STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

EARL WARREN, Governor

C. H. PURCELL, Director of Public Works

EDWARD HYATT, State Engineer

REPORT ON WATERMASTER SERVICE IN

SHASTA RIVER WATERMASTER SERVICE AREA
Siskiyou County, California

1947 SEASON

Sacramento, California

EDWARD HYATT, STATE ENGINEER
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STATE OF CALIFORNIA
Department of Public Works
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ADDRESS REPLY TO
DIVISION OF WATER RESOURCES
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P. O. BOX 1079
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January 19, 1948

Mr. Gordon Zander
Principal Hydraulic Engineer
Sacramento, California

Dear Sir:

Herewith is submitted the annual report covering watermaster service within the Shasta River Watermaster Service Area, Siskiyou County, California, during the 1947 season.

The report presents a general description of the work and a discussion of the results obtained. Records of precipitation, run-off and other pertinent data are included.

Respectfully submitted,

Harrison Smitherum
Harrison Smitherum
Supervising Hydraulic Engineer

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REPORT ON

WATERMASTER SERVICE

ON

SHASTA RIVER AND ITS TRIBUTARIES

SISKIYOU COUNTY, CALIFORNIA

1947 SEASON

INTRODUCTION

The Shasta River Watermaster Service Area was created by order of the Division of Water Resources under date of March 1, 1933, to embrace the water rights on Shasta River and its tributaries in Siskiyou County, California, excepting certain tributaries and springs named in said order, as established by Decree of the Superior Court, Siskiyou County, California, in the Shasta River Proceeding No. 7035, entered on December 30, 1932. Subsequent to creation of the district, the boundaries were changed to exclude the water rights on Willow Creek and its tributaries by order of the Division of Water Resources under date of December 30, 1935.

Watermaster service in the Shasta River Watermaster Service Area was carried on throughout the 1947 season in accordance with the "Distribution of Water" proceedure contained in Sections 4000 to 4360, inclusive, of the Water Code. Such service extended over the period from April 1 to September 30. P. E . Stephenson, Watermaster, Shasta River Watermaster Service Area, administered the distribution of water from the streams within the district during the entire period.

WATER SUPPLY

Precipitation

Data on precipitation as compiled from records taken at the U. S. Weather Bureau station at Yreka and at the Division of Water Resources Station at Edgewood are presented in Table 1.

Comparison of the precipitation indicated that the average seasonal precipitation for the 13-year period of record from 1934-35 to 1946-47 is about the same for the respective stations. Further comparison shows that the 1946-47 precipitation at Yreka was about 70 per cent of the 32-year mean. It is assumed that this same relation would apply to a long time mean at Edgewood station.

Assuming that the precipitation at the two stations was indicative of runoff conditions of the Shasta Valley Area, it appears that the water supply for the 1946-47 season was about 70 per cent of normal expectancy.

Snow Surveys

A record of the water content of the snow at Parks Creek, Sweetwater, North Fork of Sacramento and Mount Shasta snow survey courses as measured on or about April 1 of each year is presented in Table 2. The Parks Creek and Sweetwater Stations are within the Parks Creek Watershed at elevations 6500 feet and 5500 feet, respectively. The North Fork of Sacramento course lies on the south slope of Eddy Mountain just outside the Shasta River Watershed at 6800 feet elevation. The Mount Shasta course is on the south slope of Mount Shasta at 8000 feet elevation. The average water content of the snow at the four stations is considered representative of of the snow pack on the Shasta River watershed. The average water

content on April 1, 1947 was 21.6 inches or about 68 per cent of the mean for the 11-year period of record. The precipitation at Edgewood and Yreka for the period from October 1 to April 1 was about 66 per cent of the means for the 13-year period from 1934-35 to 1946-47 at the respective stations. The precipitation at Yreka for the period from October 1 to April 1 was about 70 per cent of the 32-year mean for this station.

A curve has been developed for forecasting the runoff incidental to melting snow of Shasta River, above the Edson-Foulke Yreka Ditch. The data shown in Table 2 has been used in the development of the curve along with the measured runoff at this station for the years shown in this table. The average period during which this runoff occurs varies with the water content of the April 1 snow pack as shown in the following tabulation:

Water Content of Snow inches	Period during which runoff occurs.
Over 50	April 1 to July 31
30 to 40	April 1 to June 30
16 to 30	April 1 to May 31

There is insufficient data available at the present time to accurately determine these periods. However, in the future it may be possible to forecast not only the amount of runoff but also the approximate date of dissipation of the snow runoff.

Accurate forecasts of snow runoff made on April 1 are important in the operation of Lake Dwinnell Reservoir, which must be held at or below a specified water surface elevation during the

runoff season as a safety measure in the protection of Lake Dwinnell Dam. Accurate forecasts of the date of dissipation of snow runoff will be important to the ranches diverting water for irrigation purposes from this section of Shasta River.

A comparison of the measured runoff of Shasta River above the head of the Edson-Foulke Yreka Ditch with the estimated runoff obtained by applying the average water content of the snow on April 1 to the above mentioned curve is shown in the following tabulation.

Year	Average Water-Content of Snow Inches on April 1	Run-Off in Acre-Feet	
		Measured	Estimated from Curve
1937	32.3	12,100 **	11,900
1938	55.0	30,200 ***	30,200
1939	17.1	3,000 *	3,300
1940	33.1	12,600 **	12,500
1941	56.8	32,000 ***	31,800
1942	30.2	13,800 **	10,500
1943	25.7	7,100 *	7,600
1944	16.8	3,600 *	3,200
1945	26.7	9,000 **	8,700
1946	33.9	11,600 **	13,000
1947	21.6	4,210 *	5,500

* April - May
** April - May - June
*** April - May - June - July

Stream Flow

Stream flow measuring stations equipped with water-stage recorders were maintained during the period of watermaster service

from about April 1 to September 30 on Shasta River above the Edson-Foulke Ditch, at Edgewood Bridge and near Montague; on Parks Creek above Edson-Foulke Yreka Ditch and at the 8-foot weir above the Robertson Ranch; and on Little Shasta River above the Harp Ditch. The station on Shasta River at Edgewood Bridge was maintained by the Montague Water Conservation District during the winter months. Records of discharge at the above stations are presented at the end of this report in Tables 3 to 8, inclusive.

Intermittent measurements were taken on Carrick Spring and Cleland Springs, records of which are submitted in Tables 9 and 10, respectively.

Intermittent measurements were taken at Big Springs to determine the water available for the Big Springs Irrigation District.

A summary comparing the seasonal runoff of various streams and springs in Shasta Valley for the 1947 season with that of previous seasons is presented in Table 19 of this report.

DISTRIBUTION OF WATER

Distribution for the 1947 season followed the practices initiated during the past seasons with little modification. As a necessary adjunct to distribution twelve water-stage recorders were installed and operated at critical points on streams and diversion conduits. These recorders were in addition to those mentioned heretofore and were located as follows:

Beaughan Creek below Long-Bell Mill Pond (2' Parshall Flume)

M.W.C.D. Parks Creek Canal at Head.

Lake Dwinnell Reservoir at Outlet Tower.

Soule Ditch at Head (4' weir)

Dennis Ditch at Head (3' weir)

Jones #1 and #2 take-outs from M.W.C.D. Shasta River Canal (4' weirs)

M.W.C.D. Shasta River Canal.

M.W.C.D. Shasta River Canal at Big Springs - Little Shasta Road.

Carrick Creek at Head of Upper Jackson Ditch.

Carrick Creek at Head (2' Parshall Flume)

Big Springs Lake at B.S.I.D. Pumping Station

The resulting distribution in each of the several sections into which the stream system naturally divides from the standpoint of water supply follows:

Shasta River above Confluence of Boles Creek

The water supply available to this area is the summation of the flow of Shasta River above the Edson-Foulke Yreka Ditch, as set forth in Table 3, plus the combined discharge of the Dow Eddy

Creek Ditch and the Hammond-Scott Ditch diverting from Eddy Creek During the 1947 season the supply was as indicated in the table below.

	Average Available Water Supply Cu.Ft. Per. Sec.	Distribution in Per cent of Priority Allotments		
		Hammond-Scott	Foulke, et al.	Dow
April	42	100	100	100
May	48	100	100	100
June	37	80	85	66
July	10	30	28	0
Aug.	5	22	10	0
Sept.	5	22	10	0

Shasta River Below Junction of Boles Creek and Boles Creek

During the 1947 season one hundred per cent allotments were available for all priorities including storage rights of Montague Water Conservation District until about May 10, subsequent to this date the available supply was distributed on an equal and correlative basis among water right owners down to and including the Mills Ranch. During the period from May 27 to about June 20 there was excess flow above these requirements which was available for storage in Lake Dwinnell Reservoir. During the period from July 21 to August 1 an average of 50 per cent of allotments was delivered to all ditches except the Alexander Ditch which received stock water only. Subsequent to August 1 and until the end of the irrigation season an average of 75 per cent of allotments was available.

Shasta River below Lake Dwinnell Reservoir

Watermaster service on this section of the stream system involves the operation of the Montague Water Conservation District's Lake Dwinnell Reservoir during the irrigation season. The watermaster in cooperation with the District, exercises control over deliveries from the reservoir both to the District and to the water right owners below the reservoir, who receive water from the reservoir in lieu of their natural flow rights.

Deliveries to water right owners below the reservoir are made in accordance with the respective agreements between the District and the several water right owners. In general each agreement sets forth the total acre-feet to which the water right owner is entitled and provides that delivery from the reservoir shall be made upon demand of the water users. The watermaster receives and attends to all requests for such service and regulates the discharge from the reservoir and the various diversion ditches accordingly. Regulation of deliveries to the District is also handled by the watermaster; firstly, to avoid draining the reservoir through excessive delivery to the District before the "in lieu rights" are satisfied; and, secondly, to eliminate the confusion that would result under dual regulation.

Deliveries to the "in lieu rights" commenced on April 10 and deliveries to the District commenced on April 16 and continued until about September 30. All demands of "in lieu rights" were satisfied during the 1947 season. All available storage was released prior to October 1.

Summaries of the operation of the reservoir during the 1947 season are set forth in the following tabulations;

Operation of Lake Dwinnell Reservoir During 1946 Season

Date	Storage: On Hand Acre-Ft.	Storage: Draft Acre-Ft.	Inflow to Reservoir Acre-Ft.	Total Draft Acre-Ft.	Measured Release Acre-Ft.	Seepage and Evaporation Loss from Reservoir Acre-Feet
April 1	17,800					
May 1	16,200	1,600	1,200	2,800	1,820	980
June 1	11,400	4,800	1,230	6,030	3,200	2,830
July 1	8,300	3,100	1,180	4,280	1,640	2,640
Aug. 1	4,200	4,100	0	4,100	3,060	1,040
Sept. 1	700	3,500	0	3,500	2,860	640
Oct. 1	0	700	0	700	680	20
TOTALS		17,800	3,610	21,410	13,260	8,150

Deliveries to Prior Right Owners Below Reservoir- During 1947 Season

Name of Water Right owner	Allotment as per Agreement Acre-Feet	Amount Delivered from Lake Dwinnell Reservoir for 1947 Season: Acre-Feet	Amount Delivered from Lake Dwinnell Reservoir for 1947 Season: Per Cent of Allot.
Leland Root	198	198	100
John Soule	692	692	100
Fred Dennis; K.K.Waters and Emily S. Waters	696	565 *	81
McKee Company	1,200	1,145	96
Orrin Brown and Estate of Fred Rebling	596	0 *	0

* Leakage from reservoir provided additional water sufficient to supply full irrigation demands.

Summaries of Deliveries from Lake Dwinnell Reservoir for 1947 Season

Month	Measured Release Acre-Feet	Deliveries in Acre-Feet		
		Prior Rights	M.W.C.D.	Westgate
April	1,820	455	1,365	0
May	3,200	433	2,767	0
June	1,640	417	1,223	0
July	3,060	519	2,541	0
August	2,860	464	2,396	0
September	680	312	368	0
TOTALS	13,260	2,600	10,660	0

Additional data pertaining to Lake Dwinnell Reservoir are contained in Tables 11, 12, 13, 14 and 15 of this report

Beaughan Creek

One measurement was made during the 1947 season at the 8.0 foot rectangular weir (Long-Bell Upper Weir) located at the head of Beaughan Creek. This measurement indicated that no change in flow since the 1945 season. The results are given below:

Date	Gage Height in Feet	Discharge in C.F.S.
7-23-47	0.37	5.92

This amount of water was sufficient to supply approximately 71 per cent of the total second priority allotments of 8.28 cubic

feet per second. Distribution was made in accordance therewith during the 1947 season. The Long-Bell Lumber Company diverts practically the entire flow of Beaughan Creek, including the downstream users' share of the available water, for use at its millpond. After such use, the downstream users' share of the water or 65 per cent of the measured flow at Long-Bell Upper weir, must be returned to Beaughan Creek above the 2-foot Parshall Flume on Beaughan Creek below the mill pond. The amount of water required at said 2-foot Parshall Flume during the 1947 season was 3.85 cubic feet per second, based on the measurement made at the Long Bell upper weir. The measured daily discharge was in excess of this amount at all times during the 1947 season.

Carrick Creek

There was sufficient water available in Carrick Creek to satisfy all irrigation requirements during the 1947 season.

The result of intermittent measurements of Carrick Spring are shown in Table 9.

Parks Creek

Distribution on Parks Creek for the 1947 season was in accordance with the practices followed during the past seasons. A summary of the distribution made during the 1947 season is set forth in the following tablulation:

	Measured Water Supply c.f.s	Distribution in Per Cent of Priority Allotments			
		Duke 1	Caledonia 2	Foulke, et.al. 3	Robertson 4,6,11,15
April	36.1	100	100	100	100
May	29.9	100	100	100	80
June	16.1	100	100	69	45
July	5.4	88	16	0	9
August	4.1	69	0	0	6
Sept.	4.0	67	0	0	6

Records of the flow available for the above distribution are set forth in Tables 4 and 5.

The 21st and 24th priority of Frank H. Solus on the extreme lower end of Parks Creek had available 100 per cent allotments throughout the season.

Big Springs

The water supply of Big Springs averaged about 36 cubic feet per second during April. The supply increased during the season and an average of about 44 cubic feet per second was available during August and September.

The Big Springs Irrigation District had available about 75 per cent allotment during April with 90 per cent available in August and September. The amount diverted by the district during the 1947 season is set forth in Table 16.

Lower Shasta River

The water supply for this section of the stream was in excess of requirements at all times during the 1947 season. All ditches and pumping plants were operated with a minimum of regulation during the season.

A record of the flow available to the water users below the Montague bridge is submitted in Table 7. Records of diversion by the Grenada Irrigation District and the Shasta River Water Association are presented in Tables 17 and 18, respectively. A summary of these data is set forth in the following tabulation.

Month	Average Diversion Grenada Irrigation District c.f.s.	Average Diversion Shasta River Water Association c.f.s.	Average Available Water Supply Fiock et.al. c.f.s *
April	31.9	36.8	37.4
May	32.3	37.5	17.9
June	15.9	24.4	58.0
July	22.8	38.0	18.6
Aug.	21.6	33.8	24.7
Sept.	17.6	30.8	55.0

Little Shasta River

Regulation was necessary on this stream beginning about April 1 when the available water supply was only sufficient to satisfy 50 per cent of the fifth priority class.

The flow from Cleland Spring supplied sufficient flow in excess of full allotments therefrom to provide 100 per cent allotments for the third priority class until August 8. Subsequent thereto and until the end of the irrigation season there was sufficient flow available to provide 100 per cent of allotments for the first to third priority classes.

A summary of the distribution during the 1947 season is set forth in the following tabulation:

Month	Available Water Supply: Cubic Feet Per Second	Available Water Supply: Per Cent of Total Allotments	1	2	3	4	5	6
April	22.7	29	100	100	100	100	50	0
May	17.6	22	100	100	100	100	25	0
June	14.5	18	100	100	100	100	15	0
July	11.4	14	100	100	100	25	0	0
Aug.	10.7	14	100	100	100	0	0	0
Sept.	12.3	16	100	100	100	0	0	0

Intermittent measurements of the discharge of Cleland Spring are recorded in Table 10. The following tabulation was compiled from measurements made during the period 1935 to 1947, inclusive.

CLELAND SPRING

Year	Discharge - Cubic Feet Per Second		
	Beginning of Season	End of Season	Seasonal Mean
1935	6.81	6.62	6.65
1936	6.50	6.72	6.60
1937	6.50	6.78	6.65
1938	7.10	10.0	7.70
1939	8.77	8.25	8.44
1940	7.84	9.56	8.48
1941	8.39	9.04	8.60
1942	8.20	9.20	8.70
1943	10.50	11.10	10.80
1944	10.20	11.40	10.60
1945	8.8	8.9	9.1
1946	9.0	9.4	9.1
1947	9.1	10.3	9.0

OWNERSHIP OF LANDS AND WATER RIGHTS WITHIN
SHASTA RIVER WATERMASTER SERVICE AREA

Changes in Ownership

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for Shasta River Watermaster Service Area, County of Siskiyou, State of California for 1947" and which shall be included in the statement for said watermaster service area for 1948 are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1947 Statement	Name of Water Right Owner to Appear in 1947 Statement	Amount of water c.f.s
5-26	Baker Ray F. and Baker, Dorothy J. to Taylor, Archie and Taylor, Goldie to Neeley, Milton M. and Neeley, Opal T.	Miller, Leroy and Miller, Marion	1.97
5-112	Buranck, Joseph and Buranck, Ida to Harrison, John H. and Harrison, Eloise	Meyers, James F. and Meyers, Hazel M.	1.275
5-53	Foulke, Lewis M. and Foulke, Christine T.	Foulke, Lewis M. and Foulke, Estate of Christine T.	5.95
5-54	Litchens, Fred and Litchens, Effie	Clink, W. A.; Clink, W.L. and Clink, Frank	7.50
5-94	Morris, Clyde	Linville, John H.	0.70
5-23	Sullivan, E. A.	Guerin, George H. and Guerin, Linda	0.98
5-65A	United States Department of Agriculture, Farm Home Administration	Browne, James H. and Browne, Alyce B.	14.945

TABLE 1
1938-1947
PRECIPITATION AT YREKA, SISKIYOU COUNTY - ELEVATION 2625 FEET

Monthly, Seasonal and Average Amounts in Inches

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1937-38	1.97	5.03	4.86	3.51	5.46	4.05	0.64	0.44	0.11	0.95	.00	0.41	27.43
1938-39	.82	.80	1.38	2.15	1.23	1.51	.42	.45	.04	.35	.00	2.35	11.50
1939-40	.89	.00	6.12	2.36	5.13	3.52	.69	.32	.56	.09	.00	1.71	21.39
1940-41	1.34	.98	4.13	2.85	2.99	1.51	2.07	1.66	.95	.70	.54	.81	20.53
1941-42	1.01	1.84	8.01	1.88	2.65	.33	1.60	3.96	.30	.00	.13	.47	22.18
1942-43	.34	6.26	5.01	4.22	1.41	1.21	1.07	.66	1.07	.09	.01	.00	21.35
1943-44	2.24	1.17	.85	1.25	1.43	1.44	1.00	.73	.68	.60	.25	.22	11.86
1944-45	.45	2.86	1.15	.96	2.87	1.53	.69	4.06	.07	.13	.05	T	14.82
1945-46	2.06	2.86	4.55	2.25	1.99	1.13	.57	.89	.89	.41	T	.08	17.68
1946-47	1.07	3.15	.76	1.16	.93	1.84	.35	.73	1.13	.26	.85	.00	12.23
32-Year Mean	1.14	2.48	2.91	2.24	2.34	1.40	1.00	.91	.67	.36	.18	.54	16.17
13-Year Mean	1.23	2.28	3.26	2.65	2.49	1.60	1.09	1.21	.70	.32	.16	.54	17.53

PRECIPITATION AT EDGEWOOD, SISKIYOU COUNTY - ELEVATION 3952 FEET
Monthly, Seasonal and Average Amounts in Inches
1937 - 1947

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1937-38	1.52	3.49	4.24	3.47	5.45	5.16	.96	.89	.35	.08	.00	.60	26.21
1938-39	1.31	1.79	.44	1.17	.53	1.79	.56	.37	.51	.55	.37	1.27	10.62
1939-40	1.27	.38	5.77	2.45	5.37	3.12	.92	.91	.68	.01	T	2.61	23.49
1940-41	2.61	.64	9.30	2.25	7.86	6.36	4.51	1.55	1.42	.29	.78	.07	37.64
1941-42	1.87	1.42	4.69	3.83	3.01	.58	3.09	2.53	.61	.00	.90	.00	22.53
1942-43	.70	3.17	2.29	3.92	1.74	1.78	1.71	.20	1.02	.09	.00	.03	16.65
1943-44	2.31	1.25	.85	.61	.66	.00	1.79	1.37	.91	.85	.33	.00	10.93
1944-45	.97	2.91	.81	.94	3.60	1.60*	.80*	2.51	.34	.00	.00	.00	14.48
1945-46	2.43	2.90*	4.50*	1.26	.54	1.30*	.09	.37	.98	1.82	.00	.34	16.53
1946-47	.71	3.68	.65	.00	2.55	1.59	.66	.76	.86	.31	.44	.15	12.36
13-Year MEAN **	1.37	2.00	2.82	2.05	2.72	2.36	1.51	1.08	.77	.35	.22	.44	17.67

* Estimated ** 1934-1947

TABLE 2

SNOW SURVEY DATA

1937-1947

Year	Water Content of Snow as of April 1 - Inches				
	Parks Creek Elevation 6,500	Sweetwater Elevation 5,500	Mt. Shasta Elevation 8,000	N.Fk. Sacramento Elevation 6,800	Average
1937	31.8	18.4	43.4	35.5	32.3
1938	33.3	27.0	120.4	39.1	55.0
1939	24.8	10.5	23.3	9.9	17.1
1940	36.3	6.3	67.4	22.2	33.1
1941	54.6	18.8	108.6	45.3	56.8
1942	33.1	12.7	52.7	22.5	30.2
1943	34.2	11.8	41.5	15.4	25.7
1944	18.2	7.7	28.6	12.6	16.8
1945	29.3	10.9	46.7	19.9	26.7
1946	42.8	14.2	53.4	25.4	33.9
1947	29.7	6.1	37.2	13.4	21.6
11-Year Mean	33.5	13.1	56.7	23.7	31.7

TABLE 3

Daily Discharge in Cubic Feet per Second

SHASTA RIVER ABOVE EDSON-FOULKE YREKA DITCH

April 1 to September 30, 1947

Day	April	May	June	July	August	September
1	38	44	42	21	5	3
2	37	63	38	17	5	3
3	35	64	38	16	5	3
4	34	59	38	16	3	3
5	32	49	38	16	3	3
6	31	48	38	15	3	3
7	30	47	38	13	3	3
8	27	49	42	9	3	2
9	27	46	39	9	3	2
10	24	38	34	9	3	2
11	24	34	31	8	3	2
12	24	34	28	8	3	2
13	26	32	25	7	3	2
14	31	32	23	6	3	2
15	43	30	20	6	3	2
16	45	30	27	6	3	2
17	48	31	25	6	3	2
18	39	31	23	5	3	3
19	37	31	23	5	2	3
20	37	30	21	5	2	3
21	24	30	20	3	2	3
22	28	30	17	3	2	3
23	29	29	17	3	2	3
24	27	29	21	3	2	3
25	27	29	21	3	2	3
26	28	29	21	3	2	3
27	30	34	21	5	2	3
28	31	37	21	7	2	3
29	32	30	21	6	4	3
30	32	30	21	5	4	3
31		34		5	3	
Total Sec. Ft., Days	957	1163	832	249	91	80
Mean Sec. Feet	31.9	37.5	27.7	8.0	2.9	2.7
Total Acre Feet	1900	2310	1650	494	180	160

Total Acre Feet for 183 day period - 6,690

TABLE 4

Daily Discharge in Cubic Feet per Second

PARKS CREEK ABOVE DUKE NORTH DITCH

April 1 to September 30, 1947

Day	Apr.	May	June	July	August	Sept.
1	25	57	26	7	5	4
2	25	67	25	7	5	4
3	25	63	24	7	5	4
4	24	56	24	7	5	4
5	23	50	23	7	4	4
6	23	48	23	7	4	4
7	21	45	23	6	4	4
8	21	44	27	5	4	4
9	21	38	24	5	4	4
10	21	30	21	5	4	4
11	22	26	19	5	4	4
12	25	25	18	5	4	4
13	33	24	17	5	4	4
14	57	23	16	5	4	4
15	64	22	14	5	4	4
16	66	22	17	5	4	4
17	64	22	17	5	4	4
18	55	20	15	5	4	4
19	50	20	13	5	4	4
20	49	21	12	5	4	4
21	39	20	11	5	4	4
22	35	20	10	5	4	4
23	35	19	9	5	4	4
24	34	19	9	5	4	4
25	33	17	8	5	4	4
26	35	16	8	5	4	4
27	38	21	8	5	4	4
28	35	19	8	5	4	4
29	43	17	8	5	4	4
30	43	18	7	5	4	4
31		19		5	4	
Total Sec. Ft. Days	1084	928	484	168	128	120
Mean Sec. Feet	36.1	29.9	16.1	5.4	4.1	4.0
Total Acre Feet	2150	1840	960	330	250	240

Total Acre-Feet for 183 day period - 5,770

TABLE 5

Daily Discharge in Cubic Feet per Second

PARKS CREEK AT ROBERTSON WEIR

May 1 to September 30, 1947

Day	April	May	June	July	August	September
1		16	5.4	2.4	1.1	0.9
2		16	5.4	2.1	1.0	.9
3		16	5.4	2.1	1.0	.9
4		16	5.4	2.6	1.0	.9
5		16	5.4	2.1	1.0	.9
6		16	5.4	1.9	1.0	.9
7		16	7.3	1.9	.9	.9
8		16	14.4	1.9	.9	.9
9		16	13.5	1.9	.9	.9
10		16	11.4	1.9	.9	.9
11		16	9.7	1.9	.9	.9
12		16	8.6	1.9	.9	.9
13		16	8.1	1.9	.9	.9
14		16	7.9	1.9	.9	.9
15	Surplus	16	10.5	1.3	.9	.9
16		16	11.4	1.1	.9	.9
17		14.3	12.0	.9	.9	.9
18		15.4	9.7	.9	.9	.9
19		13.5	8.4	.9	.9	.9
20		13.2	5.9	.9	.9	.9
21		12.8	5.4	.9	.9	.9
22		9.4	5.4	.9	.9	.9
23		8.8	5.4	.9	.9	.9
24		7.8	5.6	.9	.9	.9
25		7.0	5.0	.9	.9	.9
26		6.1	4.3	.9	.9	.9
27		6.1	3.9	1.1	.9	.9
28		6.1	3.5	1.6	.9	.9
29		6.1	3.1	1.6	.9	.9
30		6.1	2.7	1.6	.9	.9
31		6.1		1.3	.9	
Total Sec. Ft. Days		394.8	215.5	47.0	28.6	27.0
Mean Sec. Feet		12.7	7.2	1.5	.9	.9
Total Acre Feet		783	427	93	57	54

Total Acre-Feet 153 day period - 1,410

TABLE 6

Daily Discharge in Cubic Feet Per Second
SHASTA RIVER AT EDGEWOOD BRIDGE

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	20	61	44	47		25	33	44	10	8	9
2	10	20	62	42	47		25	19	39	9	8	8
3	11	20	64	40	47		25	84	39	9	8	8
4	12	19	66	40	47		25	80	38	9	8	8
5	14	19	67	40	47		25	66	37	9	8	8
6	14	19	70	41	47		25	56	36	8	8	8
7	14	19	67	42	47		25	53	45	8	8	9
8	14	19	65	42	47		25	65	57	7	7	9
9	14	19	62	43	47		25	60	45	7	7	9
10	16	19	60	44	47		25	48	35	8	7	9
11	16	19	57	42	47		28	37	25	8	7	9
12	16	19	53	41			22	24	22	8	6	9
13	15	19	50	40			21	20	20	8	7	9
14	15	19	50	38			25	19	20	8	7	8
15	16	19	50	37			46	15	20	7	7	8
16	16	19	50	37			56	16	20	7	7	7
17	17	22	50	36			57	16	19	7	7	7
18	17	32	50	35			46	16	15	6	7	8
19	17	54	50	37			40	15	14	6	6	9
20	20	17	49	38			45	11	14	6	7	9
21	20	22	48	40			34	10	14	6	7	10
22	20	134	48	42			30	10	14	7	7	10
23	21	186	48	44			24	10	14	7	8	10
24	21	98	48	45			24	10	11	8	8	10
25	20	72	49	45			24	11	10	8	8	10
26	17	60	50	46			24	12	10	7	8	10
27	17	60	50	46			26	20	9	8	8	11
28	14	60	50	46			28	28	10	10	8	10
29	20	60	49	46			28	19	10	9	9	10
30	20	60	48	47			28	19	10	9	9	10
31		60	47	47				25		9	9	
Total	483	1304	1688	1293			906	927	716	243	234	269
Ac. Feet:	960	2590	3350	2560			1800	1840	1420	480	460	530

NO RECORD

NO RECORD

Total Discharge for 317 day period 15,990 acre-feet.

TABLE 7

Daily Discharge in Cubic Feet per Second
SHASTA RIVER NEAR MONTAGUE
April 1 to September 30, 1947

Day	April	May	June	July	August	September
1	55	21	71	15	27	34
2	55	21	78	13	31	33
3	55	21	72	18	21	38
4	55	21	88	16	18	59
5	55	21	88	15	16	53
6	55	21	101	13	16	56
7	55	20	101	16	16	55
8	55	19	101	25	16	55
9	55	19	101	23	19	50
10	55	18	108	30	20	50
11	55	18	113	28	21	52
12	55	18	115	16	23	53
13	55	16	91	15	37	55
14	55	16	86	15	27	56
15	38	16	69	18	16	59
16	21	16	59	16	18	59
17	21	16	50	15	17	59
18	21	16	32	14	16	59
19	21	16	27	17	19	59
20	21	16	24	18	14	59
21	21	16	23	19	20	59
22	21	23	21	19	23	59
23	21	23	19	14	22	60
24	21	16	16	13	31	60
25	21	16	14	15	33	60
26	21	16	13	18	37	60
27	21	16	16	21	42	60
28	21	16	12	21	39	60
29	21	16	15	34	38	60
30	21	16	15	23	37	60
31		16		24	36	
Total Sec. Ft. Days	1123	556	1739	577	766	1651
Mean Sec. Feet	37.4	17.9	58.0	18.6	24.7	55.0
Total Acre Feet	2230	1100	3450	1140	1520	3270

Total Acre Feet for 183 day period - 12,710

TABLE 8

Daily Discharge In Cubic Feet per Second

LITTLE SHASTA RIVER ABOVE HARP DITCH

April 1 to September 30, 1947

Day	April	May	June	July	Aug.	September
1	12	10	7	4	2	2
2	11	10	7	4	2	2
3	11	10	7	4	2	2
4	11	9	7	4	2	2
5	10	9	7	4	2	2
6	10	9	7	4	2	2
7	10	9	7	4	2	2
8	14	9	6	4	2	2
9	16	9	6	4	2	2
10	15	9	6	4	2	2
11	15	9	6	4	2	2
12	15	9	6	4	2	2
13	16	9	6	4	2	2
14	18	9	6	4	2	2
15	19	9	6	3	2	2
16	19	9	5	3	2	2
17	18	9	5	3	2	2
18	17	8	5	3	2	2
19	17	8	5	3	2	2
20	15	8	5	3	2	2
21	13	8	5	3	2	2
22	13	8	5	3	2	2
23	13	8	5	3	2	2
24	12	8	5	3	2	2
25	12	8	5	2	2	2
26	12	8	5	2	2	2
27	11	8	5	2	2	2
28	11	7	5	2	2	2
29	12	7	5	2	2	2
30	11	7	5	2	2	2
31		7		2	2	
Total Sec. Ft. Days	409	264	172	100	62	60
Mean Sec. Feet	13.6	8.5	5.7	3.2	2.0	2.0
Total Acre Feet	810	520	340	200	120	120

Total Acre-Feet for 183 day period - 2,110

TABLE 9

Discharge in Cubic Feet Per Second

CARRICK SPRING

April 1 to September 30, 1947

Day	April	May	June	July	August	Sept.
1						
2					6.8	
3			7.0			
4	7.0					6.8
5				6.9		
6						
7		7.0				
8						
9						
10						
11						
12					6.9	
13						
14						
15						
16						
17	7.1			6.9		
18						
19			6.9			6.8
20						
21						
22						
23						
24					6.8	
25		7.0				
26						
27						
28				6.9		
29						
30			6.9			
31						
Mean Sec. Feet	7.1	7.0	6.9	6.9	6.8	6.8
Total Acre ft.	420	430	410	420	420	410

Total Acre-Feet 183 day period = 2,510

TABLE 10

Discharge in Cubic Feet Per Second

CLELAND SPRING

April 1 to September 30, 1947

Day	April	May	June	July	Aug.	Sept.
1	9.0					
2						
3						
4		9.1				
5			9.0		8.4	9.6
6						
7						
8					8.4	
9				8.2		
10						
11						
12						
13						
14						
15						
16		9.2				
17			8.8			
18						
19						
20						
21						
22						11.0
23						
24				8.3		
25						
26		9.0				
27						
28					9.0	
29	9.1		8.6			
30						
31						
Mean Sec. Feet	9.1	9.1	8.8	8.2	8.7	10.3
Tot. Acre Feet	540	560	520	500	540	610

Total Acre-Feet for 183 day period - 3,270

TABLE 11

Daily Discharge in Cubic Feet Per Second

M.W.C.D. PARKS CREEK CANAL AT HEAD

April 14 to May 13 1947

Day	April	May
1		15
2		15
3		15
4		15
5		15
6		15
7		10
8		10
9		5
10		5
11		3
12		2
13		1
14	5	
15	15	
16	15	
17	15	
18	15	
19	15	
20	10	
21	10	
22	5	
23	5	
24	5	
25	5	
26	5	
27	5	
28	5	
29	10	
30	10	
31		
Total Sec. Ft. Days	155	126
Mean: Sec. Ft.	9.1	9.7
Total Acre Feet	310	250

Total Acre-Feet for 30 day period - 560

TABLE 12

Daily Storage on Hand in Acre-Feet

LAKE DWINNELL RESERVOIR

April 1 to September 30, 1947

Day	April	May	June	July	Aug.	Sept.
1	17,800	16,200	11,400	8,300	4,200	700
2	17,800	15,900	11,400	8,200	4,100	700
3	17,800	15,600	11,300	8,100	4,000	600
4	17,800	15,300	11,300	8,000	3,800	500
5	17,900	15,000	11,200	7,800	3,700	500
6	17,900	15,000	11,200	7,600	3,500	500
7	17,940	15,000	11,100	7,400	3,400	500
8	17,900	14,900	11,100	7,200	3,200	400
9	17,900	14,900	11,000	7,000	3,100	400
10	17,900	14,700	11,000	6,900	2,900	400
11	17,900	14,500	10,900	6,700	2,800	400
12	17,800	14,400	10,900	6,500	2,600	400
13	17,800	14,200	10,800	6,300	2,500	400
14	17,800	14,100	10,800	6,100	2,300	400
15	17,800	13,900	10,700	6,000	2,200	400
16	17,800	13,700	10,600	6,000	2,100	400
17	17,700	13,500	10,500	6,000	2,000	400
18	17,600	13,200	10,400	6,000	1,900	300
19	17,500	12,900	10,300	5,800	1,800	300
20	17,400	12,600	10,200	5,600	1,700	300
21	17,300	12,400	10,100	5,400	1,600	300
22	17,100	12,200	10,000	5,200	1,500	300
23	17,000	12,000	9,900	5,100	1,400	300
24	17,800	11,800	9,800	5,000	1,300	200
25	17,600	11,800	9,700	4,900	1,200	200
26	17,400	11,700	9,500	4,700	1,100	200
27	17,200	11,700	9,200	4,600	1,000	200
28	17,000	11,600	8,900	4,500	1,000	100
29	16,700	11,600	8,700	4,500	900	100
30	16,400	11,500	8,400	4,400	900	0
31		11,500		4,300	800	

TABLE 13

Daily Release in Cubic Feet Per Second

LAKE DWINNELL RESERVOIR

April 10 to September 30, 1947

Day	April	May	June	July	Aug.	Sept.
1		57	18	60	42	35
2		47	18	60	42	30
3		47	18	60	42	25
4		47	18	60	45	20
5		49	18	60	47	20
6		54	18	60	47	20
7		58	18	60	47	20
8		58	18	57	47	15
9		63	18	55	45	15
10	5	68	18	55	42	15
11	5	68	18	55	46	15
12	5	69	18	55	50	10
13	5	71	18	55	50	10
14	5	71	20	55	50	10
15	5	71	23	30	50	10
16	27	71	23	5	50	10
17	50	71	23	5	50	10
18	50	71	23	22	50	10
19	50	71	23	40	50	5
20	50	71	23	45	50	5
21	56	71	23	50	50	5
22	62	71	23	50	50	5
23	67	71	23	50	50	5
24	72	42	23	50	50	5
25	70	13	41	55	46	5
26	67	13	60	60	45	2
27	67	13	60	60	44	2
28	67	15	60	60	43	2
29	67	18	60	60	42	2
30	67	18	60	51	41	2
31		18		42	40	
Total Sec. Ft. Days	919	1616	825	1542	1443	345
Total Ac. Ft.	1820	3200	1640	3060	2860	680

Total Acre-Feet for 174 day period - 13,300

TABLE 14

Summary of Deliveries to Prior Right Owners From
LAKE DWINNELL RESERVOIR
1929 - 1947

Year	Deliveries in Acre-Feet						Deliveries in per cent of Allotment
	Jones	Soule	Dennis	McKee	Terwilliger *	Total	
1929	---	---	---	---	---	---	---
1930	190	485	465	923	---	2060	61
1931	198	473	473	909	---	2050	61
1932	---	---	---	---	---	---	---
1933	198	692	687	1130	101	2210	83
1934	159	692	461	922	159	2390	71
1935	198	609	600	1075	234	2720	80
1936	198	637	527	1195	202	2759	82
1937	198	633	489	1200	120	2690	80
1938	198	---	---	1073	---	1271	38
1939	198	692	687	1138	308	3023	90
1940	198	471	562	1105	0	2336	69
1941	198	561	631	1200	51	2641	76
1942	198	344	618	1200	0	2360	70
1943	198	509	443	1200	0	2350	70
1944	198	692	460	1200	0	2550	76
1945	198	591	387	1050	0	2220	65
1946	198	484	486	1094	0	2262	67
1947	198	692	565	1147	0	2602	77

1929 - Record of deliveries missing.
1930-1931 - Record of deliveries to Terwilliger missing.
1932 - Record of deliveries missing
1938 - Soule, Dennis and Terwilliger had sufficient water from reservoir seepage to supply irrigation demands
1940-1941)
1942-1943) Reservoir seepage supplied sufficient additional water for
1944-1945) Soule, Dennis and Terwilliger.
1946-1947)

* Accretions to the flow of Shasta River through the Dennis Ranch provide additional water, which is available for diversion by E. S. Terwilliger, in amounts more than sufficient to make up the shortage in the amounts of water delivered from the reservoir.

TABLE 15

RECORD OF OPERATION OF LAKE DWINNELL RESERVOIR - 1929 to 1947

Year	Reservoir Storage On April 1 Ac. Ft.	Inflow Apr.1 to Sept.30 Ac.Ft.	Total Available Water Supply Ac.Ft.	Maximum Storage in Reservoir Ac.Ft.	Maximum Storage in Reservoir Date	Delivery from Reservoir: M.W.C.D. Ac.Ft.	M.W.C.D. Period	Prior Rights Ac. Ft.	Prior Rights Period	Total Ac.Ft.	Storage In Res. When Delivery to MWCD Ceased Ac. Ft.	Seepage and Evaporation Loss Ac. Ft.
1929				4,500		No Rcrd.		No. Rcrd.				
1930				10,500	Mar.14	5,000	5/5/30-7/4/30	2,060	4/23/30-9/5/30	7,060	2,800	
1931				4,250	Apr.4	0		2,050	4/1/37-7/25/31	2,050	2,800	
1932	5,500			5,500	Mar. 20	2,000	5/15/32-6/15/32	No.Rcrd.		2,000	2,000	
1933	5,200			6,500	May 3	4,750	4/21/33-7/16/33	2,810	4/10/33-9/3/33	7,560	2,200	
1934	4,850			5,000	Apr. 5	1,500	4/10/34-4/23/34	2,390	4/5/34-7/22/34	3,890	2,800	
1935	5,000	4,620	9,620	5,700	May 10	2,700	5/10/34-6/2/35	2,720	4/9/35-8/11/35	5,420	3,000	4,200
1936	5,460	4,720	10,180	6,020	Mar. 3	1,560	4/14/36-5/20/36	2,760	4/14/36-8/11/36	4,320	3,250	5,860
1937	5,940	14,040	19,980	9,800	May 6	7,360	5/5/37-9/15/37	2,690	4/26/37-9/9/37	10,050	0	9,930
1938	31,600	28,440	60,040	32,100	May 3	23,910b	5/1/38-9/30/38	1,270	5/1/38-9/30/38	25,180	2,850	32,010
1939	7,350	1,210	8,560	7,350	Apr. 1	2,350	4/9/39-5/5/39	3,020	4/4/39-8/10/39	5,370	3,525	3,190
1940	27,350	18,000	45,350	28,000	Apr. 6	18,570c	4/22/40-9/18/40	2,340	4/17/40-9/30/40	20,900	2,540	22,040
1941	31,680	48,060	79,740	34,400	Apr. 4	36,490d	4/1/41-9/30/41	2,640	5/1/41-9/30/41	39,130	13,600	27,010
1942	25,700	20,600	46,300	29,100	June 6	12,940e	4/13/42-9/30/42	2,360	4/13/42-9/30/42	15,300	10,000	21,000
1943	33,100	12,880	45,980	33,400	Apr. 5	19,770f	4/13/43-9/30/43	2,350	4/15/43-9/30/43	22,120	4,900	18,960
1944	14,200	5,370	19,570	14,200	Apr. 1	9,030	4/17/44-9/30/44	2,550	4/17/44-9/30/44	11,580	90	7,900
1945	17,550	12,450	30,000	18,600	June 11	9,840	4/13/45-9/30/45	2,220	4/13/45-9/30/45	12,060	2,500	15,400
1946	24,400	11,600	36,000	25,100	May 20	11,640	4/2/46-9/30/46	2,260	4/19/46-9/30/46	13,900	5,400	16,600
1947	17,800	3,600	21,400	17,800	Apr. 1	10,600	4/16/47-9/3047	2,600	4/10/47-9/30/47	13,260	0	8,150

TABLE 15 (Cont'd)

RECORD OF OPERATION OF LAKE DWINNELL RESERVOIR - 1929 to 1947

(a) In 1929 the District used water only for puddling its canal.

(b) Includes 831 acre-feet wasted through outlet to prevent increase in reservoir level and 9980 acre-feet delivered by District to Stallcup and Big Springs Irrigation District.

(c) Includes 2710 acre-feet wasted in April to maintain reservoir level and deliveries through the entire season to Big Springs Irrigation District.

(d) Includes 21,600 acre-feet wasted in April and May through outlet to prevent increase in reservoir level and 5,970 acre-feet delivered to Big Springs Irrigation District.

(e) Includes 3,390 acre-feet delivered to Big Springs Irrigation District.

(f) Includes 10,000 acre-feet wasted in April through outlet to maintain safe water-surface elevation in reservoir.

TABLE 16

Daily Discharge in Cubic Feet per Second
BIG SPRINGS IRRIGATION DISTRICT
April 1 to September 30, 1947

Day	April	May	June	July	August	Sept.
1	27	19	23	25	27	27
2	27	19	23	25	27	27
3	27	19	23	25	27	27
4	27	19	23	25	27	27
5	27	19	23	25	27	27
6	27	19	10	25	27	27
7	27	19	0	25	27	27
8	27	19	0	25	27	27
9	27	19	0	25	27	27
10	27	19	0	25	27	27
11	27	19	0	25	27	14
12	27	19	0	25	27	0
13	24	19	0	25	27	0
14	19	19	0	25	27	0
15	19	19	12	25	27	0
16	19	19	24	26	27	0
17	19	19	24	26	27	0
18	19	19	24	26	27	0
19	19	19	24	26	27	0
20	19	19	24	26	27	14
21	19	19	24	26	27	27
22	19	19	24	26	27	27
23	19	19	24	26	27	27
24	19	19	24	26	27	27
25	19	20	24	26	27	27
26	19	21	24	26	27	27
27	19	23	24	26	27	9
28	19	23	24	26	27	0
29	19	23	24	26	27	0
30	19	23	24	26	27	0
31		23		27	27	
Total Sec. Ft. Days	671	612	497	792	837	469
Mean Sec. Ft.	22.4	19.7	16.6	25.5	27.0	15.6
Tot. Acre Feet	1330	1210	990	1570	1660	930

Total Acre-Feet 183 day period - 7,690

TABLE 17

Discharge in Cubic Feet Per Second
GRENADA IRRIGATION DISTRICT PUMPING PLANT
April 14 to October 6, 1947

Day	April	May	June	July	Aug.	Sept.	October
1		34	17	35	22	22	16
2		34	0	35	22	22	22
3		34	0	35	22	22	22
4		33	0	35	22	22	17
5		34	0	35	22	22	17
6		34	0	29	22	22	8
7		34	0	8	22	22	
8		34	0	11	22	22	
9		34	0	22	22	22	
10		32	0	22	22	22	
11		34	0	22	22	22	
12		34	0	22	22	22	
13		34	0	22	22	22	
14	10	34	0	22	22	21	
15	24	34	0	22	22	22	
16	33	34	28	22	22	22	
17	34	34	35	22	22	0	
18	34	21	35	22	22	0	
19	34	34	35	22	22	0	
20	34	21	22	22	22	0	
21	34	34	22	22	22	0	
22	34	34	22	22	22	18	
23	34	34	22	22	22	22	
24	34	33	30	22	22	22	
25	34	34	35	22	22	22	
26	34	34	35	22	22	22	
27	34	34	35	22	22	22	
28	34	33	35	6	22	22	
29	34	34	35	15	16	14	
30	34	30	35	22	16	14	
31		17		22	22		
Tot. Sec. Ft. Days	543 *	1002	478	706	670	529	102
Mean Sec. Ft.	31.9 *	32.3	15.9	22.8	21.6	17.6	17.0
Total Acre-Ft.	1080 *	1990	950	1400	1330	1050	200

Total acre-feet 170 day period - 8,000

* 17 day period

TABLE 18

Daily Discharge in Cubic Feet Per Second
Shasta River Water Association Pumping Plant
March 24 to September 30, 1947

Day	March	April	May	June	July	August	September
1		38	38	0	38	38	34
2		30	38	10	38	38	38
3		13	38	16	38	38	38
4		38	38	0	38	38	38
5		38	38	0	38	38	38
6		35	38	0	38	38	38
7		38	38	0	38	38	38
8		38	38	0	38	38	38
9		38	38	0	38	38	38
10		38	38	0	38	38	38
11		38	38	0	38	38	38
12		38	38	21	38	38	38
13		38	38	38	38	38	38
14		38	38	38	38	38	38
15		38	38	38	38	38	38
16		38	38	38	38	38	38
17		38	38	38	38	38	38
18		38	38	38	38	38	38
19		38	38	38	38	31	38
20		38	34	38	38	38	38
21		38	30	38	38	38	38
22		38	34	38	38	38	38
23		38	38	38	38	34	38
24	38	38	38	38	38	26	38
25	38	38	38	38	38	26	16
26	38	38	38	38	38	11	0
27	38	38	38	38	38	19	0
28	38	38	38	38	38	26	0
29	38	38	38	38	38	24	0
30	38	38	38	38	38	26	0
31	38		38		38	26	
Tot. Sec. Ft. Days	304 *	1104	1162	731	1178	1047	924
Mean Sec. Feet	38.0 *	36.8	37.5	24.4	38.0	33.8	30.8
Tot. Acre Feet	600 *	2190	2300	1450	2340	2080	1830

* 8 Day period

Total runoff for 191 day period - 12,790 acre-feet.

TABLE 19

Summary of Run-off in Acre-Feet
of Streams in Shasta Valley
For the Periods April 1 to September 30, 1947

Name of Stream	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
Shasta River Above Yreka Ditch	8,510	7,440	13,600	* 19,100	4,090	14,800	33,300	* 13,800	*** 10,900	6,600	11,000	13,500	6,690
Parks Creek Above Duke North Ditch	6,100	6,560	11,000	* 14,400	4,490	16,000	18,100	* 9,880	*** 8,800	5,670	9,720	10,540	5,770
Little Shasta River Above Harp Ditch	5,630	6,520	5,680	** 6,060	3,270	4,160	4,480	* 5,570	*** 10,500	2,840	6,100	7,080	2,110
Beaughan Spring	1,960	1,860	1,820	1,950	1,810	1,810	2,200	2,140	2,100	2,150	2,450	2,450	2,150
Big Spring	12,200	12,100	12,100	—	12,100	—	—	**** 15,600	14,800	14,500	14,400	14,600	7,690
Carrick Spring	2,090	2,050	2,020	2,110	2,000	2,070	2,700	2,700	2,530	2,450	2,540	2,530	2,510
Cleland Spring	2,420	2,400	2,410	2,790	3,060	3,070	3,170	3,160	3,820	3,840	3,290	3,300	3,270

* Does not include April Run-Off ** May 14 to September 30, Inclusive. *** April Partly estimated
**** Estimated from measurements made during July , August and September