldier Creek and its tributaries, in Modoc County, California, during the season of 1928, is submitted herewith.

This report includes a description of the regulation and distribution of the waters of Soldier Creek and its tributaries in accordance with the provisions of the agreement entered into, by the various parties in the case of San Francisco Cattle Loan Company, et al., vs. C. M. Crampton, et al., on March 20, 1928, and a discussion of the results that were accomplished thereby.

Run-off records and other pertinent hydraulic data are included, together with a financial statement, showing the cost of the investigation, and the sources from which such cost was met.

Respectfully submitted,

T. R. Simpson

Assistant Hydraulic Engineer.

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REPORT ON

WATER MASTER SERVICE

ON SOLDIER CREEK AND TRIBUTARIES

MODOC COUNTY, CALIFORNIA,

DURING SEASON OF 1928.

INTRODUCTION

A history of the case of "San Francisco Cattle Loan Company, et al., vs. C. N. Crampton, et al.," may be found in the "Report on Water Supply and Use of Water from Soldier Creek and Tributaries", by the writer, and dated December 21, 1925.

On March 20, 1928, the water users on Soldier Creek entered into an agreement for water master service on Soldier Creek during the 1928 season, such water master service to be in accordance with the schedules of use contained in the stipulation for consent judgment.

Mr. Paul V. Wheatley was appointed by the Division of Water Rights to act as water master on Soldier, Cedar, Owl and Emerson Creeks, all in Surprise Valley. Mr. Wheatley acted as water master from March 21st to June 7th, 1928, after which he was relieved by Mr. L. C. Jopson, who served until July 25, 1928.

A decree was entered in the above mentioned case on November 28, 1928, by the Superior Court of Modoc County. This decree was based upon the stipulation for consent judgment which was signed by all of the water users. In the decree the Division of Water Rights was appointed permanent water master.

Table XI to XV inclusive of the report for the 1927 season show the schedules contained in the stipulation for consent judgment on Soldier Creek. The water was apportioned in accordance with these same schedules during the 1928 season.

DISTRIBUTION OF WATER

1. Functions of Water Master

The primary function of the water master on Soldier Creek was the supervision of the distribution of the waters of the stream in accordance with the agreement for the 1928 season, which agreement contained the same schedules of water allotments and priorities as are set forth in the report for the 1927 season. The water master also collected hydrographic and other data pertinent to the water master service. The authority of the water master to make the necessary supervision was provided in the agreement for water distribution during the 1928 season.

The duties of the water master were assumed in the field on March 21, 1928. Measuring devices were installed on all of the diversion ditches immediately thereafter, for the purpose of assisting in the regulation of the distribution of the water. These devices consisted of staff gages rated with an acoustic current meter.

In order to obtain information as to the net water supply available for delivery, an automatic water stage recorder was installed on Soldier Creek, immediately above the uppermost diversion. The flow of Soldier Creek often varies more than 50 per cent during a 24 hour period. The mean daily discharge for any current day could be computed from the recorded fluctuation in flow during the preceding 24 hour period. The computed mean daily discharge for the current day was the criterion for apportioning the flow, rather than the flow at any particular moment of observation. The automatic recorder station was equipped with a staff gage rated with an electric current meter. The measured channel loss was subtracted from the mean daily discharge at the recorder station, which result gave the net water supply available for diversion under the schedules of allotments. The various diversions were regulated at the commencement of each rotation period and were re-regulated

whenever the weather changed during the period.

Records were kept of the water supply and of the distribution of the same among the various diversions between April 10th and July 25, 1928. Observations of crop conditions were made at frequent intervals and the acreage irrigated from Soldier Creek in 1928 was estimated by the water master.

2. Allotments Compared with Water Supply

The water supply of Soldier Creek and the springs in the West Fork of Soldier Creek, during the 1928 season as compared with the total allotments under the schedules is indicated in the following table:

Period 1928	Cubic Feet per Second		Water Supply in Per Cent of Allotments
	Allotments	Water Supply	
3rd Rotation 4/11 to 4/24	22.15	11.4	51%
4th Rotation 4/24 to 5/4	21.95	40.5	184
5th Rotation 5/4 to 5/17	22.15	35.6	161
6th Rotation 5/17 to 5/27	21.95	14.6	66
7th Rotation 5/27 to 6/9	22.15	7.3	33
8th Rotation 6/9 to 6/19	21.95	4.1	19
Dry-Weather 6/19 to 7/25	13.75*	2.7	20
Average 4/11 to 7/25	19.15*	13.2	69

* Does not include allotments to lower users after June 19th, because normally no water is available.

The above tabulation indicates a marked shortage of water during the 1928 season except during the fourth and fifth rotation periods when there was water available for the users in both rotation classes. The shortage was particularly critical during the seventh and eighth rotation periods. After the close of the irrigation season on June 19th, there was but little water available over and above the domestic requirements.

3. Efficiency of Distribution

A fair degree of efficiency of distribution, in accordance with

the provisions of the agreement for distributing the water during the 1928 season was obtained. The main factors operating against efficient distribution were lack of proper headgates and sensitive measuring devices in the ditches, and the flashy character of the run-off of Soldier Creek during the general irrigation season.

Adequate headgates and Improved Venturi Flumes should be installed in the various ditches during the 1929 season as is provided in the decree entered on November 28, 1928. A channel diversion structure should also be installed at the head of the East and West Forks of Soldier Creek in order that the water may be readily regulated at that point.

RUN-OFF RECORDS

The standard method of collecting run-off records, as is briefly described on page 14 of the "Report on Water Supply and Use of Water From Soldier Creek and Tributaries", dated December 21, 1925, prepared by the writer, was used in the water master service during the 1928 season.

An automatic water stage recorder was installed on Soldier Creek at the mouth of the canyon, above all diversions, on April 9, 1928. Continuous records were kept of the water supply at this point from April 10th to July 25, 1928. These records have been tabulated in Table 3 of this report.

The hydrographs on Plate 1 of this report graphically show the relation between the water supplies of Soldier Creek in 1926, 1927, and 1928. The water supply in 1927 was nearly normal, whereas in 1926, the run-off conditions were extremely sub-normal. The water supply in 1928 was between that in 1926 and 1927.

The totals of the allotments from Soldier Creek under the schedules are also shown on Plate 1.

PRECIPITATION

The precipitation at Cedarville, records of which are kept by the United States Weather Bureau, for the seasonal year commencing October 1, 1927, and terminating on September 30, 1928, has been compared with the average mean precipitation in Table 1 of this report.

It will be noted from Table 1 that the total precipitation for the seasonal year 1927-28 was 85.2 per cent of the mean annual precipitation. It will be further noted that more than one-half of the total precipitation for the seasonal year 1927-28, occurred in November and March, rather than being uniformly distributed.

Most of the season of snowfall on the Warner Range of mountains is normally included in the period from December first to April first. The most desirable snow pack, that is, snow which will usually pack hard and melt late in the spring occurs during this period. In average years, approximately 50 per cent of the total annual precipitation at Cedarville occurs during this four month period and more than three-quarters of this is in the form of snow. During this four month period in 1927-28, the precipitation was about 85 per cent of the normal for the period, and less than one-quarter of this amount occurred in the form of snow. This largely accounts for the marked deficiency in the run-off of Soldier Creek in June, 1928.

The distribution and character of the precipitation lead to the conclusion that the run-off of Soldier Creek during the general irrigation season in 1928, was probably farther below normal than the total seasonal precipitation would indicate.

USE OF WATER

Continuous records were kept of the disposition made of the flow of Soldier Creek and its tributaries during the period between April 10th and July 25th, 1928. A brief description of the manner of collecting the records of use of water is given on page 19 of the "Report on Water Supply and Use of Water from Soldier Creek", to which previous reference has been made.

The primary point of diversion of all of the users of water from both the West and the East Forks of Soldier Creek is at the point where the channel divides into the two forks. All of the land served with water from the West Fork is irrigated by flooding across the upper ranch and on across each succeeding ranch down to the lowest user. Likewise most of the area irrigated from the East Fork is underlaid with an impervious stratum and irrigation of any of these tracts results in mutual benefits by means of sub-irrigation. Consequently all of the area irrigated from the West Fork has been treated as a unit, and all of the area under the East Fork as a unit, in records of the disposition made of the water.

The estimated mean daily diversions of the various diversion systems in 1928, are tabulated in Tables 4 to 11, inclusive, submitted at the end of this report.

The areas irrigated and sub-irrigated under the various diversion systems, during the period from March 21st to July 25th, 1928, were estimated by the water master and have been tabulated in Table 12. The gross use of water under each diversion system, during the general irrigation season in 1928, has been calculated in acre feet per acre and in acres irrigated per cubic foot per second, and has been tabulated in Table 12 of this report. Table 12 also shows the dates of commencement and termination of general irrigation in 1928, for each diversion system.

It will be noted from Table 12 that the combined average rate of

gross use during the 1928 season, for the acreage irrigated in 1928, was approximately one cubic foot per second to 101 acres. The total acreage irrigated in 1928, represented about the normal maximum irrigated area.

A comparison of the use of water in 1928 with the use in 1927 follows:

Description	1928	1927	Use in 1928 Expressed in per cent of 1927
Days in irrigation season	67.	80.	84%
Total acre feet diverted	2449.	3406.	72%
Acreage irrigated	1867.1	1842.4	101
Use in acre feet per acre	1.31	1.85	71
Use in acres per cubic foot per second	101.	86.	117

The irrigation season was about 16 per cent shorter in 1928, than in 1927, and the acreage irrigated was nearly the same in both years. There was about 28 per cent less water available in 1928, but due to the shorter irrigation season in 1928, the duty of water expressed in acres irrigated per cubic foot per second was only 17 per cent higher in 1928.

CROPS

A crop census was not taken of the area irrigated from Soldier Creek in 1928. It was observed that the general condition of the hay crops and pastures was not as satisfactory in 1928, as in 1927, due to the failure of the water supply at the end of May.

The alfalfa seed crop was about normal in 1928, as compared with an exceedingly heavy crop in 1927. In general, good crops were raised on the house gardens and orchards in 1928.

DISCUSSION OF RESULTS IN 1928

The total water supply of Soldier Creek in 1928, as tabulated in Table 3 of this report, has been compared with that in 1927, as tabulated in Table 2 of the report for the previous season, in the following table:

Period	Water Supply - Cu. Ft. Per Sec.		Flow in 1928 Expressed in per cent of Flow -1927
	1928	1927	
April 11 to April 24	11.1	10.0	111%
April 24 to May 4	40.2	42.9	94
May 4 to May 17	35.3	32.2	109
May 17 to May 27	14.3	28.3	51
May 27 to June 9	7.0	20.9	34
June 9 to June 19	3.8	14.1	27
June 19 to July 1	2.8	7.3	38
April 11 to July 1	16.2	21.8	74%

The above table indicates that the average flow in 1928 was about 74 per cent of that in 1927, and that a marked deficiency of flow occurrred in June 1928. Similar studies that have been made on both Owl and Emerson Creeks, as may be found in the reports of water master service on those streams for the 1928 season, indicate that the flow in 1928 was about 77 per cent of the flow in 1927 on both of those streams.

The studies that were made in Surprise Valley in 1927, indicate that the run-off of Soldier Creek in 1927, was probably slightly subnormal. It is therefore concluded that the run-off of Soldier Creek in 1928, was at least 26 per cent below normal.

The hydrographs on Plate 1 of this report show that full allotments were available from Soldier Creek for 16 days in 1928, as compared with 37 days in 1927. Full allotments were not available at any time in 1928.

FINANCIAL STATEMENT

The investigation and water master service during the 1926 season on Soldier, Emerson, Owl and Cedar Creeks were financed partly by subscription from the water users and partly by contribution by the Division of Water Rights.

No segregation was made in the expense of conducting the work in 1926, on these four stream systems in Surprise Valley, because it was handled as a unit.

The total unit cost of the work in 1926, on these four stream systems was $0.23 per acre of irrigated land.

A financial statement in which receipts and disbursements are itemized, follows:

FINANCIAL STATEMENT

HUMBOLDT VALLEY WATER DISTRIBUTION

1954 SEASON

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RECEIPTS

Contributed by water users on Soldier Creek	$300.00	
Contributed by water users on Owl Creek	233.00	
Contributed by water users on Emerson Creek	299.95	
Contributed by water users on Cedar Creek	200.00	
Contributed by Division of Water Rights	500.00	$1,532.95

DISBURSEMENTS

Salaries	$1269.35	
Board and Lodging	161.18	
Travel Expense.	171.50	
Automobile Expense.	300.92	
Printing and Blueprinting	30.00	$1,532.95

TABLES

TABLE 1

PRECIPITATION AT CEDARVILLE FOR SEASONAL YEAR
1927-28 COMPARED WITH MEAN PRECIPITATION
(Records from 1894 to 1928)

Month	Mean Precipitation at Cedarville Inches	Precipitation for Seasonal Year 1927-28	
		In Inches	In Per Cent of Mean Total
September	0.53	0.32	2.5
October	1.06	0.86	6.7
November	1.71	2.87	22.5
December	1.62	0.86	6.7
January	1.74	0.92	7.2
February	1.56	0.75	5.9
March	1.47	2.93	23.0
April	0.90	0.81	6.4
May	1.07	0.00	0.0
June	0.62	0.55	4.3
July	0.26	0.00	0.0
August	0.19	0.00	0.0
Total	12.75	10.87	85.2

TABLE 2

CHARACTER OF PRECIPITATION AT CEDARVILLE FOR SEASONAL YEAR 1927-28
COMPARED WITH MEAN

Month	Mean Precipitation				Precipitation 1927-28			
	Total Inches	Snow Inches	Rain Inches	Snow Expressed in Per Cent of Total	Total Inches	Snow Inches	Rain Inches	Snow Expressed in Per Cent of Total
December	1.62	1.20	0.42	74%	0.86	0.86	0.00	100%
January	1.74	1.40	0.34	80	0.92	0.40	0.52	44
February	1.56	1.10	0.46	70	0.75	0.00	0.75	0
March	1.47	1.20	0.27	82	2.93	0.00	2.93	0
Total	6.39	4.90	1.49	77%	5.46	1.26	4.20	23%

Note: 10 inches of snow assumed equal to 1 inch of rain.

TABLE 3

RECORDS OF DAILY DISCHARGE IN CUBIC FEET PER SECOND, OF SOLDIER CREEK ABOVE ALL DIVERSIONS FOR THE PERIOD APRIL 10th TO JULY 25, 1928.

Day	April	May	June	July	
1	NO RECORD	70.4	7.2	2.6	
2		57.0	6.6	2.5	
3		43.8	6.0	2.5	
4		31.1	5.8	2.4	
5		39.3	5.3	2.4	
6		47.0	4.8	2.2	
7		47.0	4.6	2.2	
8		47.0	4.4	2.1	
9		50.3	4.2	2.0	
10	10.8	47.0	4.2	2.1	
11	10.3	47.0	4.4	2.2	
12	11.2	26.8	4.2	2.2	
13	11.8	20.3	3.8	2.1	
14	11.2	19.5	3.7	2.1	
15	11.8	17.8	3.4	2.1	
16	13.3	18.7	3.4	2.1	
17	11.8	17.8	3.4	2.1	
18	10.3	18.7	3.3	2.1	
19	9.6	17.2	3.3	2.1	
20	9.6	15.8	3.1	2.1	
21	9.2	14.5	2.9	2.0	
22	9.6	13.3	2.9	2.0	
23	14.5	12.2	2.8	2.0	
24	17.7	11.8	2.8	2.0	
25	14.5	11.2	2.8	1.8	
26	15.8	10.8	2.8	NO RECORD	
27	20.3	10.3	2.6		
28	40.4	10.0	2.5		
29	48.7	9.2	2.5		
30	73.8	8.4	2.6		
31		7.8			
Total Sec. Ft. Days	386.2	819.0	116.3	54.0	107 day Period
Mean Sec. Feet	18.39*	26.42	3.88	2.16**	12.86
Maximum Sec. Feet	73.8*	70.4	7.2	2.6**	73.8
Minimum Sec. Feet	9.2*	7.8	2.5	1.8**	1.8
Total Acre Feet	765.8*	1624.1	230.6	107.1**	2727.6

* 21 day period.

** 25 day period.

TABLE 4

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF COMPANY DITCH ON SOLDIER CREEK AT HEAD - 1928

Day	April	May	June	July	
1	NO RECORD	12.0	1.0	1.35	
2		12.0	1.0	1.3	
3		12.0	1.0	1.3	
4		1.0	1.0	1.25	
5		1.0	1.0	1.25	
6		8.0	1.0	1.1	
7		8.0	1.0	1.1	
8		8.0	1.0	1.05	
9		8.0	2.3	1.0	
10	7.45	7.5	2.3	1.05	
11	1.0	7.5	2.45	1.1	
12	1.0	2.0	2.3	1.1	
13	1.0	1.0	2.05	1.05	
14	1.0	1.0	2.0	1.05	
15	1.0	1.0	1.85	1.05	
16	1.0	1.0	1.85	1.05	
17	1.0	11.7	1.85	1.05	
18	1.0	12.0	1.8	1.05	
19	1.0	11.5	1.8	1.05	
20	1.0	10.85	1.65	1.05	
21	1.0	9.8	1.55	1.0	
22	1.0	9.05	1.55	1.0	
23	1.0	8.25	1.5	1.0	
24	11.7	8.0	1.5	1.0	
25	9.85	7.5	1.5	0.9	
26	10.7	7.3	1.5	NO RECORD	
27	12.0	1.0	1.35		
28	12.0	1.0	1.3		
29	12.0	1.0	1.3		
30	12.0	1.0	1.35		
31		1.0			
Total Sec. Ft. Days	100.70	191.95	46.60	27.25	107 day Period
Mean Sec. Feet	4.80*	6.19	1.55	1.09**	3.43
Maximum Sec. Feet	12.0*	12.0	2.45	1.35**	12.0
Minimum Sec. Feet	1.0*	1.0	1.0	0.9**	0.9
Total Acre Feet	199.7*	380.6	92.4	54.0**	726.7

* 21 day period.

** 25 day period.

TABLE 5

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF WARRENS FLOOD DITCH ON SOLDIER CREEK AT HEAD - 1928

Day	April	May	June
1	NO DIVERSION	2.2	
2		2.0	
3		1.8	
4		0.0	
5			
6			
7			
8			
9			
10	0.0		
11		NO DIVERSION	
12			
13			
14			
15			
16			
17	NO DIVERSION		
18			
19			
20			
21			
22			
23			
24			
25			
26	0.0		
27	0.6		
28	1.8		
29	2.0		
30	2.2		
31		0.0	
Total Sec. Feet Days	6.6	6.0	52 day Period
Mean Sec. Feet	0.31*	0.19	0.24
Maximum Sec. Feet	2.2*	2.2	2.2
Minimum Sec. Feet	0.0*	0.0	0.0
Total Acre Feet	13.1*	11.9	25.0

* 21 day period.

TABLE 6

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
DANIELS DITCH ON SOLDIER CREEK AT HEAD - 1928

Day	April	May	June	July	
1		2.2	1.4	0.55	
2		2.2	1.2	0.5	
3		2.2	1.0	0.5	
4		2.2	0.95	0.45	
5		2.2	0.75	0.45	
6		2.2	0.6	0.4	
7		2.2	0.55	0.4	
8		2.2	0.45	0.35	
9		2.2	1.2	0.3	
10	1.7	2.2	1.2	0.35	
11	1.6	2.2	1.25	0.4	
12	1.6	2.1	1.2	0.4	
13	1.6	1.6	1.05	0.35	
14	1.6	1.6	1.0	0.35	
15	1.6	1.6	0.85	0.35	
16	1.6	1.6	0.85	0.35	
17	1.6	1.95	0.85	0.35	
18	1.6	2.1	0.8	0.35	
19	1.6	1.7	0.8	0.35	
20	1.6	1.7	0.75	0.35	
21	1.55	1.7	0.65	0.3	
22	1.6	1.7	0.65	0.3	
23	1.6	1.7	0.6	0.3	
24	1.85	1.7	0.6	0.3	
25	1.7	1.7	0.6	0.3	
26	1.7	1.7	0.6		
27	2.1	1.7	0.55		
28	2.2	1.7	0.5		
29	2.2	1.7	0.5		
30	2.2	1.7	0.55		
31		1.6			
Total Sec. Feet Days	36.40	58.75	24.50	8.35	107 day Period
Mean Sec. Feet	1.73*	1.90	0.82	0.37**	1.21
Maximum Sec. Feet	2.2*	2.2	1.4	0.55**	2.2
Minimum Sec. Feet	1.55*	1.6	0.5	0.3**	0.3
Total Acre Feet	72.2*	116.5	48.6	16.5**	256.8

* 21 day period.
** 25 day period.

TABLE 7

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
ATKINSON DITCH ON SOLDIER CREEK AT HEAD - 1928

Day	April	May	June	July	
1	NO RECORD	3.2	0.3	0.3	
2		3.0	0.3	0.3	
3		3.0	0.3	0.3	
4		2.0	0.3	0.3	
5		2.0	0.3	0.3	
6		2.0	0.3	0.3	
7		2.0	0.3	0.3	
8		2.0	0.3	0.3	
9		2.0	0.3	0.3	
10	0.6	2.0	0.3	0.3	
11	0.3	2.0	0.3	0.3	
12	0.3	1.0	0.3	0.3	
13	0.3	0.3	0.3	0.3	
14	0.3	0.3	0.3	0.3	
15	0.3	0.3	0.3	0.3	
16	0.3	0.3	0.3	0.3	
17	0.3	1.45	0.3	0.3	
18	0.3	1.45	0.3	0.3	
19	0.3	1.35	0.3	0.3	
20	0.3	1.05	0.3	0.3	
21	0.3	0.95	0.3	0.3	
22	0.3	0.8	0.3	0.3	
23	0.3	0.75	0.3	0.3	
24	1.45	0.7	0.3	0.3	
25	0.9	0.65	0.3	0.25	
26	1.05	0.6	0.3	NO RECORD	
27	1.4	0.3	0.3		
28	3.0	0.3	0.3		
29	3.0	0.3	0.3		
30	3.2	0.3	0.3		
31		0.3			
Total Sec. Feet Days	18.50	38.65	9.0	7.45	107 day Period
Mean Sec. Feet	0.88*	1.25	0.30	0.30**	0.69
Maximum Sec. Feet	3.2*	3.2	0.3	0.3**	3.2
Minimum Sec. Feet	0.3*	0.3	0.3	0.25**	0.25
Total Acre Feet	36.7*	76.6	17.8	14.8**	145.9

* 21 day period.
** 25 day period.

TABLE 8

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF COMBINED CRAMPTON DITCHES ON SOLDIER CREEK AT THEIR RESPECTIVE HEADS - 1928

Day	April	May	June	July	
1	NO RECORD	6.2	0.3	0.3	
2		5.9	0.3	0.3	
3		5.8	0.3	0.3	
4		2.7	0.3	0.3	
5		3.3	0.3	0.3	
6		5.3	0.3	0.3	
7		5.3	0.3	0.3	
8		5.3	0.3	0.3	
9		5.3	0.3	0.3	
10	1.05	5.3	0.3	0.3	
11	0.3	5.3	0.3	0.3	
12	0.3	1.0	0.3	0.3	
13	0.3	0.3	0.3	0.3	
14	0.3	0.3	0.3	0.3	
15	0.3	0.3	0.3	0.3	
16	0.3	0.3	0.3	0.3	
17	0.3	2.6	0.3	0.3	
18	0.3	3.05	0.3	0.3	
19	0.3	2.55	0.3	0.3	
20	0.3	2.3	0.3	0.3	
21	0.3	1.95	0.3	0.3	
22	0.3	1.65	0.3	0.3	
23	0.3	1.4	0.3	0.3	
24	2.6	1.3	0.3	0.3	
25	1.95	1.25	0.3	0.25	
26	2.25	1.1	0.3	NO RECORD	
27	4.0	0.3	0.3		
28	5.8	0.3	0.3		
29	5.9	0.3	0.3		
30	6.2	0.3	0.3		
31		0.3			
Total Sec. Feet Days	33.65	78.55	9.0	7.45	107 day Period
Mean Sec. Feet	1.60*	2.53	0.30	0.30**	1.20
Maximum Sec. Feet	6.2*	6.2	0.3	0.3**	6.2
Minimum Sec. Feet	0.3*	0.3	0.3	0.25**	0.25
Total Acre Feet	66.7*	155.8	17.8	14.8**	255.1

*21 day period.
**25 day period.

TABLE 9

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF WEST FORK OF SOLDIER CREEK AT HEAD - 1928

Day	April	May	June	
1	NO RECORD	15.6	2.2	
2		12.0	1.8	
3		5.5		
4		7.5		
5		10.5		
6		10.0		
7		10.0		
8		10.0		
9		10.8		
10	0.00	10.0		
11	1.55	10.0		
12	1.55	8.7		
13	1.55	6.0		
14	1.55	4.2		
15	1.55	3.4		
16	2.15	3.9	NO OBSERVATION	
17	1.55	0.0		
18	1.55	0.0		
19	1.55	0.0		
20	1.55	0.0		
21	1.55	0.0		
22	1.55	0.0		
23	2.75	0.0		
24	0.0	0.0		
25	0.0	0.0		
26	0.0	0.0		
27	0.0	0.0		
28	5.0	0.0		
29	10.3	3.9		
30	15.0	3.1		
31		2.6		
Total Sec. Feet Days	52.25	147.7	4.0	54 day Period
Mean Sec. Feet	2.49*	4.76	2.00**	3.78
Maximum Sec. Feet	15.0*	15.6	2.2**	15.6
Minimum Sec. Feet	0.0*	0.0	1.8**	0.0
Total Acre Feet	103.6*	292.9	7.9**	404.4

* 21 day period.

** 2 day period.

TABLE 10

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF EAST FORK OF SOLDIER CREEK AT HEAD - 1928

Day	April	May	June	
1		25.0	0.0	
2		17.9	0.0	
3		11.5	3.3	
4		13.7	3.15	
5		18.3	2.85	
6		17.5	2.5	
7		17.5	2.45	
8		17.5	2.25	
9		20.0		
10	0.0	18.0		
11	3.55	18.0		
12	4.45	10.0		
13	5.05	9.1		
14	4.45	10.1		
15	5.05	9.2		
16	5.95	9.6		
17	5.05	0.0		
18	3.55	0.0		
19	2.85	0.0		
20	2.85	0.0		
21	2.50	0.0		
22	2.85	0.0		
23	5.55	0.0		
24	0.0	0.0		
25	0.0	0.0		
26	0.0	0.0		
27	0.0	6.9		
28	10.5	6.5		
29	13.3	0.0		
30	39.0	0.0		
31		0.0		
Total Sec. Feet Days	107.50	256.4	16.50	60 day Period
Mean Sec. Feet	5.12*	8.27	2.06**	6.34
Maximum Sec. Feet	29.0*	25.0	3.3**	29.0
Minimum Sec. Feet	0.0*	0.0	0.0**	0.0
Total Acre Feet	213.2*	508.4	32.7**	754.3

* 21 day period.

** 5 day period.

TABLE 11

ESTIMATED DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
REYNOLDS DITCH FROM SPRINGS IN WEST FORK OF SOLDIER CREEK - 1928

Day	April	May	June	July	
1	NO RECORD	0.30	0.30	0.30	
2		0.30	0.30	0.30	
3		0.30	0.30	0.30	
4		0.30	0.30	0.30	
5		0.30	0.30	0.30	
6		0.30	0.30	0.30	
7		0.30	0.30	0.30	
8		0.30	0.30	0.30	
9		0.30	0.30	0.30	
10	0.30	0.30	0.30	0.30	
11	0.30	0.30	0.30	0.30	
12	0.30	0.30	0.30	0.30	
13	0.30	0.30	0.30	0.30	
14	0.30	0.30	0.30	0.30	
15	0.30	0.30	0.30	0.30	
16	0.30	0.30	0.30	0.30	
17	0.30	0.30	0.30	0.30	
18	0.30	0.30	0.30	0.30	
19	0.30	0.30	0.30	0.30	
20	0.30	0.30	0.30	0.30	
21	0.30	0.30	0.30	0.30	
22	0.30	0.30	0.30	0.30	
23	0.30	0.30	0.30	0.30	
24	0.30	0.30	0.30	0.30	
25	0.30	0.30	0.30	0.30	
26	0.30	0.30	0.30		
27	0.30	0.30	0.30	NO RECORD	
28	0.30	0.30	0.30		
29	0.30	0.30	0.30		
30	0.30	0.30	0.30		
31		0.30			
Total Sec. Feet Days	6.30*	9.30	9.00	7.50**	107 day Period
Mean Sec. Feet	0.30*	0.30	0.30	0.30**	0.30
Maximum Sec. Feet	0.30*	0.30	0.30	0.30**	0.30
Minimum Sec. Feet	0.30*	0.30	0.30	0.30**	0.30
Total Acre Feet	12.5*	18.4	17.8	14.9**	63.6

* 21 day period.
** 25 day period.

TABLE 12

GROSS USE OF WATER FOR ACREAGE IRRIGATED
FROM SOLOMON CREEK IN 1928

Name of Ditch	Period 1928	Total Acre Feet Diverted	Estimated Acreage Irrigated 1928	Gross Use During Period Acre Ft. per Acre	Gross Use During Period Acres per c.f.s.
Company and Warrens Flood	April 10 - June19	666	536.9	1.24	113
Daniels	Apr. 10 - Jun. 19	224	172.5	1.30	108
Atkinson	Apr. 10 - Jun. 19	125	89.2	1.40	100
Crompton (Combined)	Apr. 10 - Jun. 19	234	167.5	1.40	101
West Fork	Apr. 10 - Jun. 2	404	387.5	1.04	103
East Fork	Apr. 10 - Jun. 6	754	488.8	1.54	77
Reynolds	Apr. 10 - Jun. 19	42	24.7	1.70	82
TOTAL	Apr. 10 - Jun. 15	2449	1867.1	1.31	101

STATE