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Department of Public Works

SACRAMENTO

DIVISION OF WATER RESOURCES
PUBLIC WORKS BUILDING

April 5, 1937

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Attention: Mr. Gordon Zander,
Supervising Hydraulic Engineer.

Dear Sir:

Herewith is submitted a report covering water master service within the Shasta River Water Master District, Siskiyou County, California, during the 1935 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,

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Senior Hydraulic Engineer.

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DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA

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REPORTS OF THE
DIVISION OF WATER RESOURCES
Edward Hyatt, State Engineer

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REPORT ON

WATER MASTER SERVICE

ON

SHASTA RIVER AND TRIBUTARIES

SISKIYOU COUNTY, CALIFORNIA
DURING THE SEASON OF 1935

oOo

BY

HARRISON SMITHERUM
SENIOR HYDRAULIC ENGINEER

-oOo-

ORGANIZATION

Earl Lee Kelly, Director of Department of Public Works

Edward Hyatt, State Engineer

Harold Conkling, Deputy State Engineer.

Gordon Zander, Supervising Hydraulic Engineer.

Harrison Smitherum, Senior Hydraulic Engineer.

REPORT ON
WATER MASTER SERVICE
ON
SHASTA RIVER AND TRIBUTARIES
SISKIYOU COUNTY, CALIFORNIA
DURING SEASON OF 1955

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GENERAL DESCRIPTION OF WORK

Water master service was carried on in the same manner and under the same authority as is described in the report on water master service for 1954.

The writer entered upon his duties in the field as Shasta River Water Master on April 2, 1955 and continued in that capacity up to October 1st, when water master service was suspended for the season.

DISCUSSION OF RESULTS FOR THE 1935 SEASON

Precipitation

Data on precipitation, as compiled from records kept at Mt. Shasta City and Montague are presented in Tables 1 and 2 at the end of this report. Table 1 also gives the monthly precipitation as recorded at Edgewood from August 1, 1934 to October 1, 1935.

Based upon the data presented in the above mentioned tables, precipitation for the 1934-1935 season was nearly normal both as to amounts and its distribution over the season. The total precipitation for the season was 22.18 inches, or 96 per cent of the mean for the 46 seasonal years - 1889 to 1935. Of this total, 17.04 inches, or 77 per cent, fell during the period October 1 to April 1 as compared to the long time mean of 80 per cent for the same months. The precipitation for the remaining six months of the season was 23 per cent of the season's total and was 3 per cent above the long time mean for the same period. The total snowfall as recorded at Mt. Shasta City for the 1934-1935 season was 106 inches as compared to the normal of 105 inches.

The rain gaging station at Edgewood was installed by the Division of Water Resources in August 1934. This station is located at the south end of Shasta Valley at an elevation of 2952 feet. The equipment consists of a standard 8-inch rain gage set up in the yard adjoining the Edgewood Post Office. Mr. H. E. Snyder, Postmaster, Edgewood, California is the observer, serving in that capacity without pay. Mr. Snyder by reason of his interest in the matter has kept a very complete record of precipitation and acknowledgment of this service is hereby made.

The station was established for the purpose of obtaining a record of percipitation that might prove to be more accurate as an index to the run-off of the Shasta River watershed than the records now available. From past observations the average of the precipitation at Mt. Shasta City and at Montague has not been a reliable indication of such run-off.

Water Supply

Measuring stations were maintained on the streams as recited in the Water Master Report for 1934. Intermittent measurements of the discharge of various springs within the area were also obtained. The records of discharge for the several streams and springs are presented in Tables 5 to 10, inclusive, submitted at the end of this report.

Water supply conditions throughout the entire stream system were greatly improved over those of the 1934 season, except as to the springs, all of which produced approximately the same amount of water as was recorded for 1934. A comparison of the run-off for the two seasons is presented below.

Name of Stream	Total run-off April 1 to October 1 in Acre Feet 1934	1935	1935 run-off in percent of 1934
Shasta River above Edson-Foulke Yreka Ditch	4420	8510	195
Parks Creek	2550	6100	240
Shasta River at Grenada Pump(May 1 to Sept.11	18500	19200	104
Little Shasta River	850	5650	660
Beaughan Spring	2020	1960	97
Big Springs	12400	12200	98
Carrick Spring	2090	2090	100
Cleland Springs	2400	2420	101

It is interesting to note the percentage differences in the run-off for Shasta River above the Edson-Foulke Yreka Ditch, Parks Creek and Little Shasta River as compared to the differences in the total precipitation and total snowfall for the two seasons. The total precipitation for the 1934-1935 season was 115 per cent of that for 1933-1934 and the total snowfall was 480 percent. The run-off of these streams is derived principally from the melting of the winter snows and the wide range in the yields for the two seasons apparently can be attributed to the difference in the snow pack for the two seasons.

Attention is also directed to the fact that the four springs listed in the above tabulation showed little or no variation, in reflection of the difference in the precipitation for the two seasons.

Distribution

Distribution for the 1935 season followed the practices initiated during 1934 with but little modification. The results accomplished in the several sections into which the stream system has been divided follow.

Shasta River above Confluence of Boles Creek: The failure of Dow and the California Joint Stock Land Bank to cooperate with the water master as to their riparian claims again confined the service principally to regulation of the strictly appropriative rights.

A summary of the distribution follows.

Month	Average Available Water Supply Cu.ft. per sec.	Distribution in per cent of Priority Allotments		
		Hammond-Scott	Foulke et al	Dow
April	52.0	100	85	100
May	64.2	100	97	100
June	41.3	95	88	71
July	14.1	43	36	00
August	4.4	22	8	00
September	3.1	17	6	00

Shasta River below Junction of Boles Creek and Boles Creek: One hundred per cent allotments were available for all priorities, excepting the storage rights of the Montague Water Conservation District, up to June 15th. For the remaining part of June the net available water supply averaged 70 per cent of allotments, for July 55 per cent, for August 49 per cent and for September 47 per cent. From June 15 to September 11, approximately 100 per cent allotments were delivered to the ditches above the Arbaugh Weir, the shortage being suffered by the Mills Ranch and the Montague Water Conservation District's Rowe Ranch. Beginning on September 11 and subsequent thereto, the available water was distributed on an equal and correlative basis among the water right owners down to and including Frank H. Mills. Under this arrangement an average of 65 per cent of allotments was delivered. The allotment to be delivered at the Arbaugh Weir was based on 5.85 cubic feet per second as awarded to Frank H. Mills under paragraphs 271 to 276, inclusive of the Shasta River Decree.

Distribution on this section of the stream was an attempt to compose the conflict between the priority dates as set forth in the Shasta River Decree and usages which have grown up under riparian claims not determined in the Shasta proceeding. It resulted in a shortage to the rights below the Arbaugh Weir, which shortage, however, did not become acute until about August 15, when haying operations were generally completed and water was required on the meadows for the production of pasturage. Many objections to the course pursued were heard from the water users, however, some progress was made over the distribution made in 1934 in that the available water supply was actually distributed on an equal and correlative basis during a portion of the season. From experience gained over the 1934 and 1935 seasons, it appears that 100 per cent allotments can be delivered to the water users as long as the discharge at the Arbaugh Weir remains at 10.0 cubic feet per second, or over; that the flow at said weir can drop to 6.0 cubic feet per second before an acute shortage is felt by the users below said weir; and that in the future distribution on an equal and correlative basis should be commenced at about the time the flow at the Arbaugh Weir diminishes to 6.0 cubic feet per second. This amount is tentatively fixed at 6.0 cubic feet per second and is subject to change dictated by future experience and water supply conditions.

Shasta River below Montague Water Conservation District Reservoir: The available water supply on this section of the stream system was 9620 acre feet, consisting of 5000 acre feet in the Montague Reservoir on April 3 and 4620 acre feet inflow to the reservoir from April 3 to August 1. The inflow includes 1860 acre feet contributed by Parks Creek. During the period from April 3 to August 1, when the water level in the reservoir dropped below the outlet gate and water was no longer available, there was delivered from the reservoir a total of 5420 acre feet, of which the water right owners below

the reservoir received 2720 acre feet and the Montague District 2700 acre feet. The difference of 4200 acre feet between the 9620 acre feet available and the 5420 acre feet delivered is chargeable to loss from the reservoir by seepage and evaporation. Operation of the reservoir during the 1935 season is summarized below.

Date	Storage: On Hand Ac. Ft.	Storage: Increase Acre Ft.	Storage: Draft Ac. Ft.	Inflow to reservoir Acre Feet	Total Draft Ac. Ft.	Measured Deliveries Acre Feet: District	Measured Deliveries Acre Feet: Below Dam	Seepage and Evaporation loss from reservoir Acre Feet
April 3	5000							
May 10	5600	600		1540	940	0	100	840
June 2	3000		2600	2400	5000	2700	900	1400
June 29	1600		1400	560	1960	0	900	1060
August 1	0		1600	120	1720	0	820	900
Totals			5600	4620	9620	2700	2720	4200

Delivery to the water right owners below the reservoir commenced in April and continued to August 1, when the available water in the reservoir was exhausted and the inflow was insufficient to care for the seepage and evaporation losses. From August 1 to September 24 the water level dropped 2.25 feet below the outlet gate.

Delivery of water for District use covered the period from May 10 to June 2, inclusive, curtailment on that date being undertaken on account of the prior rights below the reservoir.

A summary of the deliveries made from the reservoir to the water right owners below the dam is given in the following table.

Name of Water Right Owner	Allotment as per agreement Acre Feet	Amount delivered from Montague Reservoir for 1936 Season	
		Acre Feet	Per cent of Allotment
J. L. Jones	198	198	100
John Soule	692	609	88
J. W. and Mary L. Dennis	696	600	86
McKee Company	1200	1075	90
E. S. Terwilliger	596	234	39
Totals	3382	2716	80.4

Complaints against the general operation of the reservoir during the 1935 season were expressed by several of the water right owners below the reservoir to the effect that withdrawal of water from the reservoir for District use was not stopped soon enough, thereby resulting in shortages to said water right owners and also causing them to withdraw water at a faster rate than their irrigation demands required in order to use their allotted amounts before the available water in the reservoir became exhausted by seepage and evaporation. It is to be noted, however, that of the 9620 acre feet of water available, 2700 acre feet was withdrawn for District use and 2720 acre feet for the water right owners below the dam, making a total withdrawal of 5420 acre feet and that the remaining 4200 acre feet of the available supply was lost through seepage and evaporation from the reservoir. Considered over a period of four months the loss from the reservoir amounted to over 1000 acre feet per month. Furthermore it is to be noted that the 3000 acre feet of water in storage on June 2 when District use was stopped,

together with 680 acre feet of inflow, proved adequate to deliver only 1720 acre feet to the water right owners below the reservoir by August 1. Deliveries to said water right owners were therefore 660 acre feet short of supplying the total of the allotments provided for in the agreements. The loss from the reservoir during this period from June 2 to August 1 amounted to 1960 acre feet. Based upon the foregoing there should have been in storage on June 2, 4660 acre feet of water in order to have made up the deficiency of 660 acre feet, allowance being made for 1000 acre feet loss from the reservoir during the additional month which would have been required to deliver said 660 acre feet. Such operation would have limited the District's use toapproximately 1040 acre feet, or 820 acre feet less than the amount of water diverted from Parks Creek. Likewise, due to excessive loss from the reservoir, the District would have been precluded from any use whatever, if sufficient water had been held back in the reservoir so as to extend deliveries to the water right owners below the dam up to October 1.

Delivery from the reservoir to the water right owners below, was 660 acre feet short of their full seasonal allotments, however, excepting John Boule, these users havadditional water available for their use which is indirectly supplied from the reservoir through leakage therefrom. This additional water appeared after the Montague Reservoir was first partially filled in 1929 and is evidenced by new springs and seeps on the Dennis property, by increase in the discharge of old springs on the Dennis and McKee Company properties and by increased accretions to the flow of Shasta River through the Dennis and Terwilliger properties. Additional water which was thus available to E. S. Terwilliger more than compensated for the shortage of 362 acre feet in delivery of his allotment from the reservoir. The amounts of additional water available to the other users do not submit readily to measurement, hence, the benefits therefrom can

not be expressed in terms of acre feet, however, it was generally sufficient to compensate for the shortage in the deliveries from the reservoir.

In summary the following observations are offered:

(1) Deliveries from the reservoir to the water right owners below were short of the amounts allotted in the respective agreements, but the deficiencies were perhaps entirely compensated for by the use of water supplied indirectly from the reservoir.

(2) Due to the small amount of water available and to heavy losses from the reservoir, it was necessary for the water right owners to use their allotments at a faster rate than their irrigation demands required, thus exhausting the available water in the reservoir by August 1 and precluding general irrigation subsequent to that date.

(3) Injury that may have been suffered by the water right owners below the dam was due to the lack of water for general irrigation purposes during August and September rather than to the deficiencies in the amounts delivered.

(4) Regardless of the deficiencies in the amounts delivered and the lack of water for general irrigation during August and September, the water right owners below the reservoir produced better crops than would have been possible with the unregulated flows available to them under their natural flow rights.

(5) Delivery to the Montague District amounted to 2700 acre feet during the period May 10 to June 2, inclusive, of which 1860 acre feet was contributed by Parks Creek, leaving 840 acre feet as the amount of Shasta River water used by the District.

(6) On account of the heavy reservoir losses it would have been impractical, if not impossible, tohave held sufficient water in storage so that delivery of the amounts of water to which the water right owners are entitled could have been extended throughout August and September. Such a course would have precluded any use whatsoever by the District.

Data furnished by the Montague Water Conservation District on the operation of District's reservoir from 1929 up to and including 1935 are presented in the following tabulations.

Data on Storage and Use of Water by the District

Year	Maximum Amount of Water in reservoir during year Acre Feet	Amount of water used by District Acre Feet	Period of use From	Period of use To	Amount of water in reservoir when District use ceased. Acre Feet
1929	4500	—	—	—	—
1930	10500	5000	May 5	July 4	2800
1931	4250	0			2800
1932	5500	2000	May 15	June 15	2000
1933	6500	4750	April 21	July 16	2200
1934	5000	1500	April 10	April 23	2800
1935	5700	2700	May 10	June 2	3000

Deliveries to Water Users Under Agreements in Acre Feet.

Year	Jones	Soule	Dennis	McKee	Terwilliger	Total Acre feet	Total % of Allotments
1929	—	—	—	—	—	—	—
1930	190	485	465	923	—	2060	61
1931	198	473	473	909	—	2050	61
1932	—	—	—	—	—	—	—
1933	198	692	687	1130	101	2810	83
1934	159	692	461	922	159	2390	71
1935	198	609	600	1075	234	2720	80

Note: In 1929 the District used water only for puddling their canal and records of deliveries to Jones et al., are missing. The records for 1930 and 1931 are incomplete as to Terwilliger and the 1932 record of deliveries to the users below the reservoir is entirely missing.

Beaughan Creek: Two measurements of the flow of Beaughan Creek were made at the 8.0' contracted weir located at the head of the creek. The results are given below.

Date	Gage Height in Feet	Discharge Cu. Ft. per Sec.
June 17, 1935	0.35	5.45
August 27, 1935	0.345	5.34

The discharge measured slightly less than was shown by the measurement of 5.57 cubic feet per second made on May 14, 1934.

As is explained in the report on water master service for the 1934 season, distribution on this stream is confined principally to an allocation of the available water among the second priority claimants.

During 1935 the flow of the stream was sufficient to distribute 66 per cent of the second priority allotments. From July 12 to August 8, inclusive, water was available to Morris and Belcastro under their third priority rights while haying operations were in progress on the lower ranches.

Carrick Creek: Distribution on this stream for 1935 was confined largely to the first, second, third, fourth, fifth and ninth priorities on Carrick Creek and the fifth and seventh priorities from Stone Creek, as was the case in 1934. Due to storms in April, however, there was available throughout that month 100 per cent allotments for all priorities. The first to the fifth priorities, inclusive, call for a total allotment of 6.60 cubic feet per second, the seventh priority is for 1.00 cubic foot per second and the ninth for 0.86 cubic foot per second, making a total of 8.46 cubic feet per second for all allotments from the first to the ninth priorities, inclusive.

A summary of the distribution for the 1935 season follows.

Month	Average net available Water Supply		Distribution in per cent of priority allotments		
	Cu. Ft. per sec.	% of Total Allotments	1st to 5th Incl.	7th	9th
April	8.5	101	100	100	100
May	8.21	97	100	100	71
June	7.70	91	100	100	12
July	7.60	90	100	100	0
August	6.93	82	100	33	0
September	6.95	82	100	35	0

Parks Creek: Distribution on Parks Creek, for reasons given in the Report on Water Master Service for 1934, was confined chiefly to the regulation of the larger diversions which, excepting the Montague Water Conservation District's Parks Creek Canal, also command the earliest priorities. Throughout April and May the available water supply was generally sufficient to furnish 100 per cent of allotments to all users excepting the Montague District.

The Montague District's Parks Creek Canal was first opened on April 8 following a rain storm which occurred on April 7, and remained almost continuously open up to and including May 27 when it was closed for the season. During this period 1860 acre-feet of water were diverted to Shasta River for storage in the Montague District's reservoir located on that stream. The maximum diversion by the canal occurred on May 7 when a discharge of 40.5 cubic feet per second was recorded. The average rate of diversion was 17.5 cubic feet per second for April and 20.0 cubic feet per second for May.

Attention is directed to the fact that on May 16, 17, 18 and 19 the Montague District's Parks Creek Canal was closed on account of a shortage to the Grenada Irrigation District on Lower Shasta River. Also that the final closing on May 27 was hastened for the same reason. Prior to 1929, when the Montague District's reservoir on Shasta River was first put into operation, such shortages rarely if ever occurred before June 15 of each year, however, subsequent to that date and particularly so since 1932 when water was first diverted from Parks Creek by the Montague District, shortages to the Grenada Irrigation District have occurred as early as April. The Montague District is not inclined to release water from their reservoir at times of shortage on Lower Shasta River, consequently, closing of the Montague District's Parks Creek Canal is necessary in order to satisfy the prior claims of the Grenada District.

A summary of the distribution for 1935 is given below.

Month	Measured Water supply Cu.ft. per sec	Distribution in per cent of priority allotments			
		Duke 1	Caladonia 2	Foulke 3	Robertson 4, 6, 11, 12, and 15
April	32.0	100	100	100	100
May	47.1	100	100	100	100
June	13.1	100	100	60	62
July	4.2	70	0	0	15
August	2.4	40	0	0	9
September	2.4	40	0	0	4

The fifth priority rights from the North Branch of Parks Creek were supplied with 100 per cent of their allotments up to June 1, however, the water available to these rights failed entirely on about June 15. Spring Creek furnished a supply for irrigation purposes up to about July 1 after which date only stock water was available.

The 21st and 24th priority rights of M. A. Silva on the extreme lower end of Parks Creek received 100 per cent allotments throughout the season.

Big Springs: Distribution of the waters of Big Springs during the 1935 season is summarized below:

Month	Measured Water Supply Cu. Ft. per Second	Distribution in percent of priority allotments		
		Louie Bros. 1 & 2	Stallcup	Big Springs I. D. 4
April	30.2	100	116	60
May	32.4	100	107	45
June	34.4	100	100	61
July	34.3	100	65	68
August	35.1	100	65	70
September	34.9	100	91	65

Under an agreement between Stallcup and the Big Springs Irrigation District, 7.00 cubic feet per second of water was delivered to the Stallcup Ditch through the Big Springs Irrigation District's pumping plant.

One hundred and sixty acres of alfalfa on the Stallcup ranch were plowed and planted to grain. This acreage did not receive any water after the first irrigation which started May 26 and ended June 24. Upon completion of the first irrigation Stallcup turned approximately 6.00 cubic feet per second of water to the District for a period of about fifteen days. This practice was repeated for a period of about ten days each in July, August and September.

Stallcup's use of water extended over the period from April 26 to September 18, inclusive, for a total diversion of 1410 acre-feet on 250 acres of land. The Big Springs Irrigation District irrigation use covered the period from April 10 to September 18, inclusive. The total diversion for the season was 5910 acre-feet for about 1500 acres of land.

Lower Shasta River:— A summary of the results obtained on this section of the river for the 1935 season is given in the following table.

Month	Net Available Water Supply: Cu. Ft. per Sec.	per cent of Total Allotments	per cent of Priority Allotments: First	Second	Distribution in per cent of Priority Allotments: First	Second
April	168	128	100	190	73	70
May	126	96	100	86	93	65
June	103	78	100	29	93	32
July	98	75	100	17	92	39
August	102	78	100	27	93	40
September	103	78	100	29	80	36

The above tabulation is based upon a total allotment of 131.4 cubic feet per second, of which the first priority rights are entitled to 91.2 cubic feet per second and the second priority rights 40.25 cubic feet per second. The second priority rights cover decreed awards of 40.00 cubic feet per second to the Grenada Irrigation District and 0.25 cubic foot per second to Roland Elsstrom.

The amount of water required to supply the first priority diversions during the season, however, was only 84.5 cubic feet per second due to operation of the Shasta River Water Association Pumps at 40.00 cubic feet per second instead of the 48.00 cubic feet per second, the decreed right, and non-opperation of the Webb Pumping plant having a decreed right of 4.89 cubic feet per second.

During April and May, the Grenada Irrigation District operated two units to a capacity of 32.5 cubic feet per second. Beginning June 1st one unit was "signed off" and for the remainder of the season the capacity of the plant was limited to 21.5 cubic feet per second. The amount of water necessary to supply the second priority diversions, consequently was 32.75 cubic feet per second for April and May and 21.75 cubic feet per second subsequent to June 1st.

From April 23, when the plant was started, until about May 22 the diversion by the Grenada Irrigtion District was considerably below the amount of water available due to the capacity of the plant being limited to 32.5 cubic feet per second and due to a voluntary shut down of five days duration. Likewise, in September the amount diverted was below that available due to a voluntary shut down for five days. During June, July and August it was necessary to limit the Grenada Pump to a diversion of between 12.0 and 17.0 cubic feet per second and the per cent of allotments delivered to the second priority class during that period fairly reflects the amounts of water available. The percentage delivery for June, however, was approximately 10 per cent low, due a voluntary shut down of seven days.

<u>Little Shasta River</u>: During the 1935 season, the available water supply was sufficient to permit of distribution in accordance with the decreed rights up to and including August 6th. Subsequent to that day, the combined flow of Little Shasta River and Cleland Springs was inadequate to supply 100% allotments to the first priority rights and suitable stock water heads to the third priority class, consequently, for the remainder of the season, the available water supply was distributed on an equal and correlative basis between the first and third priorities.

Attention is also called to the fact that the flow of Cleland Springs, 6.7 cubic feet per second as determined from the mean of 35 measurements taken during 1935, is insufficient to supply 100% allotments to the fourth priority rights.

A summary of the distribution is given in the accompanying table:

Month	Available Water Supply		Distribution in per cent of Priority Allotments					
	Cu.ft. per sec.	% of Total Allotment*	1	3	4	5	6	7
April	48.7	63	100	100	87	100	44	0
May	39.0	50	100	100	87	95	12	0
June	17.6	23	100	100	82	22	0	0
July	10.6	14	100	100	60	0	0	0
August	9.1	12	95	93	15	0	0	0
September	9.0	12	89	89	0	0	0	0

* Per cent of total allotments for first, third, fourth, fifth, sixth and seventh priorities.

TABLE 1

PRECIPITATION DATA

Average of precipitation at Mount Shasta City and Montague-1889 to 1935 (1)

Monthly, seasonal and average amounts in inches

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Seasonal
1930-31	0.41	1.26	0.77	3.59	1.19	1.16	0.41	0.24	2.71	0.00	0.00	0.94	12.68
1931-32	1.95	.92	6.81	2.32	1.13	1.77	1.39	3.20	.50	.19	.00	.00	20.18
1932-33	.46	3.50	2.35	4.98	.64	5.86	.57	1.28	.34	.12	.00	.20	20.30
19[illegible]-34	1.24	.02	5.38	2.13	3.16	1.46	1.64	1.16	1.54	.58	.40	.24	18.95
1934-35	2.77	5.29	1.48	4.00	1.63	1.87	3.96	.34	..05	.22	.26	.31	22.18
Totals	73.26	136.01	168.54	186.46	154.66	128.64	76.44	58.61	30.55	10.56	11.23	30.36	1065.32
Mean 46 years	1.59	2.96	3.66	4.05	3.36	2.80	1.68	1.27	.66	.23	.24	.66	23.16

(1) See 1930 Water Master Report for records 1889-1930

Precipitation at Edgewood--Elevation 2952 feet.

1933-34											.38	.00	
1934-35	1.30	3.53	1.08	1.65	1.15	2.62	2.58	.43	.57	.38	.06	.21	15.56

TABLE 2

Monthly Precipitation for Seasonal Year 1934-35
Compared with Mean Monthly Precipitation-1889
to 1935

Month	Monthly Mean-46 yrs. Inches	per cent of total	Monthly 1934-35 Inches	per cent of total	Snowfall at Mt. Shasta City in inches Normal	1934-35
October	1.59	6.9	2.77	12.5		
November	2.96	12.8	5.29	23.9		
December	3.66	15.8	1.48	6.7	25.3	10.0
January	4.05	17.5	4.00	18.0	36.3	55.0
February	3.36	14.5	1.63	7.4	20.4	11.0
March	2.80	12.1	1.87	8.4	18.2	29.0
April	1.68	7.3	3.96	17.8	4.6	1.0
May	1.27	5.5	.34	1.5		
June	.66	2.8	.05	0.2		
July	.23	1.0	.22	1.0		
August	.24	1.0	.26	1.2		
September	.66	2.8	.31	1.4		
Totals	23.16	100.0	22.18	100.0	104.8	106.0

TABLE 5

Daily Discharge in Cubic Feet per Second

SHASTA RIVER ABOVE EDSON-FOULKE YREKA DITCH

April 2 to September 30, 1935

Day	April	May	June	July	Aug.	Sept.
1		54.2	38.3	16.7	4.8	1.4
2	24.1	46.2	35.5	15.2	4.5	1.3
3	34.8	41.1	35.5	14.3	4.2	1.3
4	34.1	41.1	40.4	14.3	4.2	1.3
5	29.7	43.2	44.0	15.7	3.6	1.2
6	27.1	52.6	47.8	16.7	3.4	1.2
7	43.3	55.8	48.6	14.3	3.4	1.2
8	42.5	55.8	47.8	13.5	3.2	1.4
9	32.9	66.0	44.0	13.5	3.0	1.4
10	27.1	68.7	39.7	13.5	3.0	1.1
11	24.1	62.6	37.6	11.3	2.8	1.2
12	23.5	56.8	35.5	10.4	2.8	1.2
13	27.7	50.2	41.1	10.8	2.4	1.2
14	40.4	49.4	37.6	10.4	2.0	4.2
15	100	51.0	31.5	11.3	2.2	3.0
16	69.5	55.0	29.0	10.4	2.0	2.0
17	52.6	49.4	27.7	9.6	1.8	1.7
18	45.4	44.0	26.5	8.4	1.8	1.7
19	45.4	41.8	27.7	7.6	1.8	1.7
20	50.2	43.3	25.9	7.2	1.6	1.7
21	51.0	48.6	24.7	8.4	1.5	1.7
22	43.3	60.8	24.1	8.8	1.4	1.7
23	36.2	65.0	23.5	8.0	1.4	1.7
24	32.2	63.5	21.8	8.0	1.4	1.6
25	29.7	63.5	20.8	7.6	1.3	1.6
26	30.3	63.5	20.2	6.3	1.4	1.7
27	34.8	60.0	19.2	6.0	1.5	1.7
28	39.7	55.0	19.2	5.7	1.6	1.7
29	68.7	58.3	19.2	5.7	1.8	1.7
30	64.3	51.8	18.7	5.1	1.8	1.7
31		44.0		4.8	1.4	
Total Sec. Ft. Days	1204.6	1665.0	1953.1	319.5	74.7	49.2
Mean Sec. Ft.	41.5	53.7	31.8	10.3	2.4	1.6
Total Ac. Ft.	2390	3300	1890	634	148	97.6

8460

TABLE 4

Daily Discharge in Cubic Feet Per Second

PARKS CREEK ABOVE DUKE NORTH DITCH

April 2 to September 30, 1935

Day	April	May	June	July	Aug.	Sept.
1		45.5	25.5	6.3	2.7	2.4
2	13.4	40.3	24.0	6.0	2.6	2.4
3	14.4	39.3	21.9	5.5	2.7	2.3
4	15.4	41.3	21.1	4.9	2.8	2.2
5	16.5	51.3	21.0	5.1	2.8	2.2
6	15.9	62.3	20.6	5.1	2.5	2.1
7	18.2	65.0	18.9	4.9	2.5	2.1
8	19.5	63.2	17.5	4.9	2.5	2.1
9	17.4	73.5	16.7	4.7	2.5	2.1
10	16.3	70.2	15.8	4.7	2.5	2.0
11	16.6	57.7	14.8	4.9	2.5	2.0
12	17.8	50.4	14.5	4.6	2.4	2.0
13	21.1	46.0	13.9	4.5	2.1	2.1
14	26.5	44.6	13.5	4.5	2.0	3.4
15	46.0	48.0	12.3	4.5	2.1	3.4
16	42.4	49.3	12.3	4.1	2.2	2.7
17	35.2	41.7	11.2	3.9	2.2	2.6
18	34.7	37.4	10.3	3.8	2.3	2.5
19	44.5	37.7	9.2	3.4	2.4	2.5
20	52.5	40.7	8.6	3.3	2.4	2.5
21	50.1	45.3	8.0	3.7	2.3	2.5
22	40.3	49.6	7.4	4.1	2.3	2.5
23	33.9	51.3	7.4	3.9	2.2	2.5
24	31.5	47.7	7.4	3.8	2.2	2.4
25	32.3	47.2	7.1	3.8	2.2	2.4
26	37.5	44.4	6.6	3.4	2.3	2.4
27	45.5	39.3	6.2	3.2	2.6	2.3
28	51.3	34.8	6.2	3.2	2.7	2.3
29	67.1	35.5	6.2	3.2	2.6	2.3
30	53.8	31.8	6.2	3.2	2.7	2.3
31		27.9		2.8	2.6	
Total Sec. Ft. Days.	927.6	1480.2	302.3	131.3	75.4	71.5
Mean Sec. Feet	32.0	47.1	12.1	4.2	2.4	2.4
Total Acre Ft.	1840	2900	778	260	150	142

TABLE 5

Discharge in Cubic Feet per Second

Carrick Spring

April 20 to September 24, 1935

Day	April	May	June	July	Aug.	Sept.
1						
2			5.79			
3				5.82		5.66
4			5.76			
5						
6						
7						
8					5.78	
9						
10				5.79		
11						
12						
13						
14		5.76				
15			5.78		5.77	
16						
17		5.76				
18						
19						5.69
20	5.79		5.77			
21						
22						
23						
24					[illegible].75	5.68
25					5.75	
26			5.72			
27						
28						
29			5.80			
30				5.73		
31						
Mean Sec. Feet	5.79	5.76	5.77	5.78	5.78	5.68
Total Acre Feet	344	354	343	355	355	338

Total Acre Feet--6 Months Period 2090

TABLE 6

Discharge in Cubic Feet per Second

Big Springs

April 11 to September 17, 1935

Day	April	May	June	July	Aug.	Sept
1		30.3				
2				33.0	34.1	34.9
3			35.4			
4						
5				34.4		
6			35.1		35.0	
7						
8		32.2			35.8	
9				34.7		35.5
10						
11	31.5	32.4				
12	29.6		34.0	33.7	35.2	
13			33.8			
14		31.8				
15		32.0	34.0			
16	30.0				34.8	
17				35.6		34.4
18	30.0	33.0	34.2			
19					35.6	
20				35.5		
21			34.5			
22						
23					35.3	
24	30.2	34.1		34.5		
25						
26			34.2	34.4	35.2	
27	30.1					
28					35.2	
29		33.3				
30				33.3		
31					34.6	
Mean Sec. Feet	30.2	32.4	34.4	34.3	35.1	34.9
Total Acre Feet	1800	1990	2050	2110	2160	2080

6 Mo. Peridd: Total Acre Feet 12,200

TABLE 7

Daily Discharge in Cubic Feet per Second

SHASTA RIVER AT GRENADA PUMP

April 22 to September 23, 1935

Day	April	May	June	July	Aug.	Sept.
1		107	82.5	72.6	69.4	75.7
2		105	80.1	71.8	69.6	75.7
3		107	78.4	74.2	66.5	74.0
4		118	82.3	72.6	67.3	79.7
5		120	79.6	73.4	70.7	72.0
6		122	76.1	74.9	72.7	71.3
7		107	74.4	74.9	74.1	71.3
8		92.9	77.0	77.6	74.4	71.8
9		90.2	78.7	79.6	71.2	77.0
10		89.4	81.7	74.7	72.8	75.6
11		85.3	78.5	71.9	72.8	74.1
12		83.6	73.0	71.9	67.9	77.6
13		83.6	76.0	71.1	65.7	75.8
14		88.2	78.3	72.1	64.5	77.6
15		86.3	74.4	72.8	64.1	74.0
16		88.8	76.0	78.1	65.9	75.9
17		89.4	82.2	72.0	68.7	78.2
18		92.6	79.2	76.4	70.4	78.2
19		91.8	77.6	78.1	71.4	84.6
20		89.6	73.6	69.5	74.4	83.8
21		86.6	72.0	73.1	69.8	108.
22	109.	85.8	73.6	76.5	66.5	106.
23	109.	93.5	72.8	72.9	68.8	103.
24	108.	94.2	73.8	76.3	68.8	
25	103.	88.1	77.0	78.4	68.1	
26	100.	86.0	75.2	74.4	70.9	
27	100.	81.0	73.7	69.6	72.0	
28	97.7	83.5	74.9	71.8	74.4	
29	102.	87.8	71.9	75.2	79.2	
30	112.	89.4	70.7	74.4	68.8	
31		88.4		70.2	67.4	
Total Sec. Ft. Days	940.7	2902.0	2295.0	2293.1	2169.2	1840.9
Mean Sec. Feet	105	93.6	76.5	74.0	70.0	80.0
Total Acre Feet	1870	5760	4550	4550	4300	3650

TABLE 8

Daily Discharge in Cubic Feet per Second

SHASTA RIVER NEAR MONTAGUE

April 3 to September 23, 1935

Day	April	May	June	July	Aug.	Sept.
1		97.8	7.5	12.0	13.9	36.1
2		72.5	16.8	14.9	11.6	47.0
3	116	46.2	15.5	12.9	11.6	44.2
4	102	38.7	20.2	13.9	11.2	34.0
5	100	60.7	21.5	13.9	11.2	22.7
6	98.0	79.8	35.5	14.9	13.9	12.9
7	167	71.0	79.8	13.9	12.9	13.9
8	213	43.0	34.4	13.9	14.4	13.4
9	193	33.2	18.0	18.4	16.0	12.0
10	185	31.8	10.7	17.2	14.9	13.4
11	157	10.7	18.4	15.4	13.4	14.9
12	147	9.2	17.8	15.4	13.4	12.9
13	123	34.4	17.2	14.2	11.6	13.4
14	121	40.2	16.0	13.9	11.6	17.2
15	131	46.2	17.2	14.9	17.8	30.0
16	149	21.5	17.2	11.2	13.9	38.6
17	147	7.5	17.2	10.0	15.4	31.0
18	129	12.5	19.1	13.9	15.4	24.4
19	104	34.4	19.1	18.4	16.6	34.0
20	83.5	19.0	18.4	14.9	14.9	57.5
21	89.0	10.7	13.9	12.0	19.1	63.6
22	90.8	5.0	10.4	22.7	18.4	80.3
23	81.5	10.7	15.4	17.2	18.4	80.3
24	58.4	22.5	22.7	17.8	18.4	
25	36.6	20.2	12.0	24.4	15.4	
26	26.5	20.2	12.4	13.9	11.2	
27	22.5	17.8	10.8	15.4	13.4	
28	27.8	13.5	10.8	13.9	28.0	
29	37.65	7.0	12.0	14.9	36.1	
30	97.8	9.2	11.2	14.9	42.8	
31		7.5		13.9	32.0	
Total Sec Ft. Days	3033.9	954.6	589.1	469.8	528.8	747.7
Mean Sec. Ft.	108	30.8	19.6	15.1	17.1	32.5
Total Acre Ft.	6020	1890	1170	932	1050	1480

TABLE 9

Daily Discharge in Cubic Feet Per Second

LITTLE SHASTA RIVER ABOVE HARP DITCH

April 3 to September 30, 1935

Day	April	May	June	July	Aug.	Sept.
1		40.1	20.8	5.5	3.0	2.5
2		37.4	19.3	5.1	2.9	2.4
3	35.4	36.7	17.8	5.0	2.9	2.4
4	35.4	38.1	16.5	4.8	2.9	2.3
5	32.8	40.1	16.1	5.0	2.8	2.3
6	28.6	39.4	15.1	5.7	2.8	2.3
7	51.8	39.4	14.3	5.7	2.7	2.3
8	55.5	39.4	14.3	5.0	2.6	2.3
9	49.0	38.8	13.9	4.8	2.6	2.3
10	40.8	38.7	13.5	4.7	2.6	2.3
11	40.8	33.4	12.3	4.5	2.6	2.3
12	38.1	32.2	12.0	4.4	2.5	2.3
13	40.1	31.0	11.6	4.3	2.5	2.4
14	44.9	31.6	11.6	3.9	2.5	2.6
15	52.4	32.2	10.6	3.7	2.5	2.6
16	54.4	34.7	9.9	3.5	2.5	2.5
17	41.5	33.4	9.2	3.5	2.5	2.5
18	38.8	31.0	8.6	3.5	2.5	2.5
19	45.6	28.8	8.0	3.4	2.5	2.5
20	47.6	29.2	7.6	3.3	2.5	2.4
21	42.2	28.6	6.8	3.3	2.5	2.4
22	36.0	28.0	6.8	3.6	2.5	2.4
23	31.6	28.6	6.8	3.5	2.5	2.4
24	30.4	28.0	6.6	3.4	2.5	2.4
25	37.4	27.4	6.4	3.4	2.5	2.3
26	37.4	26.2	6.2	3.3	2.5	2.3
27	46.9	25.0	6.2	5.1	2.7	2.2
28	42.8	24.0	6.0	3.2	2.7	2.2
29	44.2	24.5	5.8	3.1	2.8	2.2
30	46.2	23.5	5.7	2.8	2.6	2.2
31		22.3		3.0	2.5	
Total Sec. Ft. Days.	1172.9	990.7	326.7	125.0	81.2	71.0
Mean Sec. Ft.	41.9	32.2	10.9	4.0	2.6	2.4
Total Acre Ft	2350	1970	648	248	161	141

140
1970

TABLE 10

Discharge in Cubic Feet per Second

Cleland Springs

April 25 to September 30, 1955

Day	April	May	June	July	Aug.	Sept.
1						
2		6.81		6.67	6.65	6.58
3						
4						
5			6.71	6.67	6.66	
6						6.64
7						
8						
9				6.67	6.58	6.65
10						
11						
12				6.55	6.58	
13		6.80				
14			6.63			6.65
15				6.58		
16					6.60	
17		6.80				
18			6.67			
19				6.49	6.57	
20						6.58
21			6.67			
22						
23						
24			6.68	6.50	6.54	
25	6.81					
26				6.65		
27						6.62
28			6.67		6.51	
29						
30					6.53	
31				6.65	6.58	
Mean Sec. Feet						
Total Acre Feet						

6 Mo. Period: Total Acre.Feet 2420