STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

CULBERT L. OLSON, Governor
FRANK W. CLARK, Director of Public Works
EDWARD HYATT, State Engineer

REPORT OF

SACRAMENTO-SAN JOAQUIN

WATER SUPERVISION

FOR YEAR

1940

JUNE, 1941

1922

STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
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REPORT OF
SACRAMENTO - SAN JOAQUIN
WATER SUPERVISION

FOR
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Sacramento
June, 1941

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ACKNOWLEDGMENT

In the conduct of the activities and investigations under the heading of "Sacramento-San Joaquin Water Supervision", valuable assistance has been rendered by many individuals and public and private agencies.

Land owners and water users and the executives, engineers, managers, and water superintendents of the various water organizations throughout the territory covered by this work have cooperated fully in furnishing the many and varied data requested.

For the compilation of pumped diversions the Pacific Gas and Electric Company, and Merced, Modesto and Turlock Irrigation Districts have furnished a large number of power consumption records.

Valuable cooperation has been extended by the Water Resources Branch of the United States Geological Survey, Department of the Interior.

The State Division of Highways has cooperated in the expeditious and efficient testing of salinity samples in its testing laboratory. The Maintenance Department has cooperated in taking water samples.

In the San Joaquin Valley the City of San Francisco Public Utilities Commission, Hetch Hetchy Water Supply and the United States Bureau of Reclamation make available a large amount of stream flow data.

The Merced, Modesto, Oakdale, South San Joaquin and Turlock Irrigation Districts and Miller and Lux, Incorporated, have assisted in observing and maintaining recording and staff gages in the San Joaquin Valley as has the United States Bureau of Reclamation.

ORGANIZATION

Culbert L. Olson - - - - - - - - - - - - - - - - - Governor
Frank W. Clark - - - - - - - - -Director of Public Works
Edward Hyatt - - - - - - - - - - - - - - - State Engineer

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ADVISORY COMMITTEE

PERMANENT COMMITTEE OF THE SACRAMENTO-SAN JOAQUIN RIVER PROBLEMS CONFERENCE

This Committee, representing the water users and other interests involved, was appointed by the First Sacramento-San Joaquin River Problems Conference in January 1924. Its continued interest and cooperation and particular activity in the promulgation of effective conservation measures in the seasons of critical water supply have contributed in large measure to the successful prosecution of the Water Supervision Work.

Herbert E. White, Chairman, Sacramento

E. L. Adams, Chico
A. E. Anderson, San Francisco
Alden Anderson, Sacramento
G. A. Atherton, Stockton
P. M. Downing, San Francisco
William Durbrow, Grass Valley
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R. V. Meikle, Turlock
Jesse Poundstone, Grimes
F. T. Robson, Vina

CHAPTER I

INTRODUCTION

The purpose of this report is to make of record the measurements made and data collected in connection with the Water Supervision work in the Sacramento-San Joaquin area during 1940.

Origin and History of Work

The work was inaugurated in 1924 through the efforts of the first Sacramento-San Joaquin River Problems Conference and its Permanent Committee working with the former Division of Water Rights. A complete description of the origin, history and conduct of this work will be found in the 1924 and 1926 Biennial Reports of the former Division of Water Rights, in Bulletin Number 4 of the same Division, and in Bulletin Number 23 of the Division of Water Resources. The latter Bulletin brings together all data and measurements obtained in the five-year period, 1924 to 1928, inclusive. The Water Supervision reports for subsequent years are mimeographed as is the present report.

Objectives

The work of supervision is a measure of relief in the difficultios attendant upon water supply conditions and the use of water throughout the Sacramento-San Joaquin territory, particularly on the Sacramento River and in the Delta region. The situation involves the major problem of satisfying the water requirements for irrigation in both the up-river areas and the Delta, for the control of salinity in the Delta and Upper Bay areas, and for navigation above Sacramento as demanded by the U. S. War Department.

In nearly every season of the last seventeen years, each one of those requirements has exceeded the available summer flow in the rivers. Pending ultimate relief through the development of reservoir storage this situation has been met by mutual agreement through a provisional administration of stream flow and diversions. There has been no agreement, though, under which a water master might definitely and equitably distribute the existing water supply to those entitled to receive it but it seems inevitable that such an agreement or a definite schedule of water priorities must be developed. Its realization will require, however, that there shall be available reliable and accurate data over a long period of years covering all of the actual diversions and uses of water, the stream flow, return flow, salinity, and all pertinent hydrographic data. Looking to this requirement, then, the Division of Water Resources is, concurrently with the provisional stream administration, continuing the investigations and all measurements necessary to complete the record of basic data.

Investigational Work

During 1940 as in the past years the investigational work comprised: measurements and record of the diversions of water from Sacramento, Feather, Yuba, American, Merced, Tuolumne, Stanislaus and San Joaquin Rivers on the valley floor and above the Delta; stream flow measurements throughout the territory during the summer period in cooperation with the Water Resources Branch of the U. S. Geological Survey, and entirely by this office throughout the winter; measurements and records of waters returned to the Sacramento and San Joaquin rivers; an annual census of irrigated acreages and crops under all diversions recorded, and at intervals a complete survey of irrigated acreage in the Sacramento-San Joaquin Delta; observations and

investigations of the advance and retreat of salinity through the medium of water samples taken at four-day intervals at key stations in the delta channels and upper bays, and maintenance and operation of recording tide gages in the area covered by the salinity investigation.

History of State and Water Users' Cooperative Financing

The complete history of the State and water users' cooperative financing for previous years has been published in prior reports.

Conservation Features

A comparison of the run-off and water supply conditions of the 1940 season with those of previous seasons is indicated in Tables 1 and 2. It will be noted in Tables 1 and 2 that under the column "Run-off in Per Cent of Normal", the 40-year and 50-year mean percentages are given. The 50-year figure is based on a recent recalculation of mean full natural flow of the Sierra streams and Table 2A shows the comparison between the 40-year and 50-year mean.

TABLE 1

COMPARATIVE SACRAMENTO VALLEY WATER SUPPLY 1920-1940

Year	Run-off in per cent of normal*		Minimum Flow in Second-feet (1)									Rice Acreage Served by Sacramento River & Tributaries
			Sacramento River at			Feather River at		Yuba River at		American River at		
	Sacto.-San Joaquin to Delta	Sacramento at Red Bluff	Red Bluff	Colusa	Sacramento	Oroville	Nicolaus	Smartville	Mouth	Fairoaks	Sacramento	
	40 Yr.: 50 Yr.	40 Yr.: 50 Yr.										
1920	50: 52	45: 48	3240	660	540(2)	905	19(3)	106		100	114(2)	
1924	28: 28	35: 38	2810	1470	705	720	Zero	71		5	Zero	88500
1925	83: 86	86: 92	3240	1870	2760	1330	334	150		219	203	94700
1926	57: 60	61: 65	2980	1030	1330	1480	264	114		109	161	128600
1927	114: 121	117: 125	3580	1960	3420	1460	565	240		274	334	123300
1928	80: 84	82: 87	3400	1960	2510	1210	310	180		109	178	101100
1929	42: 44	47: 50	3060	1550	2300	1640	520	119		59	50	73700
1930	63: 65	65: 70	2980	1680	2350	1560	586	220		105	130	88000
1931	**28: 30	35: 38	2480	820	-131	950	Zero	130		38	28	126500
1932	**74: 78	54: 58	2620	1530	1900	685	284	181		178	159	90700
1933	**45: 48	49: 52	2620	1350	1340	1050	200	165		32	30	87400
1934	40: 43	48: 51	2400	1320	1050	1180	208	144		77	75	91800
1935	86: 91	80: 86	2860	1780	2700	1470	690	250		178	185	78100
1936	91: 96	76: 81	2700	1540	2150	1560	603	266		356	415	104400
1937	75: 80	64: 68	2780	1370	1640	1420	230	219		234	238	109400
1938	160: 170	157: 168	3880	3000	4950	1690	772	295		455	439	94800
1939	41: 43	47: 50	2700	1320	556	1360	68	168	38	37	44	103800
1940	108: 115	112: 120	3220	2040	2430	1600	438	177	118	279	274	94200

(1) Minimum flow that occurred prior to September 30th.
(2) No continuous record. Lowest measured discharge.
(3) Lowest measured discharge at mouth of river, August 19th.

* (40-year normal taken as 40-year mean (1889-1929) of natural run-off at foothill stations of major tributaries.
(50-year normal taken as 50-year mean (1889-1939) of natural run-off at foothill stations of major tributaries.

**Revised when additional data was received.

TABLE 2

COMPARATIVE SAN JOAQUIN VALLEY WATER SUPPLY 1920-1940

Year	Run-off in per cent of normal*				Minimum Flow in Second-feet (1)															
	Sacramento and San Joaquin to Delta		San Joaquin at Vernalis		San Joaquin River			Merced River		Tuolumne River		Stanislaus River		Calaveras River at Jenny Lind	Mokelumne River at Woodbridge	Cosumnes River at Michigan Bar			
	40 Yr.	50 Yr.	40 Yr.	50 Yr.	near Vernalis	near Newman	at (3) Fremont Ford Br.	at Yosemite Val. R.R.	near Mouth	at La Grange Br. (4)	at Tuolumne City	at Orange Blossom Bridge	at Hatmark Ranch							
1920	50	52	63	66	(2)450	62								0		1				
1924	20	28	24	24	391	15	0	0	(2) 2	(2) 29	(2) 245	(2) 14	(2) 95	0	1	0				
1925	83	86	86	88	660	114	0	(2) 4	(2) 73	(2) 35	(2) 299	(2) 19	(2)161	0	3	6				
1926	57	60	55	56	565	62	0	(2) 5	(2) 53	(2) 32	(2) 286	(2) 15	(2)116	0	3	0				
1927	114	121	100	104	1290	305	0	(2)12	(2)204	(2) 45	(2) 391	(2) 29	(2)275	0	1	6				
1928	80	84	67	70	840	205	0	6	53	38	292	31	194	0	2	2				
1929	42	44	44	46	565	105	0	4	65	32	287	30	205	0	3	1				
1930	63	65	50	53	645	170	0	7	92	60	344	32	216	0	3	1				
1931	**28	30	26	27	200	22	0	1	17	25	243	25	81	0	3	0				
1932	**74	78	101	106	965	251	0	27	165	37	348	35	223	0	150	1				
1933	**45	48	51	54	569	187	0	7	127	36	280	19	185	0	81	0				
1934	40	43	35	37	315	62	(2) 5	7	36	26	270	20	104	0	6	0				
1935	86	91	98	103	850	306	(2) 97	46	206	34	345	28	199	0	84	2				
1936	91	96	100	104	980	360	150	25	190	33	375	28	194	0	65	4				
1937	75	80	100	105	950	333	115	12	211	3	355	17	212	0	106	2				
1938	160	170	172	180	2030	702	280	66	335	8	460	22	270	1	143	14				
1939	41	43	44	46	545	202	32	2	155	3	310	13	140	0	36	0				
1940	108	115	101	105	996	340	99	7	200	3	365	17	217	0	71	1				

*40-year normal taken as 40-year mean (1889-1929) of natural run-off at foothill stations of major tributaries.
50-year normal taken as 50-year mean (1889-1939) of natural run-off at foothill stations of major tributaries.

**Revised when additional data was received.

(1) Minimum flow that occurred prior to September 30th.

(2) No continuous record. Lowest discharge measured.

(3) Prior to 1934 station maintained at Delta Bridge.

(4) Prior to 1937 station maintained at Roberts Ferry Bridge. Minimum flow at Roberts Ferry for 1937, 1938 and 1939 was 18, 20, and 34 cubic feet per second, respectively.

TABLE 2A

COMPARISONS BETWEEN 40 AND 50 YEAR MEAN FULL NATURAL FLOWS

River and Station	40-Year Mean Full Natural Flow 1889-90 to 1928-29 (Acre-feet)	50-Year Mean Full Natural Flow 1889-90 to 1938-39 (Acre-feet)	Changes in Mean
Sacramento at Red Bluff	9,354,000	8,747,000	-7%
Feather at Oroville	5,201,000	4,853,000	-7%
Yuba at Smartville	2,653,000	2,490,000	-6%
Bear at Wheatland	402,000	373,000	-7%
American at Fairoaks	3,069,000	2,879,000	-6%
Sacramento at Sacramento	20,679,000	19,342,000	-6%
Cosumnes at Michigan Bar	407,000	382,000	-6%
Mokelumne at Mokelumne Hill	853,000	802,000	-6%
Calaveras at Jenny Lind	227,000	210,000	-7%
Stanislaus below Melones	1,350,000	1,273,000	-6%
Tuolumne at La Grange	2,070,000	1,985,000	-4%
Merced at Exchequer	1,115,000	1,069,000	-4%
San Joaquin at Friant	1,995,000	1,914,000	-4%
San Joaquin at Vernalis	6,530,000	6,241,000	-4%
Combined flow to Delta	28,695,000	26,977,000	-6%
Kings at Piedra	1,889,000	1,818,000	-4%
Kaweah at Three Rivers	443,000	433,000	-2%
Kern at Bakersfield	725,000	710,000	-2%

CHAPTER II

MEASUREMENTS OF STREAM FLOW

During the season of 1940 annual stream flow measurements and records were obtained through cooperation with the Water Resources Branch of the U. S. Geological Survey, for stations on the Sacramento River at Kennett, Red Bluff and Verona; on the Feather River at Oroville; on the Yuba River at Smartville; on the American River at Fairoaks; on the Mokelumne River at Woodbridge; on the San Joaquin River below Friant, near Newman, and near Vernalis; on the Merced River near Livingston. During the low water period the following stations were also maintained through cooperation with the U. S. Geological Survey: on the Sacramento River at Butte City, Colusa, Wilkins Slough and Knights Landing; on the Feather River at Nicolaus, and on the American River at "H" Street Bridge, Sacramento.

The above cooperative stations were supplemented by stations maintained by the Division of Water Resources in connection with the San Joaquin return water measurements (See Chapter IV), and in cooperation with the Merced, Modesto, Oakdale, South San Joaquin and Turlock Irrigation Districts, the City and County of San Francisco through the Hetch Hetchy Water Supply Division and the U. S. Bureau of Reclamation, at the following places: San Joaquin River at Delta Bridge and Mud Slough, at Grayson (Laird Slough) and Hetch Hetchy Aqueduct Crossing; Merced River at Yosemite Valley Railroad Crossing and near the mouth; Tuolumne River at La Grange Bridge, Roberts Ferry Bridge, Hickman-Waterford Bridge, at Modesto and Tuolumne City; Stanislaus River at Orange Blossom Bridge,

at Riverbank (Burneyville Bridge), Ripon and Bret Harte Pump. For a majority of the stations maintained by the Division of Water Resources in cooperation with various irrigation districts, et al., the records have been worked out on an annual basis.

It will be noted that for the stations on the Sacramento River at Butte City, Colusa, Wilkins Slough and Knights Landing, on the Feather River at Nicolaus, and on the American River at Sacramento the flow is computed by the Water Resources Branch of the U. S. Geological Survey for the low water period only. The record for the balance of the year at these stations has been kept by this office. During the winter of 1939-1940 and 1940-1941 many high water measurements were made at these stations from which reasonably consistent rating curves were made. This was done in order that some approximation of the return flow in the channel on an annual basis could be made and is felt that the flows given for the period computed by the Division of Water Resources are reasonably accurate.

Sacramento River at Sacramento

The record of the flow of the Sacramento River at Sacramento for the periods of low flow as given in this and previous reports, does not represent actual measurements at a station below the City of Sacramento intake. Because of tidal action during periods of low flow, a gaging station at this point is not maintained. The daily discharge record as given has been computed for the periods of low flow by using the Verona record and making due allowance for the measured inflow and draft between that station and Sacramento. When the flow is above 25,000 cubic feet

per second at a staff gage reading of about 10.0 (13.1 U.S.E.D. datum) the effect of the tidal influence is lost and a direct ratio between gage height and discharge is used to determine the daily flow. In this computation it is not practicable and no attempt has been made to allow for the time required for the flow to travel from Verona to Sacramento and to make the various deductions and additions enroute at the exact time that the given Verona flow would have passed the respective points of inflow or draft. During the summer period the velocities between Verona and Sacramento are low and a given flow may require a day's time or more to travel this distance. Under these conditions the computed flow at Sacramento may differ somewhat from that which would have been found if the actual flow could have been measured. Contributing to this difference also there are the accretions or losses which cannot be measured. In the upper sections of the river the invisible accretions or losses between two points are susceptible of computation as the remaining quantity required to satisfy the equation when the flow at the upper and lower points and all definite intermediate inflows and drafts are known. With no actual measurement of the flow at Sacramento, the invisible accretions or losses between Verona and Sacramento cannot be thus defined and hence, they are unaccounted for in the computed flow at Sacramento. From the data presented subsequently in Chapter IV, it would appear that some return flow might be expected in the Verona-Sacramento section, but as indicated in the tabulation of return water (Table 79) no figure for it has been given (except for the measured drains - Table 78) because it could not be derived without a record of the actual flow at Sacramento.

Table 3 is given to show the water surface elevation which could be expected to occur at various points on the Sacramento River for stream flows from 1000 to 10,000 cubic feet per second. These elevations are based on data obtained during 1938, 1939 and 1940 and are subject to changes from year to year should the channel show any scour or fill at at the control points. Table 4 gives for the period March to October 1940 the average water surface elevations at various points on the Sacramento River for 15-day periods. This is the information used to determine the seasonal pumping heads for the various Sacramento River pumping plants. Similar data are available for past years but have not been published. Tables 5 to 19 list in downstream order discharge records for the Sacramento Valley stream flow stations while similar data for the San Joaquin Valley stations is given in Tables 20 to 41.

TABLE 3

ELEVATION OF WATER SURFACE AT VARIOUS POINTS ALONG SACRAMENTO RIVER FOR DIFFERENT DISCHARGES

Station	Elevation of Zero of Staff Gage U.S.E.D.	July 1939 Av. W.L. U.S.E.D.	July 1939 Av. Disch. c.f.s.	July 1940 Av. W.L. U.S.E.D.	July 1940 Av. Disch. c.f.s.	U.S.E.D. Elevation of Water Surface* 1000 c.f.s.	2000 c.f.s.	3000 c.f.s.	4000 c.f.s.	5000 c.f.s.	6000 c.f.s.	7000 c.f.s.	8000 c.f.s.	9000 c.f.s.	10000 c.f.s.
Sacramento	3.10	5.3	982	6.0	3670	Flows under 10000 c.f.s. will have no appreciable effect on average gage heights. Tidal effect lost at elevation 13.0. Flow 25000 c.f.s.									
Verona	-0.33	7.6	1281	9.2	3370	-	8.1	9.2	10.2	11.0	11.7	12.3	12.9	13.4	14.0
Knights Landing	0.0(1)	9.4	997	12.4	2130	9.7	12.2	14.0	15.5	16.5	(4)18.6	(4)20.0	(4)21.5	(4)22.5	(4)23.5
Wilkins Slough	0.0	19.0	920	21.0	1900	19.2	21.2	23.0	24.6	26.3	27.7	29.2	30.6	32.0	33.4
Colusa	0.0(2)	36.5	1660	38.4	2680	36.1	37.4	38.7	39.6	40.8	41.7	42.6	43.5	44.4	45.3
Butte City	0.0	68.9	1620	70.2	2690	68.4	69.6	70.4	71.1	71.6	72.1	72.5	73.0	73.5	74.0
Red Bluff (Iron Canyon)	252.0	252.4	3150(3)	253.4	3930	-	-	252.3	252.9	253.4	253.8	254.2	254.6	254.9	255.3
Kennett	623.0	624.1	3096	624.6	3625	-	-	624.0	624.8	625.5	626.1	626.6	627.1	627.6	628.1

*Elevations are subject to variation because of channel changes due to scour or fill. They are based upon data obtained in 1938, 1939 and 1940.

(1) Weather Bureau gage 0° = 7.6 U.S.E.D.

(2) Weather Bureau gage 0° = 40.4± U.S.E.D.

(3) Average flows during August 2926 c.f.s.

(4) When discharge at Knights Landing exceeds 5000 c.f.s. there is usually some backwater effect. Elevations as given take backwater into account.

TABLE 4

1940 (MARCH TO OCTOBER) AVERAGE WATER SURFACE ELEVATIONS AT VARIOUS POINTS ON SACRAMENTO RIVER
FOR BI-MONTHLY PERIOD
ELEVATIONS ARE U.S.E.D. DATUM

Station	Miles above Sacramento	Month and Period																0° of Staff gage U.S.E.D. datum
		March		April		May		June		July		August		September		October		
		1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-31	1-15	16-30	1-15	16-31	
Sacramento	0	25.2	21.6	25.5	21.1	16.3	12.7	9.9	7.3	6.3	5.7	5.8	5.5	5.9	6.0	6.0	6.0	3.10
Conaway Ranch	12.0	30.9*	25.7*	30.9*	25.4*	19.5*	15.5	12.8	9.3	7.9	7.1	6.9	7.2	8.1	9.1	9.3	9.3	0.0
Verona	19.6	34.7	28.5	34.5	28.4	22.4	17.9	15.1	11.2	9.7	8.8	8.5	8.6	10.1	11.3	11.2	11.9	-0.33
Knights Landing	34.0	37.4	32.2	37.2	32.5	25.9	21.3	18.8	14.8	12.9	12.0	11.5	11.6	13.6	15.1	15.2	16.0	0.0
State Ranch Bend	40.6	40.0	36.9	39.4	34.4	27.5	22.6	20.2	15.8	13.6	12.7	12.0	12.1	14.1	16.0	16.3*	17.4*	0.0
Rough & Ready	44.0	41.2	35.9	40.8	35.8	28.6	23.4	21.2	16.7	14.5	13.5	13.0	12.7	14.2	16.8	17.0	18.1	0.0
Wilkins Slough	62.9	47.9	43.2	47.5	42.4	34.9	29.0	27.1	23.4	21.5	20.5	19.9	19.8	21.3	23.5	23.8	25.0	0.0
R.D. 70 Drain	68.8	52.4	45.8	51.1	44.7	37.3	31.1	29.2	25.7	23.8	22.3	22.3	22.1	23.4	25.2	25.4	26.9	0.0
Meridian	79.8	57.3	52.2	57.5	49.0	42.4*	37.3*	35.9*	33.3*	31.8*	31.6	31.1	30.8	31.7	32.5	32.7	33.5	0.0
Colusa	89.4	61.9	54.5	62.2	52.2	46.7	42.7	41.6	39.8	38.7	38.0	37.7	37.6	38.1	38.9	39.1	39.9	0.0
Butte City	115.8	83.3	79.1	83.2	76.7	74.7	72.6	72.1	71.0	70.4	70.0	69.2	69.6	70.0	70.5	70.5	71.1	0.0
M. & T. Inc.	141.5	124.6	121.4	124.4	119.0	117.4	115.9	115.2	114.4	113.9	113.4	113.1	113.2	113.4	114.0	114.0	114.4	4.2
Gianella Br.	150.0	137.7	135.2	138.1	132.9	131.3	129.5	- - - - - - - - - - - -				NO RECORD		- - - - - - - - - - - -				127.9
Glenn Colusa ID	154.8					142.3	141.5	141.8	140.7	140.0	139.8	139.8	139.9	140.5	141.0	141.1	141.4	3.1
Red Bluff	193.4	251.8	250.7	252.7	247.4	246.0	244.8	244.1	243.6	243.0	242.8	242.7	242.4	242.6	242.3	242.6	243.1	240.6
Iron Canyon	198.6	261.4	260.5	261.4	257.0	255.9	254.8	254.3	253.8	253.5	253.3	253.2	253.2	253.2	253.2	253.3	253.9	252.0

*Estimated

TABLE 5

DISCHARGE OF SACRAMENTO RIVER AT KENNETT - 1940

Day	Daily Discharge in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	20000	9800	56200	40800	7660	5640	3920	3420	3090	3480	4580	3410
2	31400	9500	41300	31000	8020	5670	3900	3450	2920	3400	5040	3300
3	22000	28000	31700	27300	8240	5360	3850	3350	3180	3550	6180	3700
4	27500	30400	25900	26200	8840	5240	3710	3180	3590	3610	5480	3710
5	17000	27000	22100	22900	8700	5160	3710	3160	3510	3460	4810	3710
6	12900	30200	19700	20100	8100	4980	3710	3490	3450	3140	4610	3720
7	11700	27200	17500	20200	7920	4800	3850	3530	3320	3260	4630	3510
8	19700	21100	16200	20200	7920	4760	3720	3530	3150	3510	4880	3270
9	36800	17700	15100	19200	7780	4720	3680	3530	3130	3510	4680	3410
10	34900	15000	13800	17700	7720	4620	3880	3310	3460	3490	4680	3650
11	24600	13100	13400	16000	7560	4520	3820	3100	3520	3470	3930	3660
12	17400	11900	12400	15400	7090	4520	3840	3110	3450	3260	3800	3650
13	13900	12300	11500	14400	6840	4520	3680	3270	3470	3100	4170	3600
14	11800	13100	11100	13700	6540	4490	3360	3460	3250	3290	4280	3390
15	10200	12000	10300	13000	6540	4370	3260	3420	3080	3450	4030	3070
16	9080	11200	10500	12400	6690	4340	3540	3480	3170	3480	3850	3530
17	8200	21800	9800	11900	6650	4250	3780	3260	3470	3570	3600	7600
18	7210	17300	8800	11200	6440	4230	3810	3020	3540	3490	3690	22800
19	6670	14600	8760	11000	6250	4160	3720	3120	3540	3390	4020	12100
20	6420	12200	9240	10600	5910	4330	3600	3270	3580	3140	3890	17500
21	6120	11100	8930	10200	5840	4340	3340	3400	3280	3090	3760	35100
22	5920	10600	8760	9940	5910	4340	3240	3350	3020	3490	3720	35500
23	5850	10200	8600	9850	5890	4210	3530	3370	3300	3550	3480	44700
24	6350	11000	8820	9240	5670	4080	3720	3240	3470	4740	3390	63800
25	14100	20800	10000	9480	5540	3990	3640	2950	3470	4740	3570	41500
26	32000	46300	21400	9000	5500	3970	3600	3110	3450	4330	3840	49800
27	24300	120000	24400	8680	5400	3970	3530	3280	3510	3530	3820	56600
28	16800	159000	19800	8500	5340	4020	3240	3350	3360	3250	3650	31000
29	13700	89200	51800	8140	5200	4010	3150	3450	3130	4070	3690	21400
30	11900		92100	7900	5430	3980	3490	3430	3210	4030	3610	17800
31	10900		64100		5840		3570	3260		4040		14900
Mean	16040	28740	22060	15540	6741	4520	3625	3311	3336	3578	4179	17040
Ac. Ft. for Month	986400	1653000	1357000	924600	414500	268900	222900	203600	198500	220000	248600	1048000

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 6

DISCHARGE OF SACRAMENTO RIVER NEAR RED BLUFF - 1940

Day	Daily Discharge in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	30800	15300	97300	75600	10600	7120	4360	3760	3420	3590	5330	4180
2	62700	14100	69500	51800	10500	7200	4320	3590	3300	3720	9740	4000
3	44800	25900	54200	42800	12100	6760	4260	3650	3280	3820	8630	4060
4	57600	50300	43900	43200	12400	6430	4140	3510	3700	3890	7650	4280
5	33100	45400	36100	36500	13600	6300	4080	3390	3910	3930	6500	4280
6	22500	42700	31500	31700	11600	6060	4080	3440	3800	3700	5660	4280
7	21600	43000	28200	29800	10700	5780	4100	3720	3720	3470	5960	4240
8	33600	32700	25700	31000	10500	5660	4140	3720	3540	3670	7120	4020
9	50700	26300	23900	29400	10300	5620	4040	3720	3420	3820	6660	3870
10	52300	22900	22000	26800	10100	5500	4080	3670	3490	3800	5930	4060
11	45000	19700	20600	24700	9920	5380	4140	3440	3720	3780	5450	4180
12	28900	17600	19400	22500	9440	5280	4120	3320	3720	3680	4760	4200
13	21500	18400	18200	21600	8990	5260	4080	3340	3740	3460	4760	4200
14	17700	33300	17200	20200	8600	5210	3850	3540	3680	3420	5030	4100
15	15200	21900	16600	19400	8320	5090	3610	3610	3490	3670	4960	3820
16	13200	18700	16000	18200	8320	5050	3650	3580	3390	3760	4740	3850
17	11800	40400	15800	17200	8320	4940	3910	3650	3580	3820	4510	5160
18	10600	36700	14400	16400	8120	4870	4080	3400	3890	3830	4360	36300
19	9720	25100	13700	15600	7930	4790	4060	3250	3990	3740	4530	30000
20	9150	20500	13800	15200	7650	4900	3950	3390	3930	3650	4660	27100
21	8730	18200	13500	14700	7280	4940	3800	3460	3830	3470	4490	88900
22	8320	16800	13100	14000	7200	4870	3580	3540	3560	3520	4400	80200
23	8130	16000	12800	13700	7230	4810	3610	3540	3420	3850	4300	72600
24	8320	15600	12700	13200	7090	4640	3910	3540	3680	4870	4120	104000
25	26600	21800	14500	13500	6870	4510	3950	3370	3780	7930	4080	87100
26	77600	38400	19600	13200	6740	4430	3850	3220	3780	5640	4280	83100
27	48600	150000	41200	12500	6660	4360	3820	3400	3830	4960	4470	105000
28	29700	*261000	30800	11900	6500	4400	3670	3520	3820	4220	4380	62300
29	22100	178000	55200	11500	6370	4470	3420	3580	3610	4640	4280	41600
30	18700		131000	11000	6530	4450	3520	3670	3440	5160	4300	30500
31	16700		149000		7480		3780	3580		4920		24800
Mean	27930	44370	35210	24960	8837	5303	3934	3520	3649	4110	5335	30460
Ac. Ft. for Month	1718000	2552000	2165000	1426000	543400	315500	241900	216400	217100	252700	317400	1873000

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located near the Iron Canyon damsite, Mile 198.6 above Sacramento.

*Peak discharge 291,000 c.f.s. February 28th.

TABLE 7

DISCHARGE OF SACRAMENTO RIVER AT BUTTE CITY - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	20000	13500	138000	136000	13000	7140	3380	2240	2170	3380	5250	4450
2	35700	17600	120700	105500	12500	7360	3340	2240	2110	3480	5450	4450
3	68700	18800	104000	75000	12300	7120	3290	2170	2040	3300	5850	4250
4	63800	38100	80500	59300	12100	6900	3210	2200	2030	3380	6060	4050
5	61500	60800	59300	53300	12500	6530	3140	2180	2250	3530	6270	4250
6	32900	59300	47200	43300	13200	6260	2930	2080	2500	3560	6480	4450
7	24900	57800	38600	35700	13200	6020	2780	2020	2520	3420	6060	4450
8	43800	54000	33400	34300	12100	5670	2830	2150	2600	3160	7110	4450
9	54000	39100	28200	33400	11400	5360	2880	2180	2520	3220	7320	4050
10	62300	29000	26300	30600	11000	5190	2800	2170	2480	3370	6480	4050
11	71400	24900	24900	27800	10800	4960	2760	2180	2490	3400	6270	4050
12	60000	21600	23200	26000	10300	4760	2830	2070	2750	3370	5450	4250
13	35200	19100	21900	24600	10100	4660	2800	1960	2810	3340	5250	4250
14	23900	30200	20300	23200	9660	4540	2830	1940	2910	3190	5050	4250
15	19100	38100	19400	22200	9220	4420	2730	2020	3010	3180	5250	4250
16	16200	25300	18500	21300	8790	4260	2570	2100	2930	3270	5250	4050
17	14400	27000	18200	20300	8370	4160	2460	2110	2930	3340	5050	4450
18	13000	54600	17600	19400	8370	4060	2550	2230	3080	3380	4850	17300
19	11900	43300	16500	18500	8160	3960	2670	2150	3300	3480	4650	*23500
20	11000	27800	15700	17900	7950	3850	2660	2060	3430	3460	4650	23500
21	10100	22500	15700	17000	7530	3870	2620	1970	3460	3370	4850	35700
22	9660	20000	15100	16500	7320	3940	2560	2040	3450	3210	4650	80500
23	9000	18800	14900	16200	7110	3880	2380	2080	3260	3160	4650	99500
24	9000	17600	14600	15400	6900	3810	2280	2090	3050	3700	4450	99500
25	12800	18800	14600	15100	6690	3740	2390	2100	3220	5360	4450	114500
26	50800	24200	16000	14600	6690	3690	2400	2030	3340	7620	4250	114500
27	91400	56600	25300	14900	6480	3630	2390	1910	3370	5780	4450	111500
28	62300	150000	38600	14600	6270	3560	2350	1970	3380	5060	4450	114500
29	34800	162000	36200	14100	6270	3510	2290	2070	3450	4560	4450	86000
30	30200		66000	13700	6060	3450	2160	2120	3320	4940	4250	55200
31	20300		128500		6270		2110	2180		5190		38100
Mean	35000	41000	40500	32700	9310	4810	2690	2100	2870	3840	5300	35100
Ac.Ft. for Month	2150000	2361000	2491000	1943000	572400	286100	165400	128900	170900	236400	315300	2155000

NOTE: This station is maintained seasonally under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.---Record from June to October inclusive compiled by U. S. Geological Survey, balance of year by Water Supervisor. Station is near Butte City Bridge and is at Mile 115.8 above Sacramento.

*December 19 to 31 inclusive estimated - recorder out of operation. Gage heights determined by reference to Ord Ferry and Colusa.

TABLE 8

DISCHARGE OF SACRAMENTO RIVER AT COLUSA - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	10500	23400	53200	43600	13300	7020	3340	2260	2280	3280	5180	4850
2	22000	21700	48800	42700	12900	7510	3260	2310	2220	3500	5290	4960
3	33500	20800	44000	40200	12300	7280	3170	2260	2190	3480	8730	5070
4	36600	26900	40800	37600	12900	7110	3160	2260	2180	3400	9070	5180
5	37300	36100	37600	36600	13100	6690	3090	2280	2240	3520	8730	4960
6	36100	37100	35300	35000	14200	6350	3050	2210	2490	3580	7510	4960
7	31100	36600	33300	33300	13200	6140	2900	2200	2590	3530	6610	4960
8	29500	36600	31600	31900	12100	5810	2860	2200	2630	3320	6500	4960
9	34500	34800	30300	31600	11500	5450	2880	2250	2630	3260	7390	5070
10	36300	31900	29100	31100	11200	5240	2800	2260	2580	3400	7390	5290
11	37600	29500	27300	29900	10700	5060	2680	2260	2570	3460	6730	5290
12	38400	26500	25300	28700	10500	4910	2740	2220	2690	3420	6390	5180
13	34500	23700	23800	27100	10100	4780	2740	2160	2850	3420	5730	5180
14	29900	23900	22300	25600	9630	4700	2770	2110	2900	3300	5400	5180
15	24700	32800	21300	24300	9290	4620	2740	2090	3020	3180	5400	5180
16	21100	30700	20300	23200	8960	4540	2570	2120	3010	3260	5510	5290
17	18900	26900	19700	22200	8510	4420	2440	2140	2960	3370	5290	5290
18	17600	32300	19300	21300	8400	4330	2450	2190	3040	3390	5070	5950
19	15200	36300	18200	20400	8180	4200	2560	2180	3200	3470	4850	22800
20	13800	32600	17100	19700	7950	4000	2620	2140	3390	3500	4740	29800
21	12600	28900	16400	18800	7730	4020	2620	2110	3420	3430	4960	26800
22	11900	25300	16100	18000	7280	4080	2560	2120	3430	3270	4960	34900
23	11200	22800	15500	17200	7060	4010	2420	2170	3310	3160	4850	39900
24	10600	21400	15100	16700	6950	3950	2330	2180	3110	3440	4740	40800
25	10500	20600	15000	16100	6840	3830	2370	2190	3100	4240	4520	42200
26	20300	22700	15800	15900	6720	3690	2420	2180	3270	7000	4410	43300
27	37800	31900	19200	15900	6500	3580	2410	2130	3320	6430	4410	42500
28	39800	42200	30900	15200	6280	3460	2420	2040	3330	5390	4630	43000
29	35800	49000	32600	14600	6170	3370	2360	2130	3380	4820	4740	42500
30	30900		35300	14000	6170	3380	2230	2200	3360	4740	4850	38000
31	26700		40400		6390		2190	2260		5220		33800
Mean	26040	29860	27450	25610	9450	4918	2682	2189	2890	3845	5819	18490
Ac.Ft. for Month	1601000	1717000	1688000	1524000	581200	292600	164900	134500	171900	236400	346300	1137000

NOTE: This station is maintained seasonally under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. Station is at Colusa Bridge - Mile 89.4 above Sacramento. Record from June to October inclusive compiled by U. S. Geological Survey. Balance of year by Water Supervisor.

TABLE 9

DISCHARGE OF SACRAMENTO RIVER BELOW WILKINS SLOUGH - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	7540	20300	25100	22400	13200	6550	2520	1440	1560	3420	5390	4830
2	15300	19900	24400	22700	12600	7160	2410	1540	1590	3450	5320	4830
3	20600	19600	25300	22700	12100	7270	2340	1530	1600	3600	6790	4760
4	21200	20300	23900	22100	12200	7130	2210	1490	1580	3510	9080	4620
5	21300	21300	22500	21600	12600	6780	2210	1520	1550	3550	8780	4620
6	21400	21600	21700	21500	13400	6390	2160	1460	1700	3640	8160	4760
7	21000	21600	21300	21300	13100	6100	2100	1360	1970	3660	7310	4760
8	20800	21600	21100	21200	12100	5830	2050	1330	2140	3560	6580	4760
9	21300	21500	20900	21100	11400	5480	2080	1450	2300	3370	6790	4760
10	21500	21200	20900	21100	10900	5150	2070	1470	2410	3420	7310	4620
11	21600	20900	20700	2100	10600	4880	1940	1470	2260	3560	7000	4480
12	21700	20700	20400	20800	10300	4800	1920	1470	2270	3600	6580	4550
13	21500	20300	20300	20700	10100	4600	1950	1370	2510	3600	6160	4620
14	21000	20000	20000	20500	9620	4400	1950	1310	2660	3570	5670	4690
15	20400	21100	19700	20400	9240	4300	1980	1310	2860	3420	5460	4690
16	19800	21100	19400	20100	8930	4200	1880	1310	2930	3400	5530	4900
17	19000	20700	19100	20000	8620	4000	1690	1350	3060	3530	5530	4900
18	17700	20900	18800	19700	8310	3900	1600	1390	3070	3600	5390	5320
19	16200	21500	18100	19500	7930	3700	1670	1470	3220	3670	5180	14100
20	14600	21200	17100	19100	7700	3600	1800	1470	3390	3760	5040	20400
21	13400	20800	16400	18600	7310	3410	1850	1350	3500	3250	5110	20100
22	12500	20500	16000	17900	7000	3440	1890	1350	3570	3620	5180	20900
23	11700	20000	15600	17200	6720	3420	1790	1370	3510	3510	5040	21500
24	11000	19700	15200	16600	6580	3380	1630	1380	3310	3550	5040	21900
25	10700	19500	14900	16200	6510	3300	1560	1410	3160	3990	4900	22100
26	14300	19700	15300	15700	6440	3050	1630	1450	3240	5410	4760	22400
27	20900	20800	17000	15700	6300	2870	1620	1440	3400	6590	4690	22700
28	21700	22000	20700	15200	6090	2690	1640	1330	3470	5770	4760	22900
29	21500	24200	21200	14600	5950	2520	1640	1320	3510	5300	4900	22900
30	21100		21400	13900	6020	2520	1530	1410	3530	4800	4900	22300
31	20700		22000		6160		1460	1500		5000		21600
Mean	18220	20840	19880	19370	9230	4560	2000	1410	2690	3940	5940	11650
Ac. Ft. for Month	1120500	1199000	1223000	1153000	567300	271400	116600	86920	160300	242300	353700	716600

NOTE: This station is maintained seasonally under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. Record from June to October inclusive compiled by Geological Survey, balance of year by Water Supervisor. Station is located at Mile 62.9 above Sacramento, a short distance below Wilkins Slough pumping plant of Reclamation District 108.

TABLE 10

DISCHARGE OF SACRAMENTO RIVER AT KNIGHTS LANDING - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	5550	20800	24700	22800	12900	6840	2660	1700	2220	3670	4670	4490
2	9650	21400	24500	23000	12100	7750	2580	1760	2200	3570	4730	4430
3	17700	20800	24800	22100	11400	8480	2480	1830	2240	3700	5090	4370
4	20900	21600	24400	22400	11000	8160	2480	1800	2220	3660	6950	4310
5	22500	21900	23200	22200	11000	7630	2360	1830	2180	3620	7000	4250
6	24000	21500	22200	21700	11300	7140	2320	1840	2300	3680	6850	4310
7	22900	21500	21800	21400	11600	6680	2290	1770	2580	3680	6340	4370
8	21400	21300	21700	21300	11700	6320	2260	1690	2860	3630	6200	4430
9	20500	21600	21300	21100	11100	5790	2240	1720	3170	3420	6400	4310
10	21200	21600	21100	21100	10300	5250	2320	1820	3210	3430	6610	4250
11	21600	21600	21000	21100	9900	4800	2240	1830	3070	3610	6540	4200
12	21100	21600	20700	20800	9900	4530	2140	1830	3030	3710	6130	4200
13	21700	21300	20700	21000	10000	4410	2180	1780	3090	3730	5780	4250
14	20500	20100	20400	20500	9900	4270	2180	1640	3260	3720	5390	4250
15	20600	20800	20800	20200	9800	4120	2200	1540	3610	3640	5210	4310
16	21100	21400	20400	20400	9400	4070	2180	1530	3530	3540	5090	4370
17	21200	21600	20500	20000	9100	4020	1960	1630	3560	3600	5090	4430
18	19600	21400	19800	19900	8800	3890	1790	1710	3590	3860	4970	4790
19	16800	21900	18300	19400	8400	3810	1800	1810	3720	3990	4790	8300
20	13500	21900	16700	19000	8200	3630	1950	1850	3700	3550	4730	16500
21	11600	21800	15100	18400	7900	3590	2040	1740	3800	3930	4670	17800
22	10500	21500	14100	17400	7500	3490	2190	1620	3960	3850	4730	19600
23	9800	21100	13500	17800	7300	3520	2180	1670	3830	3730	4670	22900
24	9200	21000	13000	17400	7300	3460	2030	1730	3650	3660	4610	21000
25	8900	20600	12700	16800	7200	3500	1870	1790	3570	3940	4610	23400
26	10600	19300	13100	17800	7100	3250	1850	1850	3410	4900	4490	22600
27	19400	18900	15100	16800	7000	3050	1870	1860	3650	6810	4430	23100
28	21200	20700	18700	15700	6750	2880	1880	1770	3730	6320	4430	23000
29	21200	22600	20500	14900	6500	2790	1930	1740	3900	5690	4430	23000
30	21400		20600	13800	6300	2640	1890	1860	3780	5060	4430	22700
31	21400		21400		6450		1780	2050		5050		22200
Mean	17720	21210	19570	19610	9197	4792	2133	1760	3221	4063	5335	11110
Ac.Ft. for Month	1089300	1220000	1203600	1166700	565500	285100	131100	108300	191600	249800	317500	683100

NOTE: This station is maintained seasonally under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at the Knights Landing Railroad Bridge, Mile 34.0 above Sacramento, below the point of discharge to the river of Colusa Basin drainage via the Back Borrow Pit of Reclamation Districts 108 and 787. Record from June to October inclusive compiled by Geological Survey - balance of year by Water Supervisor.

TABLE 11

DISCHARGE OF SACRAMENTO RIVER AT VERONA - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	9230	54600	76300	69700	31500	16100	4450	2590	3590	5700	9720	7880
2	17400	52200	69600	68400	29300	17800	4310	2570	3520	5700	8010	7880
3	34700	49100	69500	67500	28200	17300	4190	2650	3290	5850	10000	7570
4	42400	48100	69100	66000	29800	16300	4290	2800	3250	5810	13000	7380
5	46800	51300	66300	64300	31000	15000	3970	2630	3300	5750	12800	7380
6	51100	55800	64100	62700	31200	14300	3870	2630	3560	5810	12600	7330
7	53700	57200	72200	61200	30200	13300	3920	2530	4020	5710	11800	7410
8	54600	58000	60700	60200	27900	12600	3740	2410	4810	5560	13200	7490
9	55800	58100	59500	59400	25900	11900	3680	2450	5050	5490	14400	7570
10	57900	57400	58600	58700	25600	10700	3640	2520	4810	5440	14000	7570
11	58800	56500	57700	58000	26000	9300	3530	2710	4870	5650	13200	7140
12	58400	55200	56500	57500	26400	9100	3420	2630	5020	5900	11800	7160
13	58600	53300	55400	56700	26400	8730	3420	2600	5050	5980	11000	7170
14	57800	53200	53800	56600	25800	8150	3580	2510	5240	5920	10200	7200
15	55900	54900	51000	56300	24500	7400	3350	2410	5970	5790	9580	7280
16	53500	55000	48500	54700	23400	7010	3330	2400	5680	5770	9600	7350
17	50000	54000	45800	53100	22000	6630	3150	2480	5640	5820	9500	7740
18	44900	54000	43300	51500	21200	6080	2970	2800	5850	6040	9190	9280
19	38900	54600	40900	49900	20600	6300	2870	2740	6060	6280	8420	20000
20	33400	54800	38200	48300	19200	6220	2910	2750	6060	6360	8280	33200
21	29300	54900	36100	46600	17800	6080	3120	2620	6120	6280	8330	35200
22	25200	53800	34500	44500	17700	5850	3050	2600	6440	6200	8400	40200
23	22100	51400	33400	43100	18100	5940	3170	2710	5980	6120	8170	49500
24	20300	47900	32600	42500	17800	5540	3000	2770	5810	6140	7810	58900
25	19300	45900	32000	41300	17300	5270	2840	2970	5780	6420	8110	62500
26	26400	47200	33400	39400	17200	5030	2790	2840	5720	7490	7840	64200
27	41800	53200	42400	37700	16200	4980	2730	2880	5750	9050	7560	65400
28	52900	68400	56300	36100	15400	4840	2790	2660	5780	8690	7600	66600
29	57300	75200	57900	34700	14700	4640	2790	2770	6090	7720	7700	66700
30	57400		61100	33300	14800	4520	2790	2970	5910	7440	7900	65100
31	56200		70100		14800		2680	3150		7490		63200
Mean	43290	54660	52800	52660	22840	9097	3366	2669	5134	6302	9931	26660
Ac.Ft. for Month	2662000	3144000	3247000	3134000	1404000	541300	207000	164100	305500	387500	590900	1639000

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at Mile 19.6 above Sacramento at the mouth of "Cross Canal" main drain of Reclamation District 1001, and below the mouth of the Feather River.

TABLE 12

DISCHARGE OF SACRAMENTO RIVER AT SACRAMENTO - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	10200	56600	75600	73800	35700	21800	5280	2670	3650	6110	8390	8120
2	20400	54800	69800	69400	36000	22900	5060	2640	3590	6080	8760	8160
3	38600	51900	67500	77500	37400	21700	4870	2710	3260	6350	10600	7900
4	43800	51900	66800	65700	38600	20600	4960	2890	3270	6220	13400	7770
5	47900	56900	64700	64500	38900	19000	4500	2640	3350	6120	13400	7770
6	49900	59500	62600	62600	37100	18300	4430	2680	3620	6280	12800	7770
7	52200	63000	60900	60900	35700	17200	4460	2590	4060	6060	13300	7770
8	55400	62700	60000	60300	34200	16300	4150	2490	4840	6060	15700	7970
9	66500	60600	59800	60000	33400	15300	4070	2530	5060	5870	15500	7870
10	67200	59500	59200	59800	34200	13800	4040	2570	5030	5890	14800	7870
11	65700	58000	58300	59800	35400	12300	3890	2750	5010	6140	14800	7470
12	73000	56800	57400	60000	36300	12300	3700	2660	5200	6290	12400	7660
13	69000	54800	56300	60000	36300	11700	3670	2600	5210	6400	11300	7660
14	62600	56000	55100	60600	35100	11200	3830	2520	5400	6200	10700	7610
15	58300	58300	53400	60900	33400	10200	3540	2430	6310	6210	10000	7600
16	55400	56900	51100	59800	31900	9740	3550	2440	6000	5950	9760	7670
17	51900	55400	48400	57400	30800	9130	3400	2480	6000	6050	9700	8070
18	47300	56000	46100	56300	29600	8530	3200	2850	6280	6140	9300	10100
19	41200	55700	43800	55400	28500	8480	3220	2730	6610	6420	8860	25600
20	35400	55400	41500	54500	27100	8340	3110	2790	6630	6400	8700	29300
21	30800	55100	39500	53100	26200	8190	3260	2640	6640	6450	8850	33100
22	27300	54200	38000	51600	26500	7770	3190	2660	6950	6440	8780	38900
23	24300	52800	37100	50500	26200	7570	3270	2750	6440	6580	8570	48200
24	22500	53700	36800	49900	25900	6870	3100	2840	6250	6700	8320	58600
25	22200	52800	37400	48200	24800	6610	2950	2970	6160	6890	8350	65700
26	31900	55700	41500	45800	24000	6310	2890	2830	6830	7840	8260	68700
27	56000	71600	61500	42900	22700	6080	2830	2930	6110	9270	8020	73400
28	59500	79400	71200	40300	21500	5850	2900	2670	6230	8860	8020	79000
29	60000	77500	70000	38600	20200	5600	2870	2800	6450	7950	8120	74100
30	59800		80800	37100	19700	5450	2870	2990	6310	7760	8260	69800
31	58300		82000		19300		2780	3190		7980		66500
Mean	47200	58400	56600	56600	30400	11800	3670	2710	5400	6640	10500	28200
Ac. Ft. for Month	2904800	3359000	3479200	3366300	1869600	704400	225800	166500	321400	408500	626200	1733000

NOTE: This represents the flow of the Sacramento River past Sacramento (below the City of Sacramento intake) to the delta. Additional water flows to the delta through the East Borrow Pit of Yolo By-Pass. See Table 101. The discharges of this table have been computed as follows: January 1 to June 1 and December 19 to December 31 inclusive by gage height - discharge relation. Balance of year by adding to the measured Verona discharges the measured inflow of return water and American River and subtracting therefrom the measured diversions between Verona and Sacramento. A gaging station is not maintained at Sacramento during periods of low flow because of tidal action.

TABLE 13

DISCHARGE OF FEATHER RIVER NEAR OROVILLE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	7720	6700	45400	55200	8440	5100	2150	1700	1870	2330	3010	1740
2	23000	6280	31400	38000	8630	4940	2170	1680	1820	2290	3900	1920
3	10100	11300	23400	29000	9260	4550	2180	1640	1900	2310	2180	2060
4	12700	15500	19100	24600	9330	4310	2030	1600	2140	2310	2720	2020
5	7940	16600	16900	21100	8640	4100	1990	1600	2310	2300	2210	2040
6	6100	17100	15200	18800	8080	3900	2140	1700	2360	2150	2870	1870
7	5650	16000	14000	17900	7680	3700	1920	1660	2160	2270	5260	2030
8	17900	13000	13300	17400	7600	3500	1910	1670	1970	2340	4330	1560
9	20500	10600	12400	15900	7570	2790	1970	1720	2040	2350	3360	1820
10	15900	9080	11900	15000	7840	2900	2020	1610	2190	2510	2660	1960
11	15000	7940	11300	14000	8020	3220	2090	1630	2250	2570	2750	2000
12	13500	7060	10400	12700	7510	3100	1920	1630	2330	2550	2550	1990
13	9260	6980	9590	12600	7760	2980	1950	1640	2440	2400	2400	1870
14	7020	9040	9010	12800	7720	2840	1830	1700	2360	2530	2290	1780
15	5860	7420	8680	13700	7570	2760	1840	1900	2100	2540	2090	1630
16	5400	6380	8620	12900	7190	2410	1870	2130	2320	2650	1780	1960
17	4800	7300	8200	11700	6960	2380	1930	1980	2280	2660	1370	3510
18	4470	7220	7940	11500	6620	2600	1870	1690	2270	2650	2130	13800
19	4260	6320	7860	11200	5990	2520	1930	1730	2190	2650	2210	8420
20	3810	5820	7840	10900	5750	2500	1880	2090	2220	2480	2320	5130
21	3300	5540	7890	10800	6100	2460	1800	2120	2060	2600	1990	15900
22	3540	5200	8210	12200	6150	2450	1820	2110	1970	2680	1740	22500
23	3690	4860	8160	12000	5780	2030	1860	2040	2090	2650	2110	25600
24	3630	5160	8420	10900	5500	2130	1810	1670	2270	3040	1680	24800
25	6580	8020	11300	10400	5120	2350	1820	1620	2280	2280	1910	17800
26	22100	24200	27200	10400	5250	2330	1820	1940	2280	1620	2100	20700
27	15000	13000	41300	10700	4980	2340	1790	1990	2270	1210	2100	40400
28	10800	20000	32500	10900	4670	2280	1750	2010	2330	2040	2100	24500
29	9260	68800	62300	10700	4450	2250	1700	2000	2050	2240	2100	18500
30	7860		31000	8870	4360	2130	1780	2070	2250	2320	2020	15700
31	7020		87300		5220		1760	1930		2190		12300
Mean	9473	18910	23160	16160	6830	2995	1913	1813	2179	2378	2475	9671
Ac. Ft. for Month	582500	1088000	1424000	961500	420000	178200	117600	111500	129700	146200	147300	594700

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 14

DISCHARGE OF FEATHER RIVER AT NICOLAUS - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	1030	13000	102000	90000	13600	8350	1180	478	835	1720	2670	2670
2	5480	12000	74000	69200	12900	8350	1050	520	764	1880	2560	2440
3	17200	10900	64000	55500	14200	7460	1030	535	709	1930	5200	2440
4	18500	14200	58200	45000	16300	6440	1030	590	726	1940	4120	2560
5	17400	21700	45000	37000	16500	5930	1040	530	817	1930	3240	2560
6	13000	25000	35000	31700	15700	5730	889	474	1040	1920	3370	2560
7	11600	25000	29500	27000	13200	5420	829	438	1310	1870	3490	2560
8	13200	24900	25200	24800	11900	5040	895	452	1630	1720	6500	2560
9	25300	21000	22700	23300	12100	4830	770	510	1530	1830	6650	2440
10	32000	17800	23000	22700	13200	4200	714	515	1400	1840	5200	2330
11	31000	15200	20500	21200	14200	3520	682	555	1520	1920	4370	2440
12	32200	13800	17800	20700	14400	3730	731	510	1670	2030	3870	2560
13	28800	12300	15800	19800	14800	3400	764	501	1640	2050	3620	2440
14	19800	15500	13600	19600	14000	2930	748	492	1770	1990	3370	2440
15	14700	18900	13200	19800	13000	2500	687	488	1830	1970	3490	2330
16	12300	15000	12600	20600	12500	2130	621	515	1780	2080	3490	2330
17	10500	13400	12500	20200	11600	1820	585	676	1720	2150	3130	2560
18	8700	14200	11000	19300	11300	1560	595	793	1900	2170	2670	5480
19	7500	13700	12100	19500	10600	1870	605	748	1920	2220	2560	13800
20	6200	12800	12000	19700	9700	1840	600	621	1900	2330	2780	13400
21	5620	12100	11600	19000	9100	1730	654	560	1840	2280	2900	9100
22	4640	11500	11600	18800	9550	1690	616	720	1770	2240	2670	15200
23	4640	10400	11800	19600	10200	1570	580	764	1750	2370	2330	26000
24	4500	10000	11900	20500	9550	1440	525	764	1680	2410	2560	31700
25	4640	10800	12700	19000	9250	1120	535	742	1830	2620	2560	37500
26	12700	18100	15600	17800	8800	1230	501	590	1850	2940	2330	41000
27	25200	34200	29500	16600	8050	1290	506	506	1810	2350	2440	49500
28	27300	96000	46000	15600	7300	1270	525	616	1820	1880	2560	64000
29	21000	113000	43000	15200	7020	1240	535	736	1870	1680	2670	55500
30	17300		72000	14900	7020	1240	530	775	1870	2210	2560	44500
31	14800		103000		7020		478	817		2410		36100
Mean	15121	22290	31884	26787	11566	3362	711	598	1550	2093	3398	15645
Ac.Ft. for Month	929800	1282100	1960500	1593900	711200	200100	43700	36760	92230	128700	202200	962000
Diversions Below Nicolaus, Ac.Ft.	0	0	0	0	-	100	1190	1650	220	-	0	0
Discharge to Saoramento River Ac.Ft.	929800	1282100	1960500	1593900	711200	200000	42510	35110	92010	128700	202200	962000

TABLE 15

DISCHARGE OF YUBA RIVER AT SMARTVILLE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	641	3980	17600	23500	3780	4980	579	300	282	292	428	450
2	8440	3780	12700	13000	5160	3980	537	300	278	292	1010	450
3	6020	4630	9850	12100	7920	3190	518	296	278	300	911	400
4	6060	8410	8080	10100	7780	2720	488	296	296	310	866	400
5	3870	9400	6860	8640	6700	3120	476	292	310	305	782	400
6	2320	8320	5970	7660	5680	2710	470	287	558	300	1210	400
7	2070	8030	5390	7200	4770	2760	458	287	656	296	2380	400
8	9680	6070	5130	7130	4980	2550	458	282	663	300	1480	400
9	13300	4970	5100	6780	6270	2440	446	282	656	300	1070	350
10	7600	4380	4830	6330	7660	2300	394	282	649	296	983	350
11	11300	4200	4480	6380	8100	2200	388	282	600	296	911	350
12	10200	3780	3890	6410	8810	1800	399	282	305	296	884	345
13	5680	3730	3530	6860	8640	1100	399	278	296	296	848	330
14	3930	6410	3290	7460	7130	900	377	278	296	296	839	292
15	3010	4310	3150	7680	6980	800	382	278	292	296	822	292
16	2500	3680	3240	6620	6270	650	382	278	296	300	806	345
17	2160	4060	3430	5500	6270	774	372	278	300	300	814	663
18	1890	3880	3150	5360	6030	893	360	274	300	300	782	3360
19	1710	3340	3050	6250	5710	893	360	278	305	300	758	2270
20	1530	2990	3020	6860	4880	830	360	278	197	300	718	1120
21	1380	2760	3020	7250	5550	830	355	278	177	300	600	1260
22	1220	2640	3080	7340	6280	718	345	274	287	296	470	1030
23	1140	2740	3210	7340	6140	726	320	278	287	292	656	3760
24	1110	3380	3320	6860	5490	656	310	278	300	355	635	4010
25	2670	6300	4490	5930	5680	635	305	282	274	482	565	4330
26	12600	12600	13300	5070	4940	642	300	292	287	488	440	8660
27	10400	48300	30200	4330	4130	642	296	278	296	458	450	22400
28	6740	52200	15200	3910	3980	642	325	278	300	404	450	13900
29	5350	33100	25800	3730	4060	600	325	282	296	399	450	9440
30	4630		61500	3640	4060	572	292	278	296	446	450	8420
31	4220		43300		4330		300	278		446		6930
Mean	5012	9185	10390	7441	5941	1608	390	283	354	333	816	3145
Ac. Ft. for Month	308200	528300	639000	442800	365300	95710	23950	17380	21050	20500	48530	193400

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 16

DISCHARGE OF YUBA RIVER AT MARYSVILLE (SIMPSON LANE BRIDGE) - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1							401	159	124	164	414	410
2							388	159	124	179	405	405
3							352	157	124	187	522	405
4							344	154	124	201	1040	400
5							310	152	126	210	740	387
6							299	152	160	201	676	387
7					4530		299	152	377	201	2210	396
8							294	150	439	184	2200	387
9							276	148	457	179	1680	368
10							255	141	465	179	1460	368
11							234	138	478	176	1410	368
12							231	143	362	176	1130	378
13							228	141	260	179	1030	378
14		(See footnote)					228	136	213	179	958	400
15							225	130	201	184	924	423
16						762	221	132	201	184	905	
17						585	228	132	206	187	887	
18						600	202	132	206	182	867	
19						605	199	130	206	184	849	
20	1890					610	193	124	213	187	818	
21						610	193	122	174	192	723	
22						610	193	122	142	201	553	
23						590	184	122	142	189	563	
24						520	177	122	166	201	671	
25						495	169	126	166	288	638	
26						475	169	120	166	374	548	
27					3650	460	174	118	166	374	428	33000*
28						445	177	120	166	365	487	
29						425	171	122	166	339	452	
30						415	162	122	166	378	418	
31							164	124		396		
Mean							237	136	223	226	887	
Ac.Ft. for Month							14560	8330	13260	13880	52770	

*U. S. Engineer Department measurement.

NOTE: Recording gage station maintained throughout year by Division of Water Resources. No attempt made to determine high flows. For high flows see record from U.S.G.S. station at Smartville (Table 15).

TABLE 17

DISCHARGE OF AMERICAN RIVER AT FAIR OAKS - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	1060	5180	23200	29800	6330	6240	1410	471	387	448	562	622
2	6820	4710	16600	20000	8650	5530	1330	486	340	414	664	429
3	13400	4810	13300	16000	10800	4890	1200	437	297	406	1440	634
4	6900	6240	11000	13900	9990	4620	1080	425	380	444	1090	659
5	5720	10700	9380	12200	8210	4410	962	414	403	441	934	646
6	3330	8940	8450	10700	6780	4380	962	463	384	479	851	642
7	2830	11100	7800	10100	6560	4240	878	460	384	486	2690	634
8	9390	7840	7720	9990	7180	4030	830	467	347	433	2900	634
9	23000	6420	7760	9520	8540	3810	820	456	280	486	1770	444
10	11600	5580	7080	9280	9810	3480	825	399	310	475	1290	602
11	13600	4780	6270	9400	10700	3530	785	384	422	486	1170	634
12	24300	4260	5630	9470	11300	3530	745	380	354	475	998	618
13	10400	3930	5040	10200	10800	3480	690	384	369	482	917	610
14	6470	6980	4680	10900	9680	3380	642	384	410	336	856	582
15	4740	5840	4650	11000	9350	3300	626	418	406	414	708	562
16	3990	4600	4620	9110	8670	3150	622	369	322	224	554	518
17	3310	5090	5160	7800	8820	3040	642	351	425	217	506	770
18	3070	5370	5000	7860	8180	2950	606	351	444	207	522	1720
19	2800	4470	4720	8730	7760	2800	775	333	618	181	690	3590
20	2600	3970	4880	9140	7400	2680	558	406	578	194	708	2130
21	2400	3640	5100	9040	7800	2490	502	354	526	241	708	2040
22	2270	3460	5320	9450	8010	2440	542	344	456	486	558	7060
23	2210	4730	5790	10000	7800	2200	570	387	482	510	570	7080
24	2130	9620	6110	9520	7720	2000	562	336	441	522	614	9550
25	2660	9380	8490	8580	7420	1980	542	290	441	498	542	8320
26	18900	13400	12700	7620	6760	1930	538	279	437	526	668	7340
27	22300	46600	47400	6760	6110	1750	526	333	418	418	708	21400
28	10600	57500	20200	6000	5880	1640	479	351	456	365	690	21800
29	7400	39700	22200	5760	5660	1570	482	344	326	562	682	12800
30	6090		69600	5580	5320	1510	506	362	444	590	672	9430
31	5450		61200		5240		514	384		618		7740
Mean	7798	10650	13780	10450	8040	3233	734	387	410	421	941	4266
Ac. Ft. for Month	479500	612600	847000	621600	494300	192400	45130	23810	24370	25910	56000	262300

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 18

DISCHARGE OF AMERICAN RIVER AT SACRAMENTO - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1					6500	5820	1240	446	372	432		
2					8150	5240	1190	450	368	417		
3					10200	4570	1090	427	293	422		
4					9600	4330	1010	413	343	417		
5					8350	4210	893	386	386	432		
6					6800	4130	914	422	399	450		
7					6500	4040	865	436	376	480		
8	(See footnote)				7000	3890	754	441	372	460		
9					8150	3640	761	436	293	450		
10					9100	3370	768	404	327	470		
11					10000	3350	735	376	372	475		
12					10400	3400	681	355	390	470		
13					10200	3350	633	347	359	475		
14					9300	3250	598	351	372	386		
15					8700	3190	582	376	404	390		
16					8150	3070	582	376	343	278		
17					8150	2840	593	339	363	224		
18					7800	2860	566	351	422	224		
19					7300	2600	693	312	544	204		
20					7000	2500	571	372	560	188		
21					7150	2490	475	372	516	228		
22					7500	2280	495	343	455	368		
23					7300	1990	538	347	505	490		
24					7300	1710	532	372	460	516		
25					6800	1700	516	293	450	554		
26					6350	1650	500	274	450	465		
27					5800	1470	495	331	413	465		
28					5300	1390	465	335	480	381		
29					5150	1350	441	335	381	465		
30					4850	1300	480	347	460	576		
31					4700		475	355		588		
Mean					7598	3033	682	372	400	414		
Ac.Ft. for Month					467200	180500	41910	22850	24250	25470		

NOTE: This station is maintained seasonally under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at H Street Bridge, Sacramento, 6.0 miles above mouth of river. For period not covered by this record refer to station at Fairoaks (Table 17).

TABLE 19

DISCHARGE OF MOKELUMNE RIVER AT WOODBRIDGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	92	300	864	4890	1400	2190	609	137	221	295	406	554
2	110	467	926	4880	1270	2380	51	167	121	292	454	372
3	177	643	1220	5060	1780	2640	138	194	152	298	418	518
4	253	689	1540	5100	2100	2190	255	172	305	300	526	611
5	276	645	1620	4970	2120	1880	74	71	346	317	808	655
6	363	650	1630	4540	1950	1770	100	155	351	338	602	598
7	232	674	1640	3590	1440	1910	162	258	344	317	587	569
8	220	652	1640	2610	654	1890	72	254	336	337	624	591
9	478	647	1650	2170	750	1740	94	246	164	358	642	440
10	485	647	1550	2060	1350	1540	195	244	220	360	594	589
11	438	647	1260	2000	1930	1350	221	221	310	346	602	649
12	513	645	1190	1950	2520	1340	233	75	318	355	534	651
13	474	647	1170	2110	2870	1330	287	84	322	355	539	653
14	404	782	1020	2320	2970	1270	233	113	356	236	567	611
15	442	736	903	2380	3470	1170	74	140	358	376	594	554
16	531	672	886	2250	3500	1100	100	149	203	358	642	426
17	597	698	881	2050	2970	885	153	158	286	335	646	520
18	612	816	879	2050	2980	815	144	142	320	331	462	550
19	614	694	872	1780	3200	885	136	74	324	360	532	547
20	617	672	862	1720	3240	729	140	108	349	272	611	556
21	579	665	862	1960	3320	393	141	180	380	315	600	631
22	470	665	746	1940	3190	358	66	230	370	338	452	624
23	537	678	693	2180	2460	356	144	221	214	360	550	458
24	614	694	700	3100	2490	278	163	218	305	449	572	622
25	634	734	700	3370	3420	205	160	208	312	418	526	712
26	698	950	693	3280	3370	234	146	127	318	412	554	701
27	566	1290	750	3090	3300	235	153	243	325	394	554	699
28	208	1190	1020	2330	2820	210	201	230	337	400	554	793
29	157	1050	1460	1920	2460	197	88	209	322	408	565	664
30	311		2120	1540	2460	188	108	203	256	416	587	545
31	277		3650		2500		148	203		408		534
Mean	419	722	1213	2840	2460	1122	161	175	295	350	563	587
Ac. Ft. for Month	25740	41530	74570	169000	151200	66760	9900	10780	17540	21530	33530	36090

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located just below dam of Woodbridge Irrigation District.

TABLE 20

DISCHARGE OF SAN JOAQUIN RIVER BELOW FRIANT - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	344	1650	5460	5960	4500	5420	3800	1500	1090	1020	939	808
2	478	1670	3720	4500	5630	5900	3430	1470	1230	897	621	682
3	1840	1940	3350	3820	6220	5500	3190	1470	1360	976	192	918
4	1200	3090	2700	3460	5710	5660	2830	1180	1330	960	236	911
5	1320	2180	2690	3340	4910	5340	2460	1420	1280	560	671	946
6	774	1900	2590	2980	5140	5380	2660	1430	1250	201	946	1000
7	702	2150	2590	2750	5440	5580	2400	1420	1320	76	953	876
8	1990	1800	2520	2900	5820	6250	2240	1480	1180	652	1010	772
9	2700	1570	2620	3260	6800	7160	2260	1410	1130	834	626	848
10	3880	1510	2530	3380	7800	7060	2100	1460	1340	911	227	1180
11	6840	1200	2320	3710	8310	7300	1920	1370	1240	904	192	911
12	4140	1460	2310	4170	7720	7330	1820	1320	1100	576	176	953
13	2590	1290	2250	4590	7760	7330	1680	1410	1100	189	495	763
14	1250	1830	1890	4970	7740	7300	1770	1400	992	90	939	790
15	1110	1890	1980	4950	7740	7060	1670	1410	754	719	953	585
16	1150	1690	2200	4340	7670	6670	1460	1440	778	925	946	633
17	948	1640	2120	3680	7280	6940	1440	1260	960	946	918	1160
18	969	1430	2060	3910	7180	6310	1530	1300	1080	1150	1000	1260
19	873	1570	2400	4480	6350	5900	1220	1280	1020	753	918	1340
20	834	1620	2490	4710	6280	5420	960	1440	1040	201	984	939
21	697	1590	2830	4770	7320	4980	718	1340	848	108	820	742
22	514	1540	2830	5520	7560	4910	918	1420	694	778	784	1400
23	867	3130	3060	5790	7250	4110	1560	1420	798	1220	883	4580
24	848	3220	3270	5960	7710	3990	1550	1260	992	1300	876	4210
25	1850	2410	3970	5340	7990	3990	1500	1260	1040	1430	802	2260
26	7090	5200	4260	4690	6580	3780	1770	1360	1160	1250	968	1180
27	3280	6220	8360	3740	5900	3430	1660	1420	1090	932	1000	7420
28	2190	6520	6180	3140	6600	3530	1620	1410	1100	790	932	7130
29	1710	7490	4770	3180	6400	3460	658	1390	812	897	932	2940
30	1800		4200	3680	5120	3920	1530	1360	960	1030	848	2280
31	1720		8980		4730		1590	1300		1040		2240
Mean	1887	2497	3403	4189	6618	5564	1862	1381	1069	784	760	1763
Ac.Ft. for Month	116000	143600	209300	249300	406900	331100	114500	84910	63610	48230	45200	108400

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey.

TABLE 21

DISCHARGE OF SAN JOAQUIN RIVER AT DELTA BRIDGE* - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	695	1050	930	253	1080	80	0	0	0	0	0
2	0	555	1200	880	210	1050	79					
3	0	494	1360	895	229	960	86					
4	0	484	1400	970	327	845	86					
5	0	481	1380	1000	465	800	83					
6	0	560	1340	895	535	780	70					
7	54	665	1270	680	580	775	27					
8	93	715	1180	590	600	755	15					FLOW
9	81	710	1040	505	600	685	9					
10	65	675	880	456	605	625	5					
11	114	595	795	433	635	620	3					
12	269	510	755	423	685	645	1					NO
13	397	438	715	427	740	680	0	FLOW	FLOW	FLOW	FLOW	
14	540	387	655	431	815	715	0					
15	735	376	585	459	885	735	0					
16	750	374	505	492	935	755	0					
17	575	440	390	520	985	765	3	NO	NO	NO	NO	
18	407	477	290	530	1020	780	224					
19	298	467	288	477	1050	785	83					
20	229	458	290	316	1080	780	28					16
21	187	444	228	326	1090	770	15					62
22	165	421	61	378	1100	735	8					95
23	144	425	62	408	1110	630	3					105
24	126	414	95	421	1090	460	0					85
25	95	432	255	467	1070	400	0					142
26	102	605	401	535	1070	364	0					416
27	134	750	525	575	1060	296	0					600
28	396	835	610	600	1070	200	0					620
29	685	920	705	570	1090	138	0					610
30	825		810	449	1090	85	0		0		0	685
31	825		905		1090		0	0		0		860
Mean	267	545	710	568	812	656	29	0	0	0	0	139
Ac. Ft. for Month	16440	31340	43680	33790	49910	39060	1800	0	0	0	0	8520

* Also called Turner Island Bridge.

NOTE: Station maintained by U.S. Bureau of Reclamation; intermittent measurements of flow made by Water Supervisor. Station is located at county road bridge eight miles east and six miles north of Los Banos: Mile 158.7 above mouth of San Joaquin River. An undetermined amount of water by-passes this station through Pick Anderson Slough and other channels.

TABLE 22

DISCHARGE OF SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	275	3370	4100	3240	2520	3980	1360	181	127	141	74	73
2	332	3350	3840	3400	2160	4400	1270	177	133	145	70	76
3	373	2900	4160	3520	1940	4390	1230	171	137	145	66	77
4	413	2590	3760	3550	1860	4110	1220	165	136	145	61	79
5	403	2550	3810	3540	1980	3900	1210	160	133	145	63	79
6	387	2800	3850	3530	2200	3580	1180	156	136	142	64	82
7	435	2940	3820	3500	2370	3560	1080	151	143	140	65	84
8	630	2970	3810	3370	2270	3620	861	146	149	150	66	84
9	800	3060	3760	3140	2550	3630	701	141	150	157	65	85
10	930	3040	3660	2850	2590	3320	625	137	154	150	66	86
11	1080	2960	3560	2590	2610	3040	522	130	162	150	65	85
12	1660	2730	3420	2400	2650	2900	423	125	153	149	64	84
13	2310	2480	3310	2300	2730	2860	375	134	146	145	64	89
14	2740	2370	3240	2280	2850	2930	340	116	143	141	64	119
15	2960	2260	3100	2280	2960	2980	317	108	133	137	63	199
16	3050	2190	2920	2320	3060	3070	308	106	127	118	61	333
17	3140	2230	2640	2390	3160	3190	295	106	138	118	61	484
18	2940	2240	2320	2430	3250	3270	534	105	160	125	64	603
19	2480	2260	2040	2440	3360	3350	1170	102	172	127	63	656
20	1970	2300	1930	2350	3400	3400	932	101	170	112	61	668
21	1660	2260	1890	2100	3470	3420	672	101	158	112	61	797
22	1490	2180	1720	2010	3510	3410	567	100	151	116	60	1010
23	1370	2180	1340	2050	3540	3360	504	99	145	112	60	1150
24	1260	2150	1200	2100	3800	3110	387	100	140	112	63	1250
25	1150	2300	1310	2150	4200	2750	306	100	141	104	65	1540
26	1080	2480	1650	2260	3700	2400	265	101	142	99	65	2060
27	1350	2740	1980	2410	3060	2140	235	104	140	94	69	2560
28	1900	3060	2320	2510	3060	1920	212	118	140	90	70	2890
29	2440	3500	2640	2630	3700	1670	199	133	140	86	70	3240
30	2730		2890	2720	3740	1500	191	136	140	82	70	3830
31	3090		3050		3760		186	132		78		4300
Mean	1575	2636	2872	2679	2968	3172	635	127	145	125	65	927
Ac.Ft. for Month	96850	151600	176600	159400	182500	188700	39030	7819	8606	7670	3854	57030

NOTE: This is a recording gage station at the county bridge on the road between Gustine and Stevinson, Mile 129.5 above mouth of San Joaquin River and 5.7 miles above the mouth of the Merced River. Gage operated by United States Bureau of Reclamation. Measurements of flow made by Division of Water Resources. Additional water during high flow periods passes this station via Mud Slough. See Table 23.

TABLE 23

DISCHARGE OF MUD SLOUGH (BRANCHES COMBINED) AT GUSTINE-STEVINSON HIGHWAY - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	14	1100	2050	1500	681	2860	236	5	0	0	0	0
2	25	1090	2960	1920	472	2830	221	4				
3	34	916	3670	2530	365	2790	214	2				
4	41	755	4100	2700	347	2660	211	0				
5	40	734	4460	2630	392	2160	210					
6	37	856	4700	2560	514	1740	204					
7	46	948	4650	2410	626	1500	187					
8	83	1000	4400	1810	697	1380	147		FLOW			FLOW
9	117	1060	4030	1380	759	1280	119					
10	138	1070	3420	1050	797	1190	104					
11	165	1010	2630	792	809	1070	85					
12	265	864	1890	642	847	942	65					NO
13	471	687	1540	578	921	885	55	FLOW	NO	FLOW	FLOW	
14	729	607	1370	566	1060	889	47					0
15	881	546	1200	566	1160	926	41					11
16	942	508	1010	591	1300	980	39					45
17	986	531	792	639	1420	1020	36					77
18	864	537	582	668	1540	1060	32		0			100
19	591	546	418	671	1730	1090	203	NO	2	NO	NO	110
20	371	559	371	607	1920	1120	160		2			113
21	296	531	357	455	2180	1120	113		0			136
22	263	485	311	408	2440	1120	93					167
23	237	444	233	424	2600	1100	81					199
24	218	431	208	455	2690	969	57		FLOW			217
25	200	499	228	485	2630	742	39					273
26	185	591	295	553	2660	550	28					398
27	233	738	400	658	2830	428	21		NO			630
28	361	1050	588	734	2860	357	14					834
29	572	1410	847	780	2860	295	11					1040
30	771		1080	788	2830	264	8		0		0	1290
31	959		1290		2860		6	0		0		1490
Mean	359	762	1809	1085	1542	1244	100	0.3	0.1	0	0	230
Ac.Ft. for Month	22090	43840	111200	64560	94800	74020	6120	22	8	0	0	14140

NOTE: To determine the total flow passing the Gustine-Stevinson highway (Fremont Ford Bridge road) the flow in this table should be combined with that in Table 22. Discharges determined by relation between measured flows of sloughs related to Fremont Ford Bridge gage.

TABLE 24

DISCHARGE OF SAN JOAQUIN RIVER NEAR NEWMAN - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	500	4270	7540	9020	4430	8470	1900	428	378	380	237	213
2	562	4550	8690	9820	3830	8120	1720	419	395	372	230	213
3	617	4940	9480	10500	3170	8100	1630	404	411	367	218	213
4	659	4890	10300	10900	3240	8200	1560	408	410	375	213	213
5	653	4850	10800	10800	4310	7980	1540	415	402	369	211	213
6	644	4830	11100	10500	4870	7620	1470	395	378	369	213	223
7	686	5010	11200	10200	5120	7000	1360	382	377	362	218	218
8	844	5240	11000	9220	5350	6260	1160	375	385	380	218	223
9	1010	5330	10500	7940	5560	5900	962	375	417	377	216	225
10	1190	5410	9900	6750	5650	5840	858	374	406	364	218	223
11	1700	5350	9160	5750	5590	5730	770	378	395	354	220	228
12	2770	5160	8360	5090	5700	5440	680	375	382	351	218	232
13	3210	4780	7560	5000	6400	5160	620	359	364	349	218	242
14	3610	4350	6840	5160	6880	5020	608	356	364	367	218	291
15	2870	4320	6090	5260	7200	5090	602	354	349	380	216	401
16	4140	4350	5480	5490	7490	5160	572	351	364	369	213	556
17	4250	4230	4920	5800	7780	5190	562	343	388	338	213	725
18	4210	4190	4350	5860	8120	5190	550	340	393	351	218	865
19	3750	4230	3830	5520	8420	5170	1130	340	393	320	216	970
20	3010	4230	3490	4640	8720	5110	1240	340	385	299	208	1000
21	2440	4150	3270	4080	9000	4980	946	345	393	281	211	1100
22	2090	3940	3040	4390	9200	4860	822	345	388	289	211	1280
23	1880	3350	2560	4630	9200	4750	728	345	411	278	204	1520
24	1730	3170	2300	4840	8470	4600	632	346	380	276	201	1740
25	1620	3260	2300	5300	7930	4240	538	362	380	273	208	2190
26	1520	3400	2570	5650	8530	3670	498	374	372	263	208	2520
27	2040	3930	3680	5980	9180	3180	480	361	375	258	213	3160
28	2450	5320	5110	5520	9250	2800	472	375	385	258	211	3890
29	3020	6440	6560	4810	8940	2480	472	390	390	260	213	4800
30	3510		7440	4620	8760	2200	456	380	403	252	213	4930
31	3920		8160		8700		451	370		245		5240
Mean	2197	4533	6696	6635	6935	5450	903	371	387	327	215	1292
Ac.Ft. for Month	135100	260800	411700	394800	426400	324300	55520	22820	23030	20080	12780	79450

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at Hills Ferry Bridge, Mile 123.7 above mouth of San Joaquin River and just below the mouth of the Merced River.

TABLE 25

DISCHARGE OF SAN JOAQUIN RIVER AT GRAYSON - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	600	3950	6270	7190	5540	8770	2480	740	525	585	400	345
2	615	4230	7100	8660	5060	8570	2300	700	540	590	397	350
3	660	4540	8040	9710	4560	8240	2180	640	555	605	390	350
4	735	4870	9080	10950	3840	8020	2200	620	550	625	380	355
5	740	4910	9840	11560	4210	7970	2100	660	555	630	377	350
6	740	4790	10380	11330	5060	7790	1960	650	550	615	355	350
7	750	4790	10780	11320	5540	7400	1850	630	525	660	360	352
8	825	4950	11030	10810	5580	6870	1770	620	530	655	370	352
9	960	5220	11020	9990	5740	6360	1540	580	540	655	360	355
10	1210	5390	10610	8890	5950	6010	1340	550	540	630	350	357
11	1615	5510	10100	8070	6150	5900	1210	570	555	580	355	352
12	2085	5510	9270	7180	6270	5760	1090	580	540	565	365	350
13	2790	5380	8660	6460	6360	5490	1000	590	535	535	355	355
14	3200	5610	8070	6190	6840	5240	945	560	510	530	360	365
15	3590	4510	7430	6170	7180	5150	950	550	540	535	360	410
16	3840	4540	6840	6240	7430	5200	920	540	555	555	365	530
17	4020	4430	6300	6430	7690	5320	880	560	565	520	350	705
18	4150	4410	5800	6560	7890	5380	870	530	565	465	340	885
19	4140	4410	5310	6570	8140	5330	960	580	540	455	350	1020
20	3780	4420	4840	6370	8350	5330	1400	530	555	432	355	1150
21	3130	4400	4460	5760	8480	5230	1430	510	560	445	350	1180
22	2560	4400	4150	5280	8560	5060	1250	490	585	435	350	1340
23	2200	4380	3790	5320	8650	4940	1110	505	600	427	355	1540
24	1970	3490	3270	5460	8710	4900	1000	490	615	418	355	1740
25	1870	3360	3090	5700	8560	4600	890	520	560	425	355	1925
26	1760	3550	3100	6060	8400	4020	850	550	530	417	360	2300
27	1960	3830	3490	6370	8440	3600	815	540	510	407	360	3160
28	2300	5080	3990	6510	8660	3220	810	530	525	402	365	4050
29	2670	5850	5120	6270	8775	2920	840	540	560	405	355	4575
30	3180		6560	5690	8660	2660	805	540	560	407	355	4900
31	3600		7180		8600		765	520		402		5040
Mean	2201	4645	6935	7512	7028	5708	1307	571	549	517	362	1335
Ac. Ft. for Month	135400	267200	426400	447000	432100	339700	80400	35100	32700	31800	21500	82100

NOTE: Recording gage station maintained jointly by Division of Water Resources, City of San Francisco, Modesto Irrigation District and Turlock Irrigation District. Station is at Laird Slough Bridge, Mile 96.05 above mouth of San Joaquin River.

TABLE 26

DISCHARGE OF SAN JOAQUIN RIVER AT HETCH HETCHY AQUEDUCT CROSSING - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	1530	4020	20740	23000	6830	14150	3300	1010	1180	1485	1375	1740
2	1580	4230	19560	27000	6600	13640	2800	960	1390	1490	1450	1700
3	1530	4600	17200	21200	7080	13520	2600	885	1400	1470	1450	1705
4	1530	4960	15100	18150	7700	13000	2590	905	1390	1480	1400	1740
5	1600	5460	14000	16700	7460	12810	2510	955	1490	1490	1365	1730
6	1680	5360	13800	15850	7410	12410	2310	985	1565	1515	1350	1710
7	1650	5220	13800	15100	7330	11800	2180	950	1530	1515	1365	1645
8	1680	5600	13900	14350	7430	11080	2050	960	1535	1535	1410	1630
9	1760	5800	13900	13780	7850	10340	1900	905	1560	1555	1405	1620
10	2140	5870	13920	13200	8380	9900	1710	835	1530	1505	1390	1620
11	3030	6100	13700	13860	9260	9860	1570	835	1475	1470	1375	1740
12	4450	6530	12940	11200	9760	9740	1480	880	1475	1460	1350	1740
13	4940	6710	12030	10330	10040	9460	1360	910	1495	1450	1340	1740
14	4370	6730	11190	10200	10660	9110	1300	895	1490	1445	1375	1750
15	4320	7210	10270	10230	11070	8970	1300	860	1530	1435	1350	1765
16	4420	8530	9320	10270	11200	8880	1220	860	1575	1465	1310	1800
17	4540	7520	8550	10000	11220	8680	1130	875	1580	1465	1300	1950
18	4640	6900	8590	9540	11260	8870	1120	880	1585	1375	1285	2150
19	4700	7080	7520	9220	11500	8750	1120	940	1560	1365	1275	2325
20	4540	6940	7090	9100	11550	8630	1440	905	1565	1360	1290	2440
21	4120	6450	6600	8750	11440	7750	1600	930	1565	1365	1335	2475
22	3650	6240	6170	8070	11300	6650	1490	950	1625	1365	1445	2650
23	3270	5880	5850	7940	11500	6450	1360	965	1650	1335	1750	2900
24	3050	6030	5370	8400	11810	6000	1200	975	1695	1325	1870	3055
25	2870	8130	5300	8700	11830	5480	1130	1000	1650	1340	1890	3250
26	2770	8120	5600	8980	12220	5030	1110	1075	1585	1350	1895	3590
27	3210	8660	7400	9050	13650	4470	1090	1040	1540	1360	1925	4200
28	3830	11580	11550	8830	14530	3850	1090	1015	1600	1365	1880	5700
29	3460	16350	15100	8390	14820	3400	1120	1015	1655	1375	1760	7125
30	3500		15200	7570	14950	3120	1110	1020	1540	1365	1760	6320
31	3800		15300		14750		1050	1000		1375		6510
Mean	3166	6856	11502	12232	10464	8860	1624	941	1534	1427	1491	2710
Ac. Ft. for Month	194700	394300	707200	727900	643400	527200	99800	57900	91200	87800	88700	166600

NOTE: Recording gage station maintained by City of San Francisco Public Utilities Commission (Hetch Hetchy Water Supply) and Division of Water Resources. Station is at Mile 82.65 above mouth of San Joaquin River.

TABLE 27

DISCHARGE OF SAN JOAQUIN RIVER NEAR VERNALIS - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	1650	5260	26100	26800	9950	17900	3650	1190	1400	1660	1690	1930
2	1670	5530	24800	29400	9520	17200	3360	1160	1500	1640	1710	1890
3	1620	5810	22600	27300	9630	16700	3080	1090	1600	1610	1710	1860
4	1650	6220	20400	24600	10600	16200	3000	1100	1600	1620	1630	1900
5	1780	6930	18600	22500	10800	15800	2960	1140	1600	1680	1560	1920
6	2080	6680	17700	21300	11300	15300	2740	1150	1610	1700	1550	1850
7	2130	6510	17100	20200	11200	14200	2580	1120	1620	1710	1640	1800
8	2200	6930	16800	18900	11100	13300	2430	1130	1680	1720	1700	1760
9	2380	7500	16700	17900	11000	12500	2290	1050	1740	1740	1710	1750
10	3090	7690	16500	17400	11400	11800	2130	996	1690	1670	1690	1710
11	4460	7710	16200	14800	12200	11800	1990	1000	1640	1610	1620	1760
12	6040	7990	15700	15500	13300	11800	1900	1060	1660	1600	1560	1760
13	6450	8100	14800	14500	13800	11700	1800	1080	1670	1590	1550	1780
14	5580	8050	13700	14000	14000	11500	1690	1100	1680	1590	1610	1840
15	5350	8660	12700	13700	14800	11400	1670	1090	1730	1560	1600	1900
16	5430	10100	11800	13700	15800	11300	1650	1100	1790	1630	1530	1980
17	5540	9500	10900	13800	16200	11200	1590	1140	1780	1650	1500	2100
18	5630	8610	10300	13400	16200	10700	1520	1160	1780	1550	1470	2300
19	5690	8640	9750	12800	16300	10400	1460	1220	1750	1520	1450	2510
20	5580	8590	9350	12500	16400	10200	1680	1250	1740	1520	1450	2610
21	5170	8260	9840	12400	16200	9480	1990	1220	1730	1520	1480	2660
22	4680	7860	8490	12000	15900	8100	1900	1250	1750	1550	1500	2840
23	4320	7500	8110	11700	15900	7470	1720	1250	1760	1490	1790	3100
24	4100	7530	7760	12000	16000	7110	1580	1270	1780	1500	1980	3240
25	3990	9820	7780	12500	16200	6500	1490	1290	1750	1540	2140	3620
26	4020	10900	8050	12800	16300	5940	1350	1420	1710	1560	2150	4020
27	5420	11200	9660	13000	17200	5220	1320	1380	1670	1570	2180	4660
28	5500	13800	13400	12700	18100	4690	1310	1320	1730	1600	2260	6540
29	4970	20700	19100	11800	18600	4210	1380	1330	1780	1570	2060	8260
30	4890		20500	10700	18800	3870	1360	1340	1720	1590	1970	7960
31	5000		20700		18600		1270	1370		1650		7400
Mean	4131	8572	14670	16220	14300	10850	1995	1186	1688	1604	1715	3007
Ac.Ft. for Month	254000	493100	902300	965200	879300	645600	122700	72920	100400	98600	102000	184900

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. It is located at Durham Ferry Bridge below the mouth of the Stanislaus River and is at Mile 76.7 above mouth of the San Joaquin River.

TABLE 28

DISCHARGE OF MERCED RIVER AT YOSEMITE VALLEY RAILROAD CROSSING
1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	11	*595	1360	4440	440	1250	50	23	14	7	11	13
2	12	686	1330	4460	506	1650	48	21	14	6	12	13
3	12	1080	1320	4400	1340	1810	44	25	13	6	9	14
4	11	996	1300	4180	2950	1660	42	25	12	5	8	12
5	11	1080	1300	3700	2510	1540	42	23	12	5	7	11
6	11	1060	1280	3360	2480	1170	40	21	9	6	7	11
7	14	1060	1280	2240	2440	763	40	20	8	6	7	12
8	20	1020	1280	1790	2410	945	38	20	8	7	7	11
9	60	945	1280	1740	2370	1260	34	16	8	7	8	9
10	100	840	1300	1660	2270	1340	32	17	7	8	7	11
11	900	875	1570	1740	2510	1270	29	14	7	9	6	12
12	600	875	1540	2150	3270	1160	23	13	7	7	7	13
13	400	875	1520	2510	3290	1170	23	12	7	7	7	14
14	260	945	1240	2650	3310	1200	25	9	7	7	8	14
15	200	875	1240	2920	3270	1110	30	8	7	7	11	14
16	150	1080	1160	3060	3310	938	27	9	8	6	11	16
17	110	1220	1160	2750	3360	819	25	11	7	5	12	17
18	75	1800	1200	2340	3330	777	29	12	8	4	11	18
19	60	1570	1210	1080	3330	581	30	12	8	4	11	17
20	40	1570	996	1270	3310	375	30	13	9	3	9	21
21	30	770	917	2650	3270	211	27	13	9	3	9	27
22	30	103	924	2650	2720	128	27	14	11	3	12	63
23	30	170	847	2840	1220	14	29	14	12	2	13	236
24	30	96	784	3760	1250	57	32	14	11	2	12	202
25	50	81	945	3760	3030	50	30	13	9	2	13	120
26	400	536	2510	3030	3140	48	40	13	8	2	12	81
27	300	1530	3720	1580	2780	50	38	13	8	3	9	270
28	200	1240	3240	938	2160	50	30	14	8	5	8	482
29	150	1240	4300	924	2240	48	32	14	7	6	8	113
30	120		4200	805	2160	50	29	14	7	7	11	63
31	120		4660		1590		27	16		8		46
Mean	146	924	1707	2579	2502	783	33	16	9	5	9	64
Ac.Ft. for Month	8960	53180	104900	153500	153800	46600	2030	986	536	327	561	3920

NOTE: This is a recording gage station at Mile 43.1. Recorder operated by Merced Irrigation District. Discharge measurements by Division of Water Resources.

*Discharge for period January 10 to February 1, inclusive, estimated by comparison with flow at Livingston and Exchequer.

TABLE 29

DISCHARGE OF MERCED RIVER NEAR LIVINGSTON - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	130	218	1950	5980	1340	1810	311	180	226	164	120	122
2	136	857	1600	5340	1060	1740	298	186	252	177	117	120
3	142	1180	1510	5230	1160	2150	287	173	252	166	116	120
4	148	1710	1450	5210	2500	2060	276	192	254	168	116	124
5	155	1430	1430	4580	3210	1940	260	190	216	164	114	120
6	165	1330	1410	4190	2990	1780	220	182	178	168	116	119
7	174	1450	1390	3430	2960	1310	228	175	178	171	117	119
8	191	1380	1390	2650	2950	1080	216	175	210	163	116	130
9	206	1320	1380	2320	2930	1260	204	176	198	156	117	124
10	615	1300	1390	2300	2820	1480	200	173	166	149	120	122
11	1340	1320	1480	2160	2750	1500	204	188	160	156	122	120
12	1540	1300	1650	2340	3320	1380	178	180	155	161	120	122
13	618	1290	1640	2800	3790	1290	200	166	149	163	120	125
14	384	1370	1580	2980	3840	1330	200	173	153	180	119	127
15	304	2220	1380	3220	3840	1310	220	175	158	187	117	132
16	256	1510	1360	3490	3850	1230	230	176	194	175	117	134
17	228	1390	1350	3560	3870	1110	240	180	173	184	116	146
18	204	1420	1350	3150	3840	1050	260	178	148	158	116	158
19	186	1450	1360	2550	3840	949	250	206	151	130	116	170
20	174	1360	1320	1690	3860	772	240	198	162	122	114	164
21	166	1340	1150	2120	3820	615	230	196	155	122	116	156
22	159	629	1120	2920	3720	479	220	175	190	122	119	159
23	155	386	1140	2940	3840	414	234	176	192	116	119	202
24	156	523	1110	3340	1690	372	204	178	176	117	119	480
25	159	379	1090	3660	2160	324	186	204	175	125	119	419
26	570	462	1470	3840	3490	311	204	220	158	125	119	350
27	536	1530	3010	3270	3490	298	220	208	171	120	119	410
28	313	2350	4440	2080	2980	287	244	210	186	122	124	1450
29	246	1890	4630	1620	2610	295	254	194	186	124	122	1020
30	215		4670	1550	2650	317	234	184	194	124	122	446
31	196		5460		2390		214	198		122		352
Mean	328	1252	1892	3217	2986	1075	231	186	184	148	118	260
Ac. Ft. for Month	20170	71990	116400	191400	183600	63950	14210	11430	10940	9130	7030	15990

NOTE: This is a permanent station maintained throughout the year under Federal-State cooperation by the Water Resources Branch of the U. S. Geological Survey. The station is at Mile 171 above mouth.

TABLE 30

DISCHARGE OF MERCED RIVER NEAR MOUTH - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	152	275	1940	5420	1310	2070	460	298	259	230	173	165
2	157	478	1730	5320	1050	1640	419	291	282	225	171	171
3	167	975	1690	5180	990	2030	411	275	293	221	167	166
4	167	1260	1710	5160	1670	2100	390	288	293	225	165	162
5	166	1380	1730	4930	2930	1960	385	288	280	222	165	154
6	167	1240	1760	4360	2840	1850	360	280	251	225	165	152
7	174	1250	1780	3820	2750	1540	351	272	235	222	166	150
8	178	1330	1750	2860	2770	1200	360	272	237	219	166	153
9	186	1260	1700	2330	2750	1260	333	288	275	215	166	152
10	273	1240	1650	2230	2670	1430	327	288	259	206	168	150
11	675	1240	1590	2070	2500	1530	326	288	240	201	168	148
12	1480	1220	1710	2060	2820	1450	328	288	231	201	167	147
13	765	1200	1660	2480	3570	1340	333	288	222	201	167	150
14	485	1200	1600	2810	3690	1320	359	288	214	219	167	150
15	393	1860	1390	2990	3690	1340	379	285	204	237	168	152
16	347	1540	1310	3260	3700	1320	357	285	232	234	167	154
17	324	1300	1270	3430	3740	1240	354	270	237	222	168	160
18	298	1270	1250	3190	3760	1170	317	288	217	221	167	168
19	252	1330	1270	2670	3760	1110	311	285	200	201	168	177
20	217	1250	1250	1630	3780	965	335	288	203	193	168	185
21	202	1230	1140	1660	3790	815	358	270	222	188	167	185
22	195	910	1070	2600	3760	685	359	270	227	181	163	206
23	198	485	1050	2730	3190	620	356	267	250	177	162	203
24	187	490	1040	2960	1940	590	346	269	225	177	160	304
25	187	445	1020	3430	1860	520	326	285	227	179	167	468
26	237	405	1120	3620	3140	488	319	298	222	185	167	322
27	570	895	2300	3480	3510	453	333	269	225	181	167	381
28	347	2080	3760	2320	3160	429	348	275	237	179	163	*1500
29	281	1830	4400	1560	2640	442	360	270	237	180	163	*1000
30	258		4510	1440	2640	472	340	250	251	179	165	*450
31	260		4720		2530		326	240		178		*400
Mean	321	1133	1867	3133	2868	1179	354	279	240	204	166	277
Ac.Ft. for Month	19730	65190	114800	186400	176300	70170	21750	17170	14250	12540	9900	17030

NOTE: This is a recording gage station at bridge 1.1 miles above mouth. Station operated by Division of Water Resources. Record for period January 1 to July 22 inclusive and December 23 to 27 inclusive from U. S. Bureau of Reclamation station at Mile 4 above mouth.

*Estimated.

TABLE 31
DISCHARGE OF DRY CREEK NEAR MODESTO - 1940

Day	Daily Discharge in Second-feet										
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1				⁄80.4	70	84	61	56	50	52	100(E)	36
2				⁄72.2	67	76	55	54	51	52	160(E)	36
3				⁄71.0	63	81	52	56	49	53	89	36
4				⁄69.5	63	78	55	55	47	58	51	36
5				153 (E)	60	63	56	55	48	65	44	36
6				122(E)	68	58	54	53	50	58	42	36
7				122(E)	71	58	50	51	49	58	41	36
8			*91	122(E)	65	60	55	51	46	58	40	36
9			86	134(E)	82	58	53	52	44	51	41	36
10			79	122(E)	95	67	53	53	43	50	41	36
11			82	122(E)	85	65	51	55	44	51	41	35
12			98	122(E)	62	62	51	57	43	62	40	35
13			95	87	59	58	52	53	44	61	39	35
14		76	74	72	59	56	50	50	43	57	39	34
15			61	68	54	53	58	52	49	53	39	34
16			58	64	54	53	55	55	54	50	39	36
17			56	72	58	60	56	54	54	66	39	39
18			58	74	57	54	54	56	53	78	41	40
19			63	67	62	55	54	58	49	62	39	43
20			63	81	70	66	54	61	49	56	38	44
21			54	82	61	84	53	59	55	64	38	44
22			48	73	53	79	54	59	67	67	38	47
23			43	76	53	64	55	55	73	68	36	61
24			43	83	56	62	58	52	69	73	36	70
25			42	81	63	55	55	49	78	79	37	73
26			40	95	62	56	55	52	78	86	37	106(E)
27			41	95	68	64	54	52	67	88	37	
28			40	85	62	64	55	52	62	88	37	
29			39	91	68	59	57	50	61	68	37	
30			119	82	66	59	56	50	58	73	36	
31			⁄ 67.8		69		60	48		85		
Mean					65	64	55	54	54	64	47	
Ac. Ft. for Month					3980	3790	3350	3300	3230	3950	2800	
M.I.D.Spill Below Station Ac. Ft.			498	1410	1006	1173	473	535	384	1058	93	0
Discharge to Tuolumne River Acre-feet					4990	4960	3820	3840	3610	5010	2890	

REGISTER REMOVED

*Beginning of record for season.

⁄Stage too high for an accurate estimate. Station rated to gage height of 68°. Gage heights are given for days when discharge is not known.

E: Estimated by projecting curve.

NOTE: This is a recording gage station about 2.9 miles above mouth. Recorder operated by Modesto Irrigation District. Measurements of flow made by Division of Water Resources.

TABLE 32

DISCHARGE OF TUOLUMNE RIVER AT LA GRANGE BRIDGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	416	21	8280	10300	836	4660	6	4	413	345	491	862
2	423	17	6020	6750	2760	4680	5	3	413	348	537	1010
3	427	35	4660	5050	3540	4390	5	3	413	346	537	1050
4	381	25	3990	4290	2870	4320	4	3	516	345	532	1010
5	365	45	3540	3470	2120	4120	4	3	516	343	532	906
6	322	453	3180	2840	1370	3710	4	4	516	346	532	855
7	253	557	3030	2400	1480	3600	4	5	516	346	537	859
8	248	557	3010	2420	1720	3320	4	5	517	348	537	798
9	282	551	3040	2480	2330	3320	5	5	517	346	541	916
10	346	1070	2820	2470	3020	3740	5	6	510	348	541	920
11	444	1510	2510	2610	3590	3680	5	6	518	346	541	913
12	464	1600	2260	2920	3700	3660	6	6	518	346	546	857*
13	464	1710	2020	3180	3990	3870	5	6	518	346	546	918
14	464	2630	1720	3310	3550	3950	5	5	514	346	546	918
15	460	2900	1450	3280	3080	3780	5	5	518	346	550	857
16	460	2370	1370	2970	2850	3340	5	5	518	346	555	913
17	460	2110	1370	2190	3000	2990	5	5	510	348	559	923
18	460	2370	1450	1970	3090	3040	5	5	510	348	564	1010
19	460	2130	1600	2340	2470	2900	5	164	518	346	564	1010
20	460	1790	1510	2560	2300	1480	5	175	518	348	573	923
21	460	1650	1520	2410	2020	537	5	175	514	348	1120	1010
22	461	1570	1370	2540	2270	510	5	175	514	348	1280	857
23	461	3070	1420	3000	2360	45	5	175	518	348	1330	913
24	461	5630	1500	2850	2590	4	5	175	518	346	1230	913*
25	488	4070	2150	2260	4400	4	5	175	518	346	1350	774
26	472	4480	3660	1770	6480	4	5	175	522	346	1330	919
27	468	12700	12700	1100	6160	4	5	175	522	346	986	1080
28	51	15900	7830	346	6030	4	5	175	522	346	999	969
29	11	12600	9930	160	6000	52	5	175	334	346	986	1010
30	9		11100	464	5260	4	4	310	334	346	961	1140
31	12		21000		4470		4	413		346		1110
Mean	368	2970	4291	2890	3281	2457	4.8	87.8	494	346	745	939
Ac. Ft. for Month	22640	170800	263800	172000	201700	146200	298	5400	29400	21300	44500	57760

* Period December 12th to 24th estimated by comparison with Roberts Ferry

NOTE: Recording gage station maintained throughout the year by Turlock Irrigation District. Supplemental current meter measurements by Division of Water Resources.

TABLE 33

DISCHARGE OF TUOLUMNE RIVER AT ROBERTS FERRY BRIDGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	486	80	10400	13000	740	4110	59	43	496	410	556	952
2	390	84	6300	7000	2030	4270	47	47	508	410	622	1020
3	415	111	4660	4900	3310	3910	50	49	514	400	622	1090
4	415	128	3700	4050	2660	3890	57	47	622	395	629	1040
5	365	95	3200	3700	2100	3750	54	45	629	390	622	992
6	365	204	3000	2840	1360	3370	47	43	636	400	629	904
7	320	481	2800	2480	1410	3160	45	43	629	405	629	928
8	267	481	2800	2470	1620	3050	43	45	636	410	636	880
9	324	459	2800	2500	2180	2970	43	49	636	395	629	912
10	342	617	2800	2550	2750	3330	42	42	629	400	636	968
11	624	1160	2500	2590	3190	3370	40	45	629	400	643	976
12	567	1320	2100	2820	3200	3310	38	45	622	390	643	944
13	498	1470	2000	2010	4140	3500	38	47	622	400	643	968
14	470	1880	1850	3190	3780	3620	40	47	622	390	650	976
15	448	2970	1550	3160	2900	3420	40	49	629	395	650	896
16	443	2500	1300	3000	2710	3160	40	47	629	410	643	960
17	443	2140	1320	2420	2770	2800	38	45	629	400	643	984
18	443	2320	1220	2070	2960	2820	37	45	622	400	650	1010
19	437	2220	1450	2310	2450	2750	35	90	629	395	650	1000
20	437	1860	1450	2440	2250	1900	35	224	629	405	650	984
21	437	1670	1350	2430	2030	900	35	237	615	405	896	1030
22	470	1550	1400	2400	2130	700	34	227	608	400	1210	944
23	443	1570	1250	2770	2250	370	34	227	608	415	1260	976
24	470	4820	1450	2780	2400	90	35	240	615	400	1280	960
25	470	3970	1600	2300	3270	61	37	237	608	400	1340	928
26	470	3970	3000	1800	6500	72	38	237	608	395	1340	960
27	453	16900	13900	1240	6150	70	40	227	608	395	1130	1290
28	275	16400	9290	740	5930	66	45	237	608	410	1110	1180
29	100	14300	5380	278	5930	110	43	230	415	405	1020	1070
30	76		9570	532	5120	108	42	240	405	415	1010	1160
31	76		21800		4200		42	502		400		1160
Mean	395	3025	4167	2992	3110	2300	42	128	596	401	809	1001
Ac.Ft. for Month	24280	174000	256200	178100	191200	136900	2560	7890	35500	24670	48140	61570

NOTE: This is a recording gage station at Mile 39.9. Recorder operated by Modesto Irrigation District. Discharge measurements made by Division of Water Resources.

TABLE 34

DISCHARGE OF TUOLUMNE RIVER AT HICKMAN-WATERFORD BRIDGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	638	129	7090	14220	740	4470	118	112	536	445	626	1110
2	455	130	5700	8210	2000	4820	114	112	524	445	674	1120
3	506	114	5060	5540	3920	4410	115	114	536	460	680	1240
4	518	183	4450	4520	3200	4400	115	112	662	450	686	1200
5	455	148	3950	3900	2770	4310	114	112	674	445	680	1170
6	460	156	3450	3210	1720	3950	114	111	680	450	680	1030
7	400	590	3160	2800	1680	3660	114	111	686	450	686	1020
8	336	626	2980	2620	1880	3680	114	111	692	445	692	1040
9	388	626	2980	2700	2390	3380	114	112	692	450	686	1020
10	400	856	2980	2690	3130	3800	114	112	698	460	680	1100
11	770	1560	2800	2760	3720	3860	112	112	698	455	686	1130
12	752	1680	2520	3020	3910	3790	111	112	692	445	680	1120
13	656	1800	2340	3300	4170	3930	109	114	698	440	686	1110
14	572	2300	2130	3500	3940	4150	108	114	692	435	686	1090
15	566	2660	1800	3470	3450	4030	108	114	692	465	692	1020
16	548	2660	1630	3370	3230	3720	106	115	692	500	692	1020
17	548	2520	1680	2730	3190	3240	106	112	692	450	692	1100
18	548	2340	1250	2340	3500	3270	106	112	686	445	692	1130
19	548	2160	1820	2440	2960	3170	106	112	692	450	698	1120
20	536	1980	1820	2680	2670	2520	106	216	698	440	746	1110
21	530	1900	1740	2720	2430	1110	106	252	704	445	877	1180
22	542	1820	1760	2600	2530	954	106	248	704	440	1350	1160
23	536	2160	1550	2990	2660	698	106	256	698	470	1440	1090
24	530	3160	1780	3170	2810	153	106	244	704	460	1460	1120
25	554	3160	1900	2620	3420	118	105	252	698	455	1520	1120
26	650	3020	3500	2230	6570	122	105	260	698	445	1520	1050
27	572	6390	8980	1500	6520	124	106	252	692	450	1400	1490
28	435	10260	10420	1130	6260	124	106	260	686	445	1180	1450
29	171	10260	6600	902	6290	124	106	260	470	450	1200	1290
30	127		9140	530	5720	195	106	256	455	450	1160	1330
31	127		21200		4820		108	500		455		1370
Mean	596	2323	4199	3347	3490	2676	109	174	661	451	894	1150
Ac.Ft. for Month	30490	133600	258200	199200	214600	159200	6720	10700	39310	27750	53210	70710

NOTE: This is a recording gage station at Mile 31.7. Recorder operated by Modesto Irrigation District. Discharge measurements made by Division of Water Resources.

TABLE 35

DISCHARGE OF TUOLUMNE RIVER AT MODESTO - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1				*14800	1050	4680	469	291	676	671	781	1280
2				*10800	1300	4940	438	292	690	611	896	1240
3				*8200	3540	4760	442	305	694	615	878	1340
4				6920	3470	4480	464	305	740	661	836	1360
5				5590	2990	4500	442	307	827	638	827	1330
6				4450	2090	4130	385	301	832	643	822	1230
7				3480	1850	3800	370	299	836	648	827	1160
8				2960	1900	3790	357	301	841	655	832	1180
9				2940	2160	3410	350	297	841	629	836	1110
10				2950	2750	3670	353	293	827	643	836	1220
11				2960	3320	3850	345	297	841	666	832	1230
12				3150	3800	3770	349	303	836	643	827	1240
13		(See footnote)		3310	3930	3830	351	297	836	643	832	1200
14				3490	4140	4070	349	292	836	638	832	1210
15				3570	3650	4010	345	299	855	703	832	1230
16				3510	3290	3860	351	293	841	794	832	1130
17				3030	3140	3380	347	291	836	671	836	1290
18				2490	3430	3300	345	288	836	648	832	1260
19				2490	3290	3330	349	293	813	661	841	1270
20				2750	2840	3130	343	343	827	611	882	1200
21				2940	2570	2000	339	400	832	661	873	1250
22				2710	2480	1780	341	404	845	643	1370	1320
23				2850	2200	1650	315	404	841	651	1500	1200
24				3230	2710	1150	321	411	850	689	1570	1280
25				3090	2980	574	317	419	864	675	1520	1260
26				2860	5410	597	323	404	845	680	1630	1530
27			6080	2200	6600	528	327	391	855	697	1610	1820
28			*10300	1790	6390	496	327	394	850	735	1290	2960
29			*8200	1720	6350	563	350	400	813	726	1310	2790
30			6880	965	6160	597	337	397	699	689	1300	1790
31			*11100		5430		321	514		682		1660
Mean				3940	3558	2954	360	340	815	665	1024	1405
Ac.Ft. for Month				234400	212600	175800	22140	20880	48510	40900	60940	86420

NOTE: This is a recording gage station established March 27, 1940, at Mile 15.75 above mouth. Recorder operated by Modesto Irrigation District. Flow measurements made by Division of Water Resources.

*Discharges above 7000 c.f.s. (limit of measurements) are estimated from projected curve.

TABLE 36
DISCHARGE OF TUOLUMNE RIVER AT TUOLUMNE CITY - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	810	410	14000	20250	860	4900	535	395	780	750	800	1330
2	810	390	10300	14600	530	5000	485	380	820	740	925	1290
3	710	450	6950	9750	2800	5000	475	365	805	725	950	1355
4	740	450	5380	6350	4000	4650	485	395	805	750	895	1405
5	750	900	4600	5130	3320	4650	480	390	880	740	885	800
6	730	630	4160	4350	2530	4400	460	390	895	750	880	1295
7	700	610	3800	3760	1860	4000	450	385	905	745	880	1200
8	650	1010	3760	3300	1830	3900	440	390	905	750	880	1195
9	605	1020	3620	3220	2050	3600	450	385	920	745	880	1175
10	760	960	3600	3140	2570	3650	430	375	895	735	880	1240
11	1290	1180	3450	3120	3200	4000	430	375	900	745	880	1275
12	2550	1450	3240	3260	2780	4000	430	385	900	745	890	1275
13	1910	1770	3000	3450	4000	4030	420	380	900	745	890	1265
14	1190	1970	3290	3730	4360	4350	420	375	900	745	885	1275
15	1010	3480	2340	3900	3800	4460	420	385	905	775	885	1275
16	960	4190	2100	3830	3350	4300	420	390	915	795	885	1185
17	880	2980	1900	3470	3200	3850	415	390	905	790	885	1290
18	830	2570	1950	2780	3320	3440	420	410	900	755	885	1300
19	820	2910	1930	2630	3400	3500	415	410	890	765	885	1305
20	860	2550	1980	2800	3050	3350	420	425	885	765	925	1240
21	780	2220	1800	3100	2850	2250	410	550	890	765	945	1260
22	744	2180	1850	2850	2750	1225	410	570	895	750	1260	1355
23	826	2000	1750	3920	2850	1145	400	555	900	750	1545	1260
24	908	2900	1800	3320	2950	975	395	555	905	775	1630	1270
25	990	5400	1950	3250	3100	810	395	565	905	775	1600	1270
26	1099	3500	2700	2920	4600	705	395	575	895	775	1685	1260
27	1165	3800	4800	2420	6500	625	400	550	875	775	1695	1340
28	1244	9400	14050	1800	6350	585	400	535	875	800	1435	1980
29	911	16900	12300	1330	6300	560	425	545	875	805	1350	2450
30	832		7600	900	6200	560	405	545	815	785	1355	1840
31	500		11530		5650		400	580		780		1720
Mean	954	2765	4757	4421	3449	3082	430	448	881	761	1075	1354
Ac. Ft. for Month	58600	159000	292500	263000	212100	183400	26450	27570	52440	46790	63970	83260
Diversions Below Station, Ac. Ft.	0	0	0	10	50	90	130	60	20	34	0	0
M.I.D.Spill Below Station, Ac.Ft.	0	0	670	1050	1200	800	380	190	360	1130	81	0
* Discharge to San Joaquin R. Ac. Ft.	58600	159000	293200	264200	213200	184100	26700	27700	52800	47890	64050	83260

NOTE: Recording gage station maintained jointly by Division of Water Resources, City of San Francisco, Modesto Irrigation District

TABLE 37

DISCHARGE OF STANISLAUS RIVER AT ORANGE BLOSSOM BRIDGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1					2280	2160	45	26	25	20	124	52
2					2770	2220	33	25	26	20	68	45
3	82				4020	2740	25	25	25	35	65	17
4					4800	2100	25	25	25	17	65	78
5					3960	1450	23	26	25	17	337	116
6					3840	456	28	26	20	18	430	45
7					3340	632	26	26	20	18	403	55
8					3280	456	25	28	22	20	293	55
9					3720	896	28	26	23	20	240	52
10					5730	1700	26	28	22	33	102	45
11					6200	1700	26	28	23	55	88	55
12					6070	1860	26	33	25	52	302	280
13				2900	5950	1750	26	30	25	50	240	220
14		3130		3530	8250	1700	28	28	25	50	62	216
15				4600	6490	1700	28	26	25	50	52	220
16				4110	5240	1500	35	28	23	68	50	75
17				3200	5470	1256	35	28	23	59	52	236
18				2800	5590	1304	33	25	23	52	42	232
19				2990	4700	940	30	25	25	50	35	224
20				3430	4800	544	26	23	17	50	50	224
21				3740	4700	368	26	25	17	45	85	216
22				4050	4910	368	26	25	18	42	65	236
23				4470	4700	412	26	25	22	65	324	264
24				4660	4800	324	26	26	22	116	302	553
25				4490	4910	220	25	26	20	116	72	773
26				3760	4120	160	25	23	20	82	368	610
27				2990	4400	85	25	20	20	65	324	2884
28				2380	3670	68	25	23	18	47	120	1860
29				2230	3400	47	26	25	18	264	95	795
30				2480	2740	47	25	23	18	289	92	707
31					2900		25	25		192		742
Mean					4573	1039	28	26	22	67	165	393
Ac.Ft. for Month					281200	61810	1700	1590	1310	4120	9810	24160

NOTE: Prior to April 13, 1940, discharge was determined from daily staff readings (low water period only). Recording gage then installed. Recorder operated by Oakdale Irrigation District. Flow measurements made by Division of Water Resources. Station is 44.7 miles above mouth and is 5.7 miles above Oakdale.

TABLE 38

DISCHARGE OF STANISLAUS RIVER AT RIVERBANK (BURNEYVILLE BRIDGE) - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1								104	114	96	201	142
2								104	114	98	154	116
3								104	121	102	134	107
4								104	120	96	128	128
5								104	117	98	**110	134
6								104	118	100	**200	148
7								109	117	101	**310	110
8								108	110	102	**290	110
9								107	106	102	**270	109
10								100	111	103	**240	104
11								99	105	120	**140	96
12								103	105	123	**120	222
13								104	102	119	**230	299
14								106	104	118	**220	273
15							104	110	105	119	134	273
16								117	105	118	120	226
17								109	106	135	115	262
18								107	105	120	118	304
19								102	101	120	114	280
20								106	98	121	112	280
21								115	97	123	123	299
22								114	98	115	134	304
23								114	99	123	134	**380
24								114	98	165	400	**500
25							*105	113	98	226	160	**580
26							104	112	98	190	280	**700
27							104	112	102	158	400	**1800
28							106	110	96	127	176	**1400
29							106	110	96	179	160	**1000
30							104	109	96	369	150	**790
31							105	108		326		**750
Mean								108	105	139	190	394
Ac.Ft. for Month								6630	6270	8550	11100	24200

NOTE: Recording gage station established July 1940 and maintained jointly by Division of Water Resources and Oakdale and South San Joaquin Irrigation Districts. Station is near Riverbank and is 32.0 miles above mouth of river.

*Beginning of continuous record.
**Discharge estimated by comparison with Ripon station.

TABLE 39

DISCHARGE OF STANISLAUS RIVER AT RIPON BRIDGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1					2710	2930	402	270	213	226	361	253
2					2610	2730	374	261	221	210	320	246
3					3080	2590	345	277	243	208	280	240
4					3760	2800	359	293	227	208	248	234
5					4330	2410	330	270	232	222	240	227
6					4260	1740	309	270	232	237	374	250
7					3940	1110	327	264	224	248	456	229
8					3540	1230	302	261	243	245	456	216
9					3440	1400	320	259	232	232	431	216
10					3770	1570	294	253	216	224	393	210
11					4650	1630	284	267	214	216	296	202
12					5000	1840	309	256	219	232	275	203
13					3740	1940	298	248	232	229	377	305
14					4930	1870	277	248	237	234	372	311
15				3830	5970	1850	264	256	243	234	270	312
16					5790	1850	256	267	254	230	242	320
17					5450	1650	248	284	243	238	230	272
18					5300	1480	248	298	227	235	224	325
19					5080	1450	245	300	221	235	221	350
20					4860	1200	254	305	210	237	214	334
21					4810	1110	258	302	202	258	213	348
22					4690	1030	242	294	213	246	224	365
23					4720	950	254	298	214	226	226	375
24					4760	894	242	282	208	248	327	422
25					4750	792	246	272	208	269	375	602
26				*4760	4810	674	284	248	205	294	269	684
27				4300	4720	562	270	224	218	287	388	864
28				3640	4500	464	270	213	219	266	410	2020
29				2940	4220	442	274	211	219	259	291	1520
30				2770	3810	413	264	208	230	325	272	904
31					3210		267	221		402		902
Mean					4362	1487	288	264	224	247	309	460
Ac.Ft. for Month					268200	88460	17680	16220	13330	15190	18390	28290

NOTE: Recording gage station established 1940 and maintained jointly by Division of Water Resources, City of San Francisco, South San Joaquin and Modesto Irrigation Districts, and U. S. Bureau of Reclamation. Station is at U. S. 99 crossing and is 16 miles above mouth of river.

*Beginning of continuous record. Only intermittent measurements made heretofore.

TABLE 40

DISCHARGE OF STANISLAUS RIVER AT BRET HARTE PUMP - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1										252	410	285
2										245	350	270
3										247	310	267
4										247	277	265
5										260	260	255
6										277	325	270
7										267	420	265
8										272	445	253
9										272	430	245
10										250	420	245
11			Station established October 1, 1940 to replace							245	327	245
12			station at Hatmark Ranch (.6 miles downstream)							275	290	250
13			which has been abandoned.							275	335	295
14										272	373	345
15										250	303	350
16										275	265	353
17										260	250	335
18										275	235	325
19										260	220	380
20										275	210	365
21										275	205	365
22										295	210	390
23										270	230	397
24										290	293	397
25										310	420	525
26										335	355	717
27										345	380	660
28										325	485	1750
29										310	370	1810
30										333	317	1225
31										405		940
Mean										282	324	485
Ac. Ft. for Month										17340	19280	29830
Diversions Below Station, Ac.Ft.										71	0	0
*Discharge to San Joaquin River, Ac.Ft.										17270	19280	29830

NOTE: Recording gage station maintained jointly by Division of Water Resources, United States Bureau of Reclamation, City of San Francisco, and Modesto Irrigation District. Station is 5.9 miles above mouth of river.

* Neglecting seepage return below station.

TABLE 41
DISCHARGE OF STANISLAUS RIVER AT HATMARK RANCH - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	220	1325	10250	13200	3325	3335	440	280	245			
2	225	1340	8185	9490	3150	2995	410	282	255			
3	225	1335	6125	6720	3360	2860	370	282	262			
4	225	1465	4740	5890	3960	2980	373	292	278			
5	360	1690	3815	5550	4530	2710	360	282	262			
6	365	1355	3325	5220	4690	2200	294	265	262			
7	460	1335	2890	4880	4460	1600	300	265	262			
8	680	1500	2855	3675	4130	1510	275	265	265			
9	990	1710	2715	4095	3865	1340	265	242	280			
10	1770	1710	2650	4420	3950	1445	310	240	245			
11	2310	1605	2520	4540	4460	1640	310	260	245			
12	2605	1500	2360	3910	5135	1835	313	255	245			
13	2015	1415	2300	3900	4440	2020	310	225	242			
14	1380	1390	2300	4000	4675	1960	310	238	242			
15	1200	1845	2150	3940	5790	1995	330	243	270			
16	1190	1810	2050	4220	6510	2005	310	260	270			
17	1190	1730	2075	4460	6030	1880	293	260	248			
18	1140	1530	2155	3930	5610	1650	295	260	245			
19	1115	1460	2000	3390	5550	1630	308	290	250			
20	1110	1400	1995	3375	5385	1560	305	320	255			
21	1145	1400	1925	3600	5110	1125	370	280	240			
22	1200	1400	2015	3800	4825	940	310	275	255			
23	1195	1155	1970	3960	4800	965	300	278	230			
24	1190	1660	2160	4225	4900	835	308	255	240			
25	1195	2380	2370	4480	4870	775	295	298	225			
26	1595	2625	2730	4680	4960	730	280	300	217			
27	2130	3010	3530	4550	4930	660	283	260	230			
28	1655	4030	4490	3960	4650	490	292	252	265			
29	1475	10240	9610	3240	4460	495	313	245	267			
30	1420		7125	2990	4185	485	292	255	265			
31	1350		6670		3740		288	245				
Mean	1172	2012	3679	4743	4659	1622	317	266	252			
Ac.Ft. for Month	72000	115700	226200	282200	286500	96500	19500	16400	15000			
Diversions Below Station Acre-feet	0	0	0	0	25	141	170	170	75			
Discharge* to San Joaquin River, Ac.Ft.	72000	115700	226200	282000	286500	96400	19300	16200	14900			

NOTE: Station discontinued September 30th and replaced by station established October 1 at Bret Harte pump which is .6 miles above Hatmark Ranch.

* Neglecting seepage return below station.

CHAPTER III

MEASUREMENTS OF DIVERSIONS

Measurements and records of diversions in 1940 have included those from the Sacramento River and its tributaries on the valley floor, those to the Delta Uplands from Old San Joaquin River, Tom Paine Slough, and San Joaquin River, and those on the Stanislaus, Tuolumne, Merced, (below the major irrigation district gravity diversions) and San Joaquin (above Durham Ferry Bridge) rivers as obtained in connection with the return water measurements (See Chapter IV). For 1940 this report records a total of 658 points of diversion, (an increase of 7 over last year), segregated to the various sources as follows: Sacramento River 285, Colusa Trough 13, Back Borrow Pit (carrying drainage water from Colusa Basin along the back levees of Reclamation Districts 108 and 787) 18, Lower Butte Creek and Butte Slough 23, By-Pass and Drainage Channels 44, Feather River 38, Yuba River 10, American River 36, from Old San Joaquin River 13, from Tom Paine Slough 8, and from San Joaquin River (below Vernalis gaging station) 52, San Joaquin River (above Vernalis gaging station) 20, Stanislaus River 26, Tuolumne River 17, and Merced River 55.

All of these diversions except five are accomplished by pumping. The five exceptions are gravity diversions, two on the Yuba River, two on the Feather River and one on the Sacramento River, and the records for these are obtained by means of canal ratings. In the case of the pumping diversions there are a few instances where the records are obtained by means of canal ratings but in the main the records are obtained from the

relation established between electric power consumption and pump discharge. This is possible due to the fact that nearly all of the pumping plants are electrically operated. The relation between power input and water pumped is determined from current meter measurements of the discharge and a measured kilowatt input. At the larger pumping plants several measurements are made during each season. At the smaller plants a number of measurements are made initially to determine the rating and thereafter at intervals to show any changes which may occur in the rating. Prior to 1933 a daily diversion record for each plant was compiled. However, since that year, except for the larger diversions, the monthly diversion records only are available.

For 1940 the amount of water diverted by the larger plants was computed, as above, and several discharge measurements were made at each of the larger plants during the season. Due to the intermittent operation of the smaller plants and the large area to be covered by the field engineers, it was not possible to make many discharge measurements at any one of these smaller plants. However, it is felt that possibly the rating as initially determined, remains more or less constant and that over a period of time, enough measurements will be secured to determine any change in the rating. The diversions for 1940 have been computed on a monthly basis only and the breakdown into daily records was not made.

A summary of the 1940 diversions throughout the Sacramento-San Joaquin territory is shown in Table 60. A segregation is made to show the relative diversions from the various river sources. For each segregation the table shows also the acreage irrigated and the computed seasonal gross

duty of water. Table 59 summarizes the diversions and irrigated acreages between different points on the Sacramento River. Table 42 shows a comparison of the Sacramento River stream flow irrigation draft and gross duty of water for the years 1924 to 1940, inclusive. Tables 43, 44 and 45 show similar data for the Feather, Yuba and American Rivers. In Table 46 is shown the average monthly diversions in per cent of seasonal for the streams in the Sacramento and San Joaquin Valleys. A summary of the monthly diversions for the Sacramento Valley streams for the period of record prior to 1940 is given in Tables 47 to 50. All available data regarding monthly diversions, acreage irrigated, and gross duty of water for the San Joaquin Valley streams and Delta Upland channels is given in Tables 51 to 57. Table 58 is given to show, for the Sacramento River only, the seasonal diversions and acreages irrigated for the period 1924-1940, segregated to the different river sections.

TABLE 42

SACRAMENTO RIVER - REDDING TO SACRAMENTO
STREAM FLOW - IRRIGATION DRAFT - GROSS DUTY OF WATER 1924-1940

Year	Seasonal Runoff at Red Bluff in per cent of normal * (1)	Discharge of Sacramento River at Kennett Cubic feet per Sec.		Irrigation Draft		Acreage Irrigated			Gross Duty of Water				
									Acre-feet per Acre			Acres per sec. foot	
		Average Jul - Sep Inclusive	Average July	Aver. cfs Jul - Sep Inclusive	Acre-feet Mar - Oct Inclusive	General	Rice	Total	Jul - Sep Inclusive	July	Mar - Oct Inclusive	Mar - Oct Inclusive	Jul - Sep Inclusive
1924	36	2920**	2890**	2470**	953000	104300	59700	164000	2.75	1.15	5.81	84	66
1925	86	3630**	3640**	2960**	843000/	76200	58000	134200	4.03	1.57	6.28	77	45
1926	61	2780	2880	3210	1108000/	76600	87500	164100	3.57	1.58	6.75	72	51
1927	117	3550	3950	3510	1159000/	77900	79800	157700	4.07	1.60	7.35	66	45
1928	82	3320	3580	2920	1055000/	88200	63500	151700	3.52	1.49	6.95	70	52
1929	47	2920	3060	2770	1066000/	136900	43900	180800	2.80	1.15	5.90	83	65
1930	65	2970	3070	2880	1056000/	96600	56200	152800	3.44	1.42	6.91	70	53
1931	36	2570	2600	3030	1335000	141500	73900	215400	2.57	1.13	6.20	78	71
1932	54	2730	2940	2570	1020000	130700	53800	184500	2.54	1.07	5.53	88	72
1933	49	2770	3010	2680	1042000	101100	53000	154100	3.17	1.28	6.76	72	57
1934	48	2540	2650	2750	1057000	93800	56500	150300	3.34	1.35	7.03	69	54
1935	80	3010	3330	2820	926000	98500	51100	149600	3.44	1.38	6.19	78	53
1936	76	2910	3280	2890	1055000	93100	62700	155800	3.38	1.39	6.77	72	54
1937	64	2950	3380	3210	1070000	101000	66500	167500	3.50	1.41	6.39	76	52
1938	157	4220	4870	2990	932000	85600	62600	148200	3.68	1.47	6.29	77	49
1939	47	3000	3100	2910	1301000	158800	63900	222700	2.38	1.03	5.84	83	77
1940	112	3425	3625	3275	1063000	119700	64400	184100	3.25	1.35	5.77	84	56
Average 1924-1940		3070	3285	2930	1061000	104700	62200	166900	3.26	1.34	6.39	76	57

* 40 year mean (1889-1929) of natural run-off. Figures given for Red Bluff as Kennett station was not established until 1926.
** Flow near Red Bluff. Station at Kennett established in 1926.
/ Diversions for March estimated.
(1) See Table 1 for comparison of 40 and 50 year means.

TABLE 43

FEATHER RIVER - OROVILLE TO MOUTH
STREAM FLOW - IRRIGATION DRAFT - GROSS DUTY OF WATER 1924-1940

Year	Seasonal Runoff at Oroville in per cent of normal *	Discharge of Feather River at Oroville Cubic feet per sec.		Irrigation Draft		Acreage Irrigated			Gross Duty of Water				
		Average Jul - Sep Inclusive	Average July	Aver. cfs Jul - Sep Inclusive	Acre-feet Mar - Oct Inclusive	General	Rice	Total	Acre-feet per Acre: Jul - Sep Inclusive	July	Mar - Oct Inclusive	Acres per second-ft.: Mar - Oct Inclusive	Jul - Sep Inclusive
1924(1)	24	933	852	917	355346	22402	22541	44943	3.72	1.30	7.92	61	49
1925	68	1719	1770	1287	417150	25560	26734	52294	4.49	1.72	7.98	61	41
1926	61	1839	1840	1432	474025	23545	34694	58239	4.49	1.81	8.14	60	41
1927	121	1920	2110	1578	533615	24944	38513	63457	4.54	1.80	8.41	58	40
1928	85	1689	1980	1363	497201	23383	33145	56528	4.40	1.85	8.80	55	41
1929	36	2080	1920	1134	453464	29011	23917	52928	3.91	1.64	8.57	57	47
1930	72	1986	1890	1225	450020	25604	24258	49862	4.48	1.87	9.03	54	41
1931	28	1177	1230	1059	464138	24683	27079	51762	3.73	1.58	8.97	54	49
1932	63	1570	1990	1327	496713	24115	28108	52223	4.64	1.91	9.51	51	39
1933	37	1389	1590	1286	478326	21897	26541	48438	4.84	1.95	9.88	49	38
1934	39	1445	1530	1085	428008	23984	24918	48902	4.05	1.67	8.75	56	45
1935	82	1937	2067	1258	390873	25162	20849	46001	4.99	2.01	8.50	57	37
1936	82	2171	2242	1349	479093	23990	26546	50536	4.87	1.96	9.48	51	37
1937	60	1760	2138	1529	507765	26705	30203	56908	4.90	1.93	8.92	54	37
1938	163	2674	3334	1594	512600	26938	27144	54082	5.38	2.00	9.48	51	34
1939	36	1516	1460	1168	501357	29234	26303	55537	3.84	1.66	9.03	54	48
1940	108	1966	1913	1414	473974	30117	23526	53643	4.81	1.96	8.84	55	34
Average 1924-1940		1750	1870	1290	46550	25370	27350	52720	4.48	1.80	8.84	55	41

* 40 year mean (1889 - 1929) of natural run-off. See Table 2A for comparison of 40 and 50 year mean.
(1) Some of the smaller plants were omitted in 1924.

TABLE 44

YUBA RIVER - SMARTVILLE TO MOUTH
STREAM FLOW - IRRIGATION DRAFT - GROSS DUTY OF WATER 1925-1940

Year	Seasonal Runoff at Smartville in percent of normal *	Discharge of Yuba River at Smartville Cubic feet per Sec.		Irrigation Draft		Acreage Irrigated			Gross Duty of Water				
		Average Jul - Sep Inclusive	Average July	Aver. cfs. Jul - Sep Inclusive	Acre-feet Mar - Oct Inclusive	General	Rice	Total	Acre-feet per acre: Jul - Sep Inclusive	July	Mar - Oct Inclusive	Acres per second-ft.: Mar - Oct Inclusive	Jul - Sep Inclusive
1925(1)	80	417	637	10	4045	1796	0	1796	1.01	0.55	2.25	217	180
1926	60	226	280	133	35908	3234	3279	6513	3.73	1.37	5.51	88	49
1927	133	495	868	125	39750	4003	1930	5933	3.84	1.66	6.71	73	47
1928	92	374	546	114	36800	4935	1875	6810	3.04	1.42	5.40	90	60
1929	38	252	340	139	53254	5180	2450	7630	3.33	1.23	6.99	69	55
1930	69	296	347	163	58521	4680	2875	7555	3.93	1.56	7.74	63	46
1931	24	146	152	134	63320	4823	2950	7773	3.14	1.16	8.14	60	58
1932	80	359	603	137	58201	4950	2615	7565	3.32	1.26	7.70	63	55
1933	41	293	420	162	63369	5935	2645	8580	3.46	1.27	7.38	66	53
1934	37	185	222	127	52651	6305	1667	7972	2.91	1.49	6.51	74	63
1935	84	383	602	153	48850	6535	1552	8087	3.46	1.40	6.05	80	53
1936	98	394	584	155	64058	5202	2665	7867	3.58	1.31	8.14	60	51
1937	70	360	541	156	59163	6699	2598	9297	3.06	1.05	6.37	76	60
1938	152	748	1410	152	43257	5772	1605	7377	3.75	1.35	5.88	83	49
1939	34	213	238	186	73113	6642	1898	8540	3.97	1.51	8.56	57	46
1940	112	342	390	207	69968	7220	1270	8490	4.45	1.79	8.24	59	41
Average 1925-1940		343	511	141	51510	5240	2115	7360	3.37	1.33	6.72	80	60

* 40 year mean (1889 - 1929) of natural run-off. See Table 2A for comparison of 50 and 50 year means.
(1) Record obtained for Lower Yuba River only.

TABLE 45

AMERICAN RIVER - FAIROAKS TO MOUTH
STREAM FLOW - IRRIGATION DRAFT - GROSS DUTY OF WATER 1925-1940

Year	Seasonal Runoff at Fairoaks in per cent of normal*	Discharge of American River at Fairoaks Cubic feet per sec.		Irrigation Draft		Acreage Irrigated			Gross Duty of Water				
		Average Jul - Sep Inclusive	Average July	Aver. cfs Jul - Sep Inclusive	Acre-feet Mar - Oct Inclusive	General	Rice	Total	Acre-feet per acre: Jul - Sep Inclusive	July	Mar - Oct Inclusive	Acres per sec. foot: Mar - Oct Inclusive	Jul - Sep Inclusive
1925	88	565	1080	16	4353	3510	--	3510	0.82	0.35	1.24	392	219
1926	45	207	247	16	4606	3073	--	3073	0.94	0.50	1.50	324	192
1927	119	653	1240	21	5636	3343	--	3343	1.16	0.52	1.68	288	159
1928	82	286	414	17	5635	3071	--	3071	1.00	0.41	1.83	264	181
1929	37	262	482	20	6324	3077	--	3077	1.20	0.50	2.04	239	154
1930	54	276	414	15	4955	2639	--	2639	1.06	0.49	1.87	262	176
1931	23	98	136	15	5620	2694	--	2694	1.03	0.46	2.09	232	179
1932	84	679	1500	17	5481	3165	--	3165	.96	0.42	1.73	281	187
1933	41	344	633	15	4651	2848	--	2848	.94	0.46	1.62	300	190
1934	37	179	192	15	5505	2770	--	2770	.98	0.46	1.99	245	185
1935	84	504	1009	15	4815	2808	--	2808	.97	0.46	1.71	284	187
1936	111	753	1364	16	4727	2492	--	2492	1.16	0.49	1.90	256	156
1937	76	497	873	20	5381	3353	--	3353	1.07	0.45	1.61	302	168
1938	147	1060	2101	16	4287	2923	--	(1)2923	1.03	0.43	1.47	331	182
1939	34	127	165	19	6654	3064	--	(1)3064	1.11	0.55	2.17	224	161
1940	111	511	734	19	6052	3061	--	(1)3061	1.15	0.58	1.98	245	159
Average 1925-1940		438	786	17	5290	2990	--	2990	1.04	0.47	1.78	279	177

*40-year mean (1889-1929) of natural run-off. See Table 2A for comparison of 40 and 50 year means.
(1) An estimated 2200 acres have been added for Carmichael Irrigation District.

TABLE 46

AVERAGE MONTHLY DIVERSIONS IN PER CENT OF SEASONAL FOR SACRAMENTO AND SAN JOAQUIN VALLEY STREAMS

	Period of Record	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.
Sacramento Valley		Per Cent of Seasonal Diversion							
Sacramento River - Redding to Sacramento	1924 to 1940	0.8	7.7	17.8	19.7	20.9	19.2	10.4	3.5
Feather River - Oroville to mouth	1924 to 1940	0.3	5.8	18.7	19.9	20.5	19.1	11.3	4.4
Yuba River - Smartville to mouth	1925 to 1940	-	8.7	17.2	18.9	19.5	18.2	12.2	5.3
American River - Fairoaks to mouth	1925 to 1940	0.5	4.7	10.5	20.5	26.7	20.3	11.5	5.3
Delta Uplands									
Old San Joaquin River	1924 to 1940	2.8	9.7	17.5	17.6	20.1	16.9	11.0	4.4
Tom Paine Slough	1924 to 1940	1.7	8.1	15.2	16.9	18.3	18.0	14.1	7.7
San Joaquin River below Vernalis	1924 to 1940	3.1	13.1	16.2	13.5	23.5	18.3	8.7	3.6
San Joaquin Valley									
San Joaquin River - Delta Bridge to Vernalis	1931 to 1940	3.5	11.2	14.7	15.6	22.0	18.3	11.0	3.7
Merced River - Yosemite Valley Railroad Crossing to mouth	1931 to 1940	1.8	8.1	15.2	18.4	21.4	18.7	12.1	4.3
Tuolumne River - La Grange to mouth	1931 to 1940	2.7	8.3	17.0	17.2	20.3	18.3	11.1	5.1
Stanislaus River - Orange Blossom Bridge to mouth	1931 to 1940	1.2	9.5	13.6	19.1	21.3	19.2	11.2	4.9

TABLE 47

SACRAMENTO RIVER - MONTHLY DIVERSIONS IN ACRE-FEET - SACRAMENTO TO REDDING 1924 - 1940

Year	March	April	May	June	July	August	September	October	Seasonal Diversion
1924	7324	102511	184043	186073	189081	163677	97976	22088	952773
1925	1200*	11177	87709	184151	211788	194888	134442	18108	843463
1926	4000*	34326	195052	258889	259777	226874	98632	30220	1107770
1927	600*	31327	206864	234116	260018	241876	139469	44993	1159263
1928	1900*	52335	207747	229261	227058	214549	92114	29574	1054538
1929	5600*	138283	204360	167378	207785	191346	107103	43954	1065809
1930	3100*	74236	198836	221852	217698	199875	107577	32681	1055855
1931	30199	222932	257156	227158	242076	209351	101822	44572	1335266
1932	4661	123973	176667	194500	197849	171122	99657	51571	1020000
1933	4452	118677	188004	189852	197452	185945	105071	52267	1041720
1934	2599	109638	204710	193469	202843	191488	107885	44331	1056963
1935	1524	18598	157817	203562	206813	195215	112498	30137	926164
1936	7320	76534	203802	194110	216217	206858	104203	45925	1054969
1937	3459	32727	210339	210927	235304	217924	133271	26510	1070461
1938	5285	29942	121847	199745	218572	208414	118177	30248	932230
1939	63636	202428	227491	233319	230319	209735	90708	43412	1301048
1940	1802	18073	182534	218505	249012	228765	119951	43988	1062630
Average Acre-feet	8745	82220	189120	208640	221700	203400	110030	37330	1061200
Average c.f.s.	142	1382	3076	3506	3606	3308	1849	607	2184
Monthly Diversion in per cent:	0.8	7.7	17.8	19.7	20.9	19.2	10.4	3.5	

TABLE 48

FEATHER RIVER - MONTHLY DIVERSIONS IN ACRE FEET - OROVILLE TO MOUTH 1924 - 1940

Year	March	April	May	June	July	August	September	October	Seasonal Diversion
1924	2652	36440	75741	60132	58418	67365	41618	12980	355346
1925	0*	9506	70947	88956	90047	81340	63395	8829	413020
1926	0*	16528	83297	104100	105255	101623	54446	4083	469332
1927	0*	17522	96458	107706	114211	102251	71514	18669	528331
1928	0*	19912	101655	109875	104359	97452	46986	12040	492279
1929	1500*	48450	97295	83570	87061	82177	37711	12711	450475
1930	0*	31719	78154	91418	93250	89300	40912	20811	445564
1931	5887	67203	98054	85024	81941	71953	39288	14788	464138
1932	2158	50002	85950	94140	99640	93180	49359	22284	496713
1933	5388	31219	91529	91635	94231	85891	54515	23918	478326
1934	2245	34217	92225	82379	81467	72334	44121	19020	428008
1935	214	1538	51974	89713	92372	85835	51342	17885	390873
1936	768	14136	92675	92002	99147	90575	56374	33416	479093
1937	620	5647	92614	99882	109850	103248	65946	29958	507765
1938	0	3512	76975	98534	108039	104846	77969	42725	512600
1939	3583	71539	99567	90960	92044	83292	37752	22620	501357
1940	188	2207	84408	95502	105337	93454	59182	33695	473974
Average Acre-feet	1480	27140	86440	92090	95100	88600	52490	20610	463950
Average c.f.s.	24	456	1406	1548	1547	1441	882	335	955
Monthly Diversion in per cent of seasonal	0.3	5.8	18.7	19.9	20.5	19.1	11.3	4.4	

*Estimated

TABLE 49

YUBA RIVER - MONTHLY DIVERSIONS IN ACRE-FEET - SMARTVILLE TO MOUTH 1925 - 1940

Year	March	April	May	June	July	August	September	October	Seasonal Diversion
1925	-	-	617	1594	985	586	249	14	4045
1926	0	0	4681	6825	8893	10785	4604	120	35908
1927	-	304	6492	9761	9808	8733	4220	432	39750
1928	0	0	7329	8759	9651	8816	2245	0	36800
1929	0	3972	10808	8843	9376	8710	7308	4237	53254
1930	0	4803	9234	10293	11752	10825	7137	4477	58521
1931	0	10471	12111	10427	8991	8986	6468	5866	63320
1932	0	8778	10151	9973	9525	9188	6371	4215	58201
1933	0	7617	11048	10516	10917	10920	7724	4627	63369
1934	0	7112	11137	10985	11235	8454	3496	232	52651
1935	0	525	9034	11008	11313	10013	6674	283	48850
1936	0	9709	11579	10513	10330	10009	7908	4010	64058
1937	0	8093	9913	10055	9749	9815	8835	2703	59163
1938	0	360	4807	9371	9982	9433	8284	1020	43257
1939	176	8986	13174	12890	12889	12739	8304	3955	73113
1940	0	1326	9377	14114	15190	11798	10780	7383	69968
Average Acre-feet	11	4504	8843	9745	10040	9363	6288	2723	51514
Average c.f.s.	0.2	76	144	164	163	152	106	44	106
Monthly Diversion in per cent of seasonal	-	8.7	17.2	18.9	19.5	18.2	12.2	5.3	

TABLE 50

AMERICAN RIVER - MONTHLY DIVERSIONS IN ACRE-FEET - FAIROAKS TO MOUTH 1925 - 1940

Year	March	April	May	June	July	August	September	October	Seasonal Diversion
1925	10*	66	261	985	1233	1198	458	142	4353
1926	0*	5	390	1162	1519	894	480	156	4606
1927	5*	16	317	1028	1754	1577	529	410	5636
1928	10*	121	580	1406	1263	965	832	458	5635
1929	50*	482	812	936	1539	1280	864	361	6324
1930	30*	317	436	1250	1302	976	504	140	4955
1931	46	469	1127	916	1237	1027	510	288	5620
1932	39	390	598	1116	1317	1164	556	301	5481
1933	0	106	471	1070	1317	924	424	303	4615
1934	63	431	896	1078	1281	806	624	326	5505
1935	5	338	663	893	1289	824	603	200	4815
1936	44	312	355	786	1208	1005	667	350	4727
1937	3	119	329	1082	1518	1252	797	281	5381
1938	0	100	267	824	1256	1117	635	88	4287
1939	73	380	932	1616	1699	1151	557	246	6654
1940	44	339	488	1216	1785	1038	686	456	6052
Average Acre-feet	26	249	558	1085	1407	1075	608	282	5290
Average c.f.s.	0.4	4	9	18	23	17	10	5	11
Monthly Diversion in per cent of seasonal	0.5	4.7	10.5	20.5	26.7	20.3	11.5	5.3	

*Estimated.

TABLE 51

OLD SAN JOAQUIN RIVER - DELTA UPLANDS, MONTHLY DIVERSIONS IN ACRE-FEET AND GROSS SEASONAL DUTY OF WATER - 1924-1940

Year	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Seasonal Diversion	Acreage Irrigated: General	Acreage Irrigated: Rice	Gross Seasonal Duty, Acre-Ft. per acre
1924	10320	10311	12600	12434	12460	10845	8277	3633	80880	29190	0	2.8
1925	100*	1737	7330	13233	16264	13962	9404	2347	64377	34677	0	1.9
1926	500*	4440	15526	17420	16690	15283	12376	2151	84386	37480	0	2.3
1927	80	1815	16312	14758	14252	12651	9398	2504	71770	35351	0	2.0
1928	500*	3430	16895	15037	14526	13701	9185	2679	75953	39924	0	1.9
1929	2000*	12977	13170	8894	14735	13143	9465	3389	77773	37359	0	2.1
1930	400*	5624	15152	14488	15289	12958	8535	3019	75465	36480	0	2.1
1931	5735	17099	10400	9245	14125	10854	3522	389	71369	34232	0	2.1
1932	296	5460	9318	9343	9803	8379	5718	2636	50953	27942	0	1.8
1933	488	10114	10351	10092	10938	10414	6082	3463	61942	27851	0	2.2
1934	3204	14687	10321	8708	12827	9946	5817	3019	68529	29792	0	2.3
1935	10	30	11027	13473	12973	10171	6933	2082	56699	28307	0	2.0
1936	420	5310	12235	8621	14492	9994	6958	5239	63269	30232	0	2.1
1937	3	2621	13418	11093	13590	11934	7100	4853	64612	31913	0	2.0
1938	0	1313	8628	11989	9806	8841	6250	3566	50393	29658	0	1.7
1939	7728	12880	8746	12055	13453	9855	4977	1669	71363	34956	0	2.0
1940	0	1015	9527	10943	14091	10217	6148	3306	55247	29009	0	1.9
Average	1870	6520	11820	11870	13550	11360	7420	2940	67350	32610	0	2.1
Average c.f.s.	30	110	192	199	220	185	125	48	139			
Monthly Diversion in per cent of seasonal	2.8	9.7	17.5	17.6	20.1	16.9	11.0	4.4				

TABLE 52

TOM PAINE SLOUGH - DELTA UPLANDS, MONTHLY DIVERSIONS IN ACRE-FEET AND GROSS SEASONAL DUTY OF WATER - 1924-1940

Year	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Seasonal Diversion	Acreage Irrigated: General	Acreage Irrigated: Rice	Gross Seasonal Duty, Acre-ft. per acre
1924	1126	1926	2529	2696	2238	2419	1474	1242	15650	2810	0	5.6
1925	0*	500*	1672	3491	3027	3058	2205	933	14886	7441	0	2.0
1926	100*	926	3676	3095	3238	2903	2507	693	17138	4973	0	3.4
1927	0*	94	3700	2911	3099	3166	2630	1655	17255	6157	0	2.8
1928	200*	785	2111	2589	2456	2353	2497	1649	14640	4906	0	3.0
1929	500*	1554	2376	1642	3028	2814	2100	1154	15168	5195	0	2.9
1930	100*	764	2081	2132	2326	2124	1752	960	12239	4987	0	2.5
1931	530	2109	1324	1602	2325	2286	1981	523	12680	5322	0	2.4
1932	67	1809	926	1883	1952	2068	1894	775	11374	5040	0	2.3
1933	0	1306	1608	1775	1715	1898	1543	1351	11196	4450	0	2.5
1934	70	2069	1272	1433	1936	1616	1578	972	10946	4549	0	2.4
1935	0	0	1593	1917	1797	1826	1241	556	8930	3226	0	2.8
1936	38	990	1680	1670	2469	2373	1709	1308	12237	4450	0	2.7
1937	0	112	1545	1864	2173	2041	1426	503	9664	3302	0	2.9
1938	0	432	1219	1364	1296	1497	1062	427	7297	2887	0	2.5
1939	763	1620	1218	1703	1414	1789	1015	645	10167	3911	0	2.6
1940	0	159	1509	1974	2129	1612	1133	873	9389	4007	0	2.3
Average	206	1010	1885	2100	2270	2230	1750	954	12400	4565	0	2.7
Average c.f.s.	3	17	31	35	37	36	29	16	26			
Monthly Diversion in per cent of seasonal	1.7	8.1	15.2	16.9	18.3	18.0	14.1	7.7				

*Estimated.

TABLE 53

SAN JOAQUIN RIVER - DELTA UPLANDS, MONTHLY DIVERSIONS IN ACRE-FEET AND GROSS SEASONAL DUTY OF WATER - 1924-1940

Year	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Seasonal Diversion	Acreage Irrigated: General	Acreage Irrigated: Rice	Gross Seasonal Duty, Acre-ft. per acre
1924	614	1126	1760	1889	2175	1819	1385	206	10974	4335	0	2.5
1925	0*	6	276	1149	1530	1694	1040	39	5734	3224	0	1.8
1926	2000*	5657	8800	7696	8251	7693	6308	1577	47982	11196	0	4.3
1927	0*	713	8530	8224	8927	9378	4317	746	40835	12870	0	3.2
1928	1000*	3075	7915	7523	9141	8159	4604	1849	43266	17579	0	2.5
1929	2000*	6747	9600	5497	10594	7624	4498	2586	49146	16941	0	2.9
1930	2000*	6823	11848	7555	12899	11800	4227	1257	58409	18486	0	3.2
1931	3009	9378	8007	5475	12617	11759	4141	2126	56512	17021	0	3.3
1932	1452	8519	5767	5133	9972	7349	4365	1704	44261	19088	0	2.3
1933	767	9174	6089	5799	10703	7581	3165	2099	45377	18025	0	2.5
1934	3744	10633	7861	5411	12805	8682	4068	1965	55169	19372	0	2.8
1935	12	1691	6790	8950	10353	7785	3637	1714	40932	16571	0	2.5
1936	1483	7467	6838	4166	11651	8629	3575	1865	45674	18993	0	2.4
1937	3	5355	6512	4285	12542	7737	2824	1970	41228	19648	0	2.1
1938	1	3062	6753	4154	9943	6622	3004	991	34530	17582	0	2.0
1939	4012	9394	5398	6901	11721	8744	3862	1178	51210	18672	0	2.7
1940	4	4638	6974	7011	12805	7978	3300	1932	44642	18457	0	2.4
Average	1300	5500	6810	5695	9920	7710	3665	1515	42110	15770	0	2.7
Average c.f.s.	21	92	111	96	161	125	62	25	87			
Monthly Diversion in per cent	3.1	13.1	16.2	13.5	23.5	18.3	8.7	3.6				

TABLE 54

SAN JOAQUIN RIVER - FREMONT FORD BRIDGE TO VERNALIS, MONTHLY DIVERSIONS IN ACRE-FEET AND GROSS SEASONAL DUTY OF WATER - 1928-1940

Year	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-ft. per acre
										General	Rice	
1928	*	*	*	*	11854	10574	8925	*	-	*	*	-
1929	*	*	*	*	12814	11021	10790	*	-	*	*	-
1930	*	12970	15632	15951	16472	16921	10860	1654	90460	*	*	-
1931	8084	18145	14765	14752	19847	15593	9607	5203	105996	34894	500	3.0
1932	3510	16745	11018	11802	15571	14886	11562	5010	90104	39813	80	2.3
1933	5496	14431	11244	11762	19043	18373	11437	3795	95581	35036	0	2.7
1934	5935	21809	17152	12615	24787	22392	12880	3123	120693	41696	290	2.9
1935	595	1228	14156	18502	23647	22541	13284	5211	99164	37320	155	2.6
1936	4511	12744	15608	21854	23594	15879	10614	3729	108533	41862	160	2.6
1937	212	3100	17198	16112	25933	21963	12183	3295	99996	41542	230	2.4
1938	69	4378	17054	15089	21991	17576	10842	2767	89766	42226	200	2.1
1939	7044	17485	17212	18955	25161	21288	10366	2505	120016	42379	420	2.8
1940	555	4547	15524	18950	26396	17707	10769	3365	97813	39373	470	2.5
Average**	3600	11460	15090	16040	22600	18820	11350	3800	102770	39610	250	2.6
Average c.f.s.**	59	193	245	270	368	306	191	62	211			
Monthly **: Diversion in per cent of seasonal	3.5	11.2	14.7	15.6	22.0	18.3	11.0	3.7				

*No Record.
**1931 to 1940.

TABLE 55

MERCED RIVER - YOSEMITE VALLEY RAILROAD CROSSING TO MOUTH, MONTHLY DIVERSIONS IN ACRE-FEET AND GROSS SEASONAL DUTY OF WATER - 1928-1940

Year	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-ft. per acre
										General	Rice	
1928	*	*	*	*	3451	3027	2343	*	-	*	*	-
1929	*	*	*	*	3420	2965	1942	*	-	*	*	-
1930	*	1062	2319	2750	2716	2253	1242	474	12816	*	*	-
1931	778	2836	3298	2902	3553	3232	2128	765	19492	3623	0	5.4
1932	524	1334	1808	2261	2539	2292	1787	711	13256	3299	0	4.0
1933	320	1406	1757	1990	2372	1900	1600	645	11990	3229	0	3.7
1934	627	2627	2989	2637	3202	2673	2018	826	17599	5091	0	3.5
1935	0	70	1612	2684	2764	2472	1607	632	11841	3305	0	3.6
1936	26	486	2192	2149	2426	2705	1623	411	12018	3662	0	3.3
1937	0	108	1341	2514	3114	2876	1671	387	12011	4155	0	2.9
1938	0	123	858	1523	2213	1933	1018	458	8126	3072	0	2.6
1939	38	951	1791	2162	2520	1803	808	236	10309	3478	0	3.0
1940	2	220	1541	2275	2206	1597	949	317	9107	3123	0	2.9
Average**	232	1015	1920	2310	2690	2350	1520	539	12570	3604	0	3.5
Average c.f.s.**	4	17	31	39	44	38	26	9	26			
Monthly** Diversion in per cent of seasonal	1.8	8.1	15.2	18.4	21.4	18.7	12.1	4.3				

*No record.
**1931 to 1940
NOTE: No records prior to 1928.

TABLE 56

TUOLUMNE RIVER - LA GRANGE BRIDGE TO MOUTH, MONTHLY DIVERSIONS IN ACRE-FEET AND GROSS SEASONAL DUTY OF WATER - 1928-1940

Year	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Seasonal Diversion	Acreage Irrigated: General	Acreage Irrigated: Rice	Gross Seasonal Duty, Acre-ft. per acre
1928	*	*	*	*	327	277	79	*	-	*	*	-
1929	*	*	*	*	477	338	189	*	-	*	*	-
1930	*	173	388	480	523	473	224	59	2320	*	*	-
1931	128	585	560	585	673	585	363	88	3567	894	0	4.0
1932	37	234	260	281	438	331	181	95	1857	653	0	2.8
1933	72	222	213	380	451	411	266	205	2220	855	0	2.6
1934	108	334	396	368	325	349	219	150	2249	845	0	2.7
1935	7	47	326	422	438	375	257	120	1992	770	0	2.6
1936	41	125	387	345	422	442	295	121	2178	736	0	3.0
1937	41	120	540	339	451	409	255	57	2212	752	0	2.9
1938	0	12	135	222	245	201	127	38	980	594	0	1.7
1939	160	149	414	501	455	558	193	104	2534	864	0	2.9
1940	3	19	577	415	642	436	335	151	2578	1072	0	2.4
Average**	60	185	381	386	454	410	249	113	2240	804	0	2.8
Average c.f.s.**	1	3	6	6	7	7	4	2	5			
Monthly** Diversion in per cent of seasonal	2.7	8.3	17.0	17.2	20.3	18.3	11.1	5.1				

*No records.
**1931 to 1940
NOTE: No records prior to 1928.

TABLE 57

STANISLAUS RIVER - ORANGE BLOSSOM BRIDGE TO MOUTH, MONTHLY DIVERSIONS IN ACRE-FEET AND GROSS SEASONAL DUTY OF WATER - 1928-1940

Year	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Seasonal Diversion	Acreage Irrigated		Gross Seasonal Duty, Acre-ft.per acre
										General	Rice	
1928	*	*	*	*	1248	1277	1089	*	-	*	*	
1929	*	*	*	*	1059	807	605	*	-	*	*	
1930	*	625	1057	1495	1336	1167	730	115	6525	*	*	
1931	108	2023	1692	2773	2855	2449	1308	706	13914	2261	0	6.2
1932	431	1142	1529	1994	1780	1678	1216	471	10241	2522	0	4.1
1933	103	1046	1158	1355	1350	1176	684	316	7188	2021	0	3.6
1934	240	1620	1274	1687	1697	1683	780	402	9383	2122	0	4.4
1935	0	250	1177	1702	1855	1745	759	304	7792	2076	0	3.8
1936	0	727	838	1256	1952	1407	943	429	7552	2313	0	3.3
1937	0	508	1816	2248	2530	2429	1756	650	11937	3849	75	3.0
1938	0	327	735	1239	1690	1748	997	309	7045	3198	0	2.2
1939	198	1848	2201	2873	3222	3310	1752	827	16231	6331	0	2.6
1940	217	682	2143	3330	3858	2924	1741	851	15746	6902	0	2.3
Average*	130	1015	1455	2045	2280	2055	1195	526	10700	3360	8	3.2
Average** c.f.s.	2	17	24	34	37	33	20	9	22			
Monthly** Diversion in per cent of seasonal	1.2	9.5	13.6	19.1	21.3	19.2	11.2	4.9				

*No record
**1931 to 1940
NOTE: No records prior to 1928.

TABLE 58

TABLE 58

SACRAMENTO RIVER - SEASONAL DIVERSIONS AND ACREAGES IRRIGATED 1924 - 1940
(SEGREGATED TO RIVER SECTIONS)

Year		River Sections							Redding to Sacramento
		Redding to Red Bluff	Red Bluff to Butte City	Butte City to Colusa	Colusa to Wilkins Slu	Wilkins Slu to Knights Ldg	Knights Ldg to Verona	Verona to Sacramento	
1924	Seasonal diversion acre-feet	99835	407427	67152	167217	99573	18422	93147	952773
	Average cubic feet per second	205	838	138	344	205	38	192	1960
	Acreage irrigated - rice	0	25875	6950	10130	11000	770	4963	59688
	Acreage irrigated - general	20020	32488	12991	19401	6093	854	12422	104269
1925	Seasonal diversion acre-feet	105593	369570	69511	179953	33822	6731	78283	843463
	Average cubic feet per second	217	761	143	370	70	14	161	1736
	Acreage irrigated - rice	0	30467	8761	9156	3054	0	6587	58025
	Acreage irrigated - general	15714	12979	7065	25408	3472	922	10662	76222
1926	Seasonal diversion acre-feet	107160	525287	134027	189515	41796	19700	90285	1107770
	Average cubic feet per second	220	1081	276	390	86	41	186	2280
	Acreage irrigated - rice	0	47827	14117	13214	1781	1537	9025	87501
	Acreage irrigated - general	19890	13580	7534	18778	4440	1803	10600	76625
1927	Seasonal diversion acre-feet	103248	502946	95815	233466	113750	24786	85252	1159263
	Average cubic feet per second	212	1036	197	481	234	51	175	2386
	Acreage irrigated - rice	0	37718	9110	16864	7574	2569	5926	79761
	Acreage irrigated - general	17823	17565	6445	18609	5371	1597	10451	77861
1928	Seasonal diversion acre-feet	113321	446674	68244	224477	77851	22153	101818	1054538
	Average cubic feet per second	234	919	140	461	160	46	210	2170
	Acreage irrigated - rice	0	29911	5751	14024	4865	1642	7353	63546
	Acreage irrigated - general	20789	19996	7452	21875	5889	513	11704	88218
1929	Seasonal diversion acre-feet	120150	478947	70608	205659	76003	18246	96196	1065809
	Average cubic feet per second	247	986	146	423	156	37	198	2193
	Acreage irrigated - rice	0	21680	4557	7979	4404	0	5274	43894
	Acreage irrigated - general	19105	39985	9168	45826	10859	464	11507	136914
1930	Seasonal diversion acre-feet	126760	440617	72341	229715	68169	21528	96725	1055855
	Average cubic feet per second	261	907	149	473	140	44	199	2173
	Acreage irrigated - rice	0	29199	4963	11717	3155	1130	6020	56184
	Acreage irrigated - general	14571	24068	9461	30003	7659	491	10324	96577
1931	Seasonal diversion acre-feet	143543	553663	93184	313237	70966	21506	139167	1335266
	Average cubic feet per second	295	1139	192	645	146	44	286	2747
	Acreage irrigated - rice	0	39532	5462	19067	780	200	8853	73894
	Acreage irrigated - general	14538	33254	10216	54487	9706	2417	16887	141505
1932	Seasonal diversion acre-feet	132035	460462	31846	249723	37791	18573	89570	1020000
	Average cubic feet per second	272	947	66	514	78	38	184	2099

TABLE 58 (CONTINUED)

Year		River Sections: Redding to Red Bluff	Red Bluff to Butte City	Butte City to Colusa	Colusa to Wilkins Slu	Wilkins Slu to Knights Ldg	Knights Ldg to Verona	Verona to Sacramento	Redding to Sacramento
1932 (cont'd)	Acreage irrigated - rice	0	29673	3086	15529	0	567	968	53823
	Acreage irrigated - general	12745	52084	7387	34883	9159	4707	9782	130747
1933	Seasonal diversion acre-feet	135323	474372	33281	250149	59381	17837	71377	1041720
	Average cubic feet per second	278	975	69	515	122	37	147	2143
	Acreage irrigated - rice	0	31663	1640	15578	2126	270	2017	53294
	Acreage irrigated - general	12809	30479	4436	34925	6468	1847	10057	101021
1934	Seasonal diversion acre-feet	133625	448806	23531	243463	90826	20877	95835	1056963
	Average cubic feet per second	275	924	48	501	187	43	197	2175
	Acreage irrigated - rice	0	29153	587	15853	4497	892	5534	56516
	Acreage irrigated - general	13620	27858	4591	28934	7035	1461	10284	93783
1935	Seasonal diversion acre-feet	121974	385508	19703	225702	74382	20989	77906	926164
	Average cubic feet per second	251	794	41	464	153	43	160	1906
	Acreage irrigated - rice	0	26884	380	14462	4168	650	4546	51090
	Acreage irrigated - general	13405	28589	5142	30663	6804	1313	12577	98493
1936	Seasonal diversion acre-feet	149313	455981	36371	215313	80901	17072	100018	1054969
	Average cubic feet per second	307	937	75	443	167	36	206	2171
	Acreage irrigated - rice	0	30087	2028	14409	7042	400	8696	62662
	Acreage irrigated - general	13254	27579	5423	27832	5884	1542	11579	93093
1937	Seasonal diversion acre-feet	114609	482048	42570	247130	72526	12949	98629	1070461
	Average cubic feet per second	236	992	88	508	149	27	203	2203
	Acreage irrigated - rice	0	34214	2040	19235	3739	0	7318	66546
	Acreage irrigated - general	13324	30634	5843	29888	6710	2631	11806	100836
1938	Seasonal diversion acre-feet	120301	351901	31684	267085	66219	12447	82593	932230
	Average cubic feet per second	248	723	65	550	136	26	170	1918
	Acreage irrigated - rice	0	29522	1790	19616	4264	0	7396	62588
	Acreage irrigated - general	9309	27193	5137	27788	6476	1757	7935	85595
1939	Seasonal diversion acre-feet	141403	587358	29668	292226	89153	21496	139744	1301048
	Average cubic feet per second	291	1209	61	601	183	44	288	2677
	Acreage irrigated - rice	0	32917	750	17360	3667	0	9159	63853
	Acreage irrigated - general	13423	58185	6802	51711	13120	2727	12800	158768
1940	Seasonal diversion acre-feet	116052	479028	15683	249532	70974	34057	97304	1062630
	Average cubic feet per second	239	986	32	513	146	70	200	2187
	Acreage irrigated - rice	0	31754	463	19475	4024	1541	7134	64391
	Acreage irrigated - general	9696	43885	6354	41548	7318	1318	9611	119752
	Average 1924 - 1940								
	Seasonal diversion acre-feet	122603	461800	55013	234327	72004	19375	96109	1061230
	Cubic feet per second	252	950	113	482	148	40	198	2184
	Per cent of seasonal draft	11.5	43.5	5.2	22.1	6.8	1.8	9.1	100
	Acreage irrigated - rice	0	31652	4261	14922	4126	716	6516	62191
	Acreage irrigated - general	14943	30612	7144	31915	7204	1668	11234	104722

TABLE 59

SUMMARY OF SACRAMENTO RIVER DIVERSIONS, DIVERSION PERCENTAGES AND ACREAGES IRRIGATED - 1940

River Section	Acre-feet diverted and monthly use in per cent of seasonal									Per Cent of	Acreage Irrigated		Acre-feet per Acre
	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Total Draft	Total Draft	General	Rice	
Redding to Red Bluff (Ac. Ft.)	20	44	12126	21976	22061	21462	21172	17191	116052	10.9	9696	0	12.0
Per cent of seasonal	-	.1	10.5	18.9	19.0	18.5	18.2	14.8					
Red Bluff to Butte City	0	6052	90000	98095	109737	103115	48833	23196	479028	45.1	43885	31754	6.3
Per cent of seasonal	0	1.3	18.6	20.9	22.7	21.3	10.4	4.8					
Butte City to Colusa	0	0	1436	3347	5775	3466	1308	351	15683	1.5	6354	463	2.3
Per cent of seasonal	0	0	8.9	21.8	36.6	21.8	8.6	2.3					
Colusa to Wilkins Slough	0	6155	47023	51458	61812	56862	25640	582	249532	23.5	41548	19475	4.1
Per cent of seasonal	0	2.5	18.7	21.1	24.5	22.5	10.5	0.2					
Wilkins Slough to Knights Ldg.	0	1150	11328	15917	18921	16014	7445	199	70974	6.7	7340	4024	6.2
Per cent of seasonal	0	1.6	16.0	22.4	26.7	22.5	10.5	0.3					
Knights Landing to Verona	0	284	6145	8490	7730	6689	4694	25	34057	3.2	1318	1541	11.9
Per cent of seasonal	0	0.9	18.0	24.9	22.7	19.6	13.8	0.1					
Verona to Sacramento	1782	4388	14476	19222	22976	21157	10859	2444	97304	9.1	9611	7134	5.8
Per cent of seasonal	1.8	4.5	14.9	19.8	23.6	21.7	11.2	2.5					
Total	1802	18073	182534	218505	249012	228765	119951	43988	1062630	100.0	119752	64391	5.8
Average cubic feet per second	29	304	2969	3672	4050	3720	2016	715	2187				
Monthly diversion in per cent of seasonal	.2	1.7	17.2	20.6	23.4	21.5	11.3	4.1					

TABLE 60

DIVERSIONS, ACREAGE IRRIGATED, AND GROSS SEASONAL (MARCH TO OCTOBER, INCLUSIVE) DUTY OF WATER IN THE SACRAMENTO-SAN JOAQUIN AREA - 1940

Source	Table Number	Seasonal Diversions Acre-feet	Acreage Irrigated			Gross Seasonal Duty of Water Acre-feet per acre
			General	Rice	Total	
Sacramento River - Redding to Sacramento	61	1062630	119730	64391	184121	5.8
Feather River below Oroville	66	473974	30117	23526	53643	8.8
Yuba River on Valley floor	67	69968	7220	1270	8490	8.2
American River below Fairoaks	68	6052	(1) 3061	0	(1) 3061	(1) 2.0
By-Pass and Drainage Channels	65	28092	10292	647	10939	(2) 2.5
Lower Butte Creek and Slough	64	28123	2762	407	3169	(3) 2.8
Colusa Trough and Back Borrow Pit	62 - 63	60068	3330	3959	(5) 7289	(4) 8.2
Total above Sacramento		1728907	176512	94200	(1)270712	(6) 6.2
Delta Uplands from:						
Old San Joaquin River	69	55247	29009	0	29009	1.9
Tom Paine Slough	70	9389	4007	0	4007	2.3
San Joaquin River (below Durham Ferry Bridge)	71	44642	18457	0	18457	2.4
San Joaquin River from Fremont Bridge to Durham Ferry Bridge	72	97813	39373	470	39843	2.5
Merced River below Snelling	73	9107	3123	0	3123	2.9
Tuolumne River below Roberts Ferry Bridge	74	2578	1072	0	1072	2.4
Stanislaus River below Orange Blossom Bridge	75	15746	6902	0	6902	2.3
Total delta uplands & pumping diversions of San Joaquin River and Tributaries*		234522	101943	470	102413	2.3
Sacramento-San Joaquin Delta**	(See Table 115)					

*Note that major gravity diversions by canals of Oakdale, South San Joaquin, Modesto, Turlock, Waterford and Merced Irrigation Districts and Miller and Lux are not included within the scope of these measurements.

**Delta crop census not taken in 1940. See 1938 and reports prior to 1933 for detailed data.

(1) Includes 2200 acres classed as suburban lands but not shown in totals for Table 68.

(2) Duty figured after taking into account 300 acres of gun clubs not shown in totals. Diversions after November 1 not included.

(3) Duty figured after taking into account 6885 acres of gun clubs not shown in totals. Diversions after November 1 not included.

(4) Duty figured after taking into account 25 acres of gun clubs not shown in totals. Diversions after November 1 not included.

(5) A large portion of this diversion was used to supply acreages reported under Sacramento River Diversions (Provident Irrigation District). See footnote Table 61, Provident Irrigation District diversions at Mile 154.8R.

(6) See footnotes 2, 3 and 4.

TABLE 61

SACRAMENTO RIVER DIVERSIONS

TABLE 61

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
--"M" STREET BRIDGE - SACRAMENTO - MILE 0.0--													
City of Sacramento	0.8L	1-18"	1782	1996	2860	3449	3815	3605	2789	2221	22517	Municipal	
		3-20"											
--AMERICAN RIVER - MILE 1.1 LEFT--													
--BACK BORROW PIT RECLAMATION DISTRICT 1000 - MILE 1.3 LEFT --													
E. Fourness	1.45R	1-8"				37	95	83			215	142	
M. Zubiri	2.05L	1-8"					25	15			40	55	
--RECLAMATION DISTRICT 1000 DRAIN - MILE 2.1L--													
Elmer F. Christophel (1)	2.4L	1-5"			2	25	22		11		60	36	
H. M. Swalley	2.45L	1-5"			1	17	12	4	6		40	38	
N. J. Parr	2.9L	1-6"				12	12				24	23	
Earl Fruit Company	3.55R	1-16"				292	80				372	165	
W. E. M. Beardslee Estate	3.75R	1-5"		3	15	10	27	26	23	15	119	50	
M. C. C. Van Loben Sels	4.0R	1-10"				88	121				209	92	
Reese and Greer	4.65R	1-7"				9	32	20			61	82	
Harbinson Bros.	5.05R	1-14"					32				32	20	
R. S. Seydel	5.25R	1-8"		7	9	18	13	30	14	6	97	40	
C. H. Merkley Estate	5.3R	1-8"				27	32	5			64	50	
Lucy Casselman (2)	5.5R	1-6"					12	34			46	19	
A. A. Casselman	5.55R	1-6"				13	16				29	35	
K. L. Lovdal	5.7R	1-10"			NO DIVERSION								
J. E. Bandy	6.0R	1-6"				17	42	26			85	79	
Riverside Mutual Water Company	6.1L	2-18"			40	1097	1306	1214	767		4424	(3)1433	
O. A. and F. L. White	6.6R	1-6"			NO DIVERSION								
E. S. Fisk	7.0R	1-4"			NO DIVERSION								
Fred C. Jones	7.5L	1-8"					26	24			50	45	
Calif. Western States Life Ins.Co.	7.8L	1-10"				18	7	13	9		47	44	
A. Marty	7.9R	1-8"			21	41	59	46	10	3	180	81	
Bennett Bros.	7.9L	1-10"				41	41	41			123	(4)40	
M. Marty	8.3R	2-10"	18	46	206	186	95	50	22		623	210	
Blauth Estate	8.5R	1-7"				69	45				114	83	
H. Waldeck	8.7R	1-6"		2	8	29	8	13	12	4	76	47	
Hazel Goethe	8.95R	1-6"				22	17				39	33	
California Lands Inc.	9.35R	1-14"				28	235	190			453	(5)237	
R. G. Pearson and P. S. Driver	9.8L	1-14"				192	95	57	57		401	(6)168	

*Mileage along river above Sacramento.

(1) Formerly Frank and Elmer Christophel

(2) Formerly A. Casselman.

(3) An additional 516 acres were irrigated from interior drains.

(4) All on adjoining property of E. D. Willey.

(5) Includes 132 acres on adjoining Merkley property.

(6) Divided as follows: 50 acres for Pearson, 118 acres for Driver.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Carl Casselman	9.9R	1-12"					77	45			122	110	
Lloyd M. Robbins	10.25L	1-14"			36	123	113	191	83		546	206	
Reese Estate	10.75R	1-12"					139	9	117		265	225	
Fiddyment (Lauppe) and Natomas Company (Rosa)	10.75L	1-12"				41	37	53			131	(1)117	
McKeehan & Harris	11.1R	1-12"			4	104	73	66	3	3	(2)253	104	
A. L. White	11.6L	1-10"					44	45			89	40	
--ELKHORN FERRY - MILE 11.9--													
Conaway Ranch	12.0R	4-36"			4003	3827	6196	4878	2471		21375	(3)2330	3800
Thomas O'Connor	12.5R	(4)1-5"					13	16			29	41	
		1-12"											
Gertrude Brown	12.7R	1-6"			8	16	22	16	7	5	74	26	
Julius Hauser	13.1R	1-12"				25	97	44	32		198	100	
J. Corey	13.2R	1-8"			NO DIVERSION								
M. Narahara	13.25R	1-8"			8	32	37	41	35	8	161	30	
Elkhorn Mutual Water Company	14.1L	1-20"			518	1884	1611	1757	1148		6918	(5)1432	
		1-24"											
Joseph Veress	14.25R	1-10"			41	132	184	171	130	43	(6) 701	135	70
M. E. Dole	14.4R	1-6"			NO DIVERSION								
California Lands Inc.	15.15R	1-10"				28	104	119			251	126	
California Trust and Savings Bank	15.7L	1-6"			NO DIVERSION (7)						(7)	(7)40	
Central Mutual Water Company	16.0L	(8)2-28"		1131	3281	3576	3909	3902	1489	98	(9)17386	(10)725	(11)861
Fisher and Rich (Hershey Plant)	16.27R	1-20"			196	289	53	75			(12)613	(13)108	

*Mileage along river above Sacramento.

(1) Divided as follows: Fiddyment 50 acres, Natomas Company 67 acres.

(2) Diversions in September and October for stock water.

(3) Includes 320 acres for gun clubs.

(4) Unit added in 1940.

(5) An additional 402 acres served from interior drains.

(6) Some additional water pumped from interior drain.

(7) Irrigation water received from Central Mutual Water Company's plant at Mile 16.0L.

(8) The 12" and 20" units were removed. Were used temporarily in 1939.

(9) This plant pumps to the irrigation canal both from a drain canal of R.D. 1000 and from the Sacramento River. The diversions listed are those from the river only. The water obtained from the drain canal was as follows: (Acre-feet) May 508, June 426, July 391, August 458, September 130. Total 1913.

(10) An additional 84 acres irrigated from interior drains. An additional 40 acres served for plant at Mile 15.7L.

(11) Includes 73 acres on Simpson and Holmes lands.

[illegible] diversion was used to supply 270 acres of rice on Hershey land also served by water from plant at Mile 22.5R.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion: March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
H. T. Silvius	16.4R	1-6"					23		8		31	40	(1)30
California Trust and Savings Bank	16.62R	1-10"			NO DIVERSION (1)						(1)		(1)40
California Trust and Savings Bank	16.7R	1-12"			NO DIVERSION (2)						(2)	(2)64	
Fisher and Rich	17.4R	1-18"				172					172	(3)96	
Calif. Western States Life Ins.Co.	17.75R	1-20"			NO DIVERSION								
M. & J. Scheiber (Ashwandan)	18.45L	1-12"				73	74	16	67	16	246	99	
G. H. Lyall	18.7L	1-8"					92	23	86		201	70	
Northern Mutual Water Company (4)	(4)19.6L	2-24"		1231	3379	3143	3665	4149	1435		17002		(5)1333
Natomas Ben May Plant (6)	(6)19.6L	(7)			NO DIVERSION								
--VERONA GAGING STATION - MILE 19.6--													
SACRAMENTO TO VERONA Totals			1782	4388	14476	19222	22976	21157	10859	2444	97304	9611	7134
Average cubic feet per second			29	74	235	323	374	344	182	40	200		
Monthly use in per cent of seasonal			1.8	4.5	14.9	19.8	23.6	21.7	11.2	2.5			
--FEATHER RIVER - MILE 20.9L--													
--SACRAMENTO SLOUGH - MILE 21.2L													
West Coast Life Insurance Co.	21.7L	1-15"				76	19	4			136	125	
Frank Fisher and Henry Rich (Keller Plant)	22.5R	1-22"			1290	2552	1815	1696	2076		9429		(8)1306
A. F. Johnston	26.8L	1-8"			NO DIVERSION								
Hershey Estate	26.95R				PLANT REMOVED								
Frank B. Edson	28.2L	1-4"			NO DIVERSION								
Morse Inglin	28.2R	1-6"			18	16	16	8	6	5	69	30	
Russell Bros.	29.2R	1-12"					32	27	10	10	79	59	

*Mileage along river above Sacramento.

(1) Served through plant at Mile 22.5R.

(2) Served by plant at Mile 17.4R.

(3) An additional 64 acres served for plant at Mile 16.7R. Pelican ditch plant not used in 1940.

(4) Cross Canal, the main drain between R.D. 1000 and 1001, joins the Sacramento River at Mile 19.6 Left. Plant is on the south bank and 2.0 miles from junction with Sacramento River.

(5) Includes 70 acres on adjoining Sills property.

(6) Cross Canal - North Bank - 3.35 miles from junction with Sacramento River.

(7) Unit removed.

(8) Includes 490 acres on adjoining lands of H. B. Whitten, 270 acres on Hershey lands (also served by diversion at Mile 16.27). An additional 30 acres served for plant at Mile 16.4R, also 40 acres for plant at Mile 16.62R.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion: March to: October : Acre-feet:	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
M. R. Richardson	29.7R	1-8"					65	54			119	60	
P. L. Traganza and Kate Russell	29.75R	1-8"			NO DIVERSION								
Laura Freitas	29.9L	1-12"				41		24			65	45	
Leo Giovanetti	30.2L	1-5"				13	14	4			31	(1)20	
M. R. Richardson	30.6R	1-12"			NO DIVERSION								
Floyd Anderson	30.7R	1-6"				12		3			15	6	
George Senf	30.9L	1-8"			NO DIVERSION								
A. C. Huston	31.5R	1-12"						31			31	15	
M. Alonso	31.8L	1-6"					1	5			6	23	
M. R. Richardson	32.0R	1-12"				294	371	309	226		1200	360	
Sutter Mutual Water Company (Portuguese Bend)	32.0L	2-24"		284	4406	4616	4556	3854	2057		19773	(2)	(2)
Collier Bros.	32.5R	1-10"				72	31	37	3	10	153	89	
Walter H. Ziegler	33.2L	2-10"			76	256	256	133			721	310	
J. G. Knox	33.35L	1-8"				31	21	27			79	60	
Snowball Estate	33.5R	1-12"				25	91	70	30		216	73	
Leiser Bros.	33.75L	1-12"			355	457	422	353	286		1873		(3)235
J. W. Snowball	33.85R	1-6"				29	20	13			62	43	
--KNIGHTS LANDING GAGING STATION - MILE 34.0--													
VERONA TO KNIGHTS LANDING Totals			0	284	6145	8490	7730	6689	4694	25	34057	1318	1541
Average cubic feet per second			0	4.7	100	143	126	109	79	0.4	70		
Monthly use in per cent of seasonal			0	0.8	18.0	24.9	22.7	19.6	13.8	0.1			
--COLUSA BASIN DRAINAGE - MILE 34.15--													
Meek Estate	34.2R	1-10"			NO DIVERSION								
		2-16"									(4)	(4)	
River Farms Company (Townsite Plant)	34.25R	1-20"			NO DIVERSION (4)								
		1-24"											
		1-26"											
Commercial Investments Company	34.85L	1-12"			NO DIVERSION								
Walter Raymond	35.2L	1-12"				54	139	90			283	185	
Walter Raymond	35.62L	1-7"			NO DIVERSION								
J. H. Donnelly Ranch (Bundock Bro.)	35.8L	1-10"			13	34	30	42	5	5	129	(5)78	

*Mileage along river above Sacramento.

(1) Includes 9 acres on adjoining lands of P. N. Ashley.

(2) See plant at Mile 63.75L.

(3) Includes 80 acres each on adjoining lands of California Lands, Inc., and Mrs. C. White.

(4) Water for the land under this plant now received from Back Borrow Pit - Mile 0.03L.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
F. T. Burrell (J. L. Sills)	36.2L	(1)1-12"											
		(1)1-14"			112	214	357	366	291	12	1352	40	150
R. H. Bailey (J. L. Sills)	36.45L	1-8"				30	50	25			105	45	
Amadeo Moroni (Leiser Bros.)	36.7L	1-5"				30	31	3			64	40	
Robert Bottimore (2)	37.2L	1-14"			NO DIVERSION								
Bundock Bros.	37.75L	1-8"				45	46	51	5		147	91	
Addie Reel	38.4L	1-10"				68	52	75			195	85	
California Lands Inc.(H.A.Kramer)	38.8L	1-10"				69	56	67			192	70	
F. O. Eastman	39.4L	1-12"					49				49	82	
Commercial Investment Company	39.8L	1-10"			NO DIVERSION								
William Duffy Jr.	39.9L	1-6"			NO DIVERSION								
Sutter Mutual Water Company (State Ranch Bend)	40.6L	(3)1-36"		605	3073	4367	4155	4235	1734		18169	(4)	(4)
		2-24"											
Buell Ranch (M. K. Dean)	41.8L	1-4"			NO DIVERSION								
Buell Ranch (M. K. Dean)	42.2L	1-6"					7	10	5		22	40	
Matteolli and Fratchia	42.3L	1-8"				68	25	26			119	50	
A. Kramer Estate	43.1L	1-12"				13	185	60	23		281	110	
El Dorado Ranch	43.1R	1-18"				216	119	28	89	101	553	436	
River Farms Co.(R.D.2047 Plant)	43.1R	2-50"		536	3734	4204	4918	4281	1956		(5)19629	(6)2311	(6)2278
--RECLAMATION DISTRICT 108 DRAINAGE PLANT - MILE 44.0R--													
John Clauss (7)	44.2L	1-14"				264	454	466	150		1334	213	
John Clauss (Fuschlin)	47.3L	1-14"					593	108	82		783	175	
P. J. Hiatt	48.7L	2-20"			1323	1317	1801	1286	865		6592	501	330
P. J. Hiatt	49.7L	1-14"			NO DIVERSION								
R.D. #108 (Tyndall Mount Plant)	51.1R	1-36"			1405	1190	1986	1692	534		6807	(8)245	(8)586
		2-24"											
Holmes and Noble (P. J. Hiatt)	51.2L	2-16"			455	1421	1157	830	560		4423	410	(9)160
J. F. White	51.5L	1-8"			NO DIVERSION								
T. J. Cummins Ranch Co.	52.0L	1-16"				57	261	70	58		446	200	
George Van Ruiten	52.9L	1-10"				4	50	22	4		80	(10)220	

*Mileage along river above Sacramento.

(1) Replace former 16" unit.
(2) Formerly W. W. Bottimore
(3) New unit added in 1940.
(4) See plant at Mile 63.75L.
(5) Divided about equally between River Farms (Fair Ranch) and R. D. 108.
(6) Includes 1622 acres of rice in R. D. 108 and 55 acres of pasture on lands of R. H. Geer.
(7) New installation 1940.
(8) All on lands of River Farms Company.
(9) Entire 160 acres on lands of A. C. Middleton.
(10) This is the total acreage served by this plant and the one at Mile 53.9L.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversion in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
George Van Ruiten	53.9L	1-12"				170	93	69			332	(1)	
Broomieside Farm	55.1L	1-20"				218	143	36	66		463	197	
R. D. #108 (Boyer Bend Plant)	56.4R	1-18"			NO DIVERSION								
		1-30"											
	56.42R	1-6"					22	35	22		79	25	
C. M. Miller (2)	56.65R	1-12"			NO DIVERSION								
C. M. Miller (3)	56.95L	1-20"			12	126	92	51	82	77	440	260	
Broomieside Farm	57.0R	1-10"						18	19		37	35	
L. M. Miller (4)	57.5L	1-16"			NO DIVERSION								
Lamb Bros.	58.2L	1-15"					284	118	57		459	235	
James A. Neilson (5)	58.9L	1-16"			NO DIVERSION								
Alex Grant	59.8L	1-8"											
Lamb Bros.		1-12"		9	1192	1254	1312	1479	715		5961	(6)650	(6)520
		1-14"											
											938	360	
R. D. #108 (Steiner Bend Plant)	59.85R	1-16"				328	328	282			223	80	
F. L. Burrell	60.4L	1-10"				93	76	11	43		89	127	
Blanche Coulter Brown	60.5L	1-12"					9	15	65				
Sutter Basin Corp. (Coles Ldg.)	61.3L	1-12"			NO DIVERSION								
Hines Ranch	62.3R	1-10"				27	18	21			66	(7)96	
Blanche Coulter Brown	62.3L	1-10"			NO DIVERSION								
Jake Locovitch	62.6R	1-8"			NO DIVERSION								
R. L. Young	62.8L	1-8"			9	36	23	46	15	4	133	77	
1-WILKINS SLOUGH GAGING STATION - MILE 62.9--													
KNIGHTS LANDING TO WILKINS SLOUGH			0	1150	11328	15917	18921	16014	7445	199	70974	7318	4024
Totals			0	19	184	268	308	260	125	3	146		
Average cubic feet per second			0	1.6	16.0	22.4	26.7	22.5	10.5	0.3			
Monthly use in per cent of seasonal				1807	15999	12446	12380	9079	1723		53434	1160	(8)7406
R. D.(#108 Wilkins Slough Plant)	63.2R	5-42"					19	39			58		109
B. W. Meister	63.65L	(9)1-12"									160392	(11)6642	(11)1468
Sutter Mutual Water Co.(Tisdale Plant)	63.75L	6-42"		4348	29002	32809	37347	37171	19715				
		2-48"(10)											

*Mileage along river above Sacramento.

(1) See plant at Mile 52.9L.

(2) Temporary installation 1940.

(3) J. M. Miller property divided between C. M. and L. M. Miller.

(4) New installation 1940.

(5) Plant (owned by Neilson) is on property of W. H. Saylor. Acreages irrigated as follows: Saylor, 105; Neilson, 130.

(6) All the rice and 640 acres of general crops are on lands of R. D. 1500.

(7) Includes 66 acres on lands of I. G. Zumwalt.

(8) An additional 1622 acres of rice served through R. D. 2047 plant at Mile 43.1R.

(9) 6" unit removed.

(10) Two 48" units added in 1940

(11) These figures give the total acreage served by this plant and the plants at Miles 32.0L and 40.6L. The general crop figure includes

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversion in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Ornbaum, Nobles Land & Livestock Company	64.3R	1-12"			2		23	10			35	20	
Tisdale Irrigation & Drainage Co.	64.4L	1-12"				81	422	418	34	55	1010	(1)	(1)
Van Horn Ranch	64.9R	(2)1-14"				11	206	46	31		294	240	
M. Bettencourt	65.1R	1-8"			NO DIVERSION								
California Lands Inc.	65.7L	1-10"					141	183			324	100	
M. P. Schohr	65.8R	1-16"			NO DIVERSION								
J. L. Browning	66.4R	1-18"				476	232	495	18		1221	420	
Tisdale Irrigation & Drainage Co.	67.1L	1-12"				7	1023	1029	359		2418	(3)1806	
		1-20"											
Desmond A. Winship	67.2L	1-10"			NO DIVERSION (1)						(1)	(1)	
Scott F. Ennis & E. S. Brown	67.5L	2-24"			317	992	1677	2025	859		5870	(4)2362	(4)89
--RECLAMATION DISTRICT #70 DRAIN - MILE 68.80L-- (5)													
Meridian Farms Water Co. #5 (5)	68.80L	1-24"			NO DIVERSION						(6)	(6)	
J. L. Browning	69.0R	1-24"				600	333	126			1059	597	
Faxon Ranch	69.2R	1-18"				384	424	158	16		982	410	
--EDDYS FERRY (GRIMES) - MILE 69.45--													
Wilber Jensen & Mary Cecil et.al.	70.35R	1-24"			NO DIVERSION								
H. F. Daly	(7)70.4L	1-10"				4	8	7	8		27	31	
Houchins, Hoffman, Beckley and Ritchie	70.4R	(8)1-6"				62	37	17	27		143	(9)69	
		1-20"											
Meridian Farms Water Co. #4	71.1L	1-24"				284	715	1140	197		2336	997	
J. L. Browning	71.9R	1-12"						97	228		325	100	
Antone Steidlmayer	71.9R	1-12"			NO DIVERSION								
Calif. Western States Life Ins.Co.	72.3L	1-7"					13	20			33	60	
E. E. Vann	73.6R	1-10"			NO DIVERSION								
Meridian Farms Water Co. #3	74.8L	1-18"				112	565	441	38		1156	649	
L. B. Westfall	75.3R	1-10"					113				113	(10)173	
J. H. Yates	76.1L	1-12"						49			49	67	

*Mileage along river above Sacramento

(1) See plant at Mile 67.1L.

(2) Replaces 8" unit.

(3) This is the total acreage served by this plant and the one at Mile 64.4Left and includes 154 acres on adjoining Winship lands.

(4) Includes 89 acres of rice and 60 acres general on lands of Sutter Butte Lands Company (Meridian Farms Water Co.) and 82 acres general for L. C. Middleton.

(5) Combination drainage and irrigation plant.

(6) No diversion from river. All pumping was from R. D. 70 drain canal which enters river at this point. Diversion was as follows: (Acre-feet) July 1534, August 1646, September 400. Total 3580. Acreage served 1006 general. See acreage note for plant at Mile 67.5L.

(7) Plant moved from Mile 69.9 in 1940.

(8) Six inch unit reinstalled.

(9) Acreages divided as follows: 65 acres on G. L. Beckley lands and 4 acres on lands of J. E. Bashers, et al.

(10) Includes 120 acres on adjoining lands of Tuttle and Napier.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversion in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Joe Miller (Sanborn)	76.2L	1-8"				27	19				46	(1)45	
Steidlmayer Bros.	76.5R	1-16"					95				95	240	
E. V. Jacobs	77.9L	1-12"			NO DIVERSION								
Sebia Davis Estate	78.2R	1-16"			NO DIVERSION								
Sebia Davis Estate	78.8R	1-24"			NO DIVERSION								
C. E. Reische	79.0L	1-10"				56	73	33	21		183	(2)140	
Steidlmayer Bros.	79.0R	1-12"				348	279		25		652	(3)405	
Henry Schmidt	79.3R	1-10"					38				38	50	
E. V. Jacobs	79.5L	1-8"			NO DIVERSION								
G. W. Wood	79.7L	1-10"					9				9	14	
--MERIDIAN BRIDGE - MILE 79.85--													
Meridian Farms Water Co. #1 & 2	80.0L	(4)1-20"			1318	1743	3630	3309	1488	29	11517	2113	512
		1-24"											
Roger C. Wilbur (5)	80.3R	1-8"					66	14	17	17	114	57	
Wonderly and Lillienthal	81.5L	1-16"			13	23	53	31	42		162	(6)104	
Steidlmayer Bros.	81.9R	1-20"				104	373	137	291	357	1262	(7)756	
F. T. Reische and L. F. Wood	82.5L	1-12"					33	20	3		56	(8)66	
J. T. Pinkard	83.05L	1-7"			NO DIVERSION								
George W. Kirkpatrick Estate	83.3L	1-14"					17	13			30	25	
J. E. Clark	83.5L	1-8"				9	13				22	80	
--BUTTE SLOUGH GATES - MILE 84.0L--													
Clifford Reichel	85.8L	1-8"			NO DIVERSION								
Ewing and Halsey	86.1R	1-12"				52	73	32	92		249	75	
Lydell Peck (9)	86.1L	1-8"					58				58	65	
Lydell Peck (10)	86.6L	1-12"			NO DIVERSION								
Lloyd Scoggins	86.3L	1-8"				35	47	89			171	45	
California Lands Inc.	86.9R	1-10"				57	31	41	14		143	92	
California Lands Inc.	87.4R	1-10"				43	19	14			76	50	

*Mileage along river above Sacramento.

(1) Includes 30 acres on adjoining lands of M. S. Davis.
(2) Includes acreages on adjoining lands as follows: Rockholt 19, Kilgore 30, Lemos 23, and Staas 24.
(3) Includes 275 acres on adjoining lands of A. H. Tubbs.
(4) Replaces 18" unit.
(5) Formerly George P. Ahlf.
(6) Divided as follows: Wonderly 34 acres, Lilienthal 70 acres.
(7) Includes 125 acres on adjoining lands of A. H. Tubbs.
(8) Divided as follows: Reische 37 acres, Wood 29 acres.
(9) New installation 1940.
(10) Formerly J. F. Peck.

(10) Formerly J. F. [illegible]

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet							Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Jacobsen & O'Rourke	87.6L	1-10"	NO DIVERSION										
Swinford Tract Irrigation Company	87.7R	1-12"			38	186	67	72			363	(1)136	
Edward K. Lange	88.0R	1-6"					16				16	20	
Nagle and Locovitch	88.2L	1-10"					51	3			54	(2)35	
W. D. DeJarnett	88.7L	1-14"			263	369	513	348	342	116	1951	345	
Colusa Irrigation Company	89.2R	1-20"			71	138	483	156	52	8	908	(3)508	
Phil B. Arnold	89.25L	1-8"					78				78	70	
G. A. Berkey	89.26L	1-12"	NO DIVERSION										
--COLUSA GAGING STATION - MILE 89.4--													
WILKIN'S SLOUGH TO COLUSA													
Totals			0	6155	47023	51458	61812	56862	25640	582	249532	41548	19475
Average cubic feet per second			0	103	765	865	1005	925	431	9	513		
Monthly use in per cent of seasonal			0	2.5	18.7	21.1	24.5	22.5	10.5	0.2			
Lillian and Hattie Boggs	89.7L	1-6"	NO DIVERSION										
Roberts Ditch Company	90.7R	2-20"			103	454	601	382	278	110	1928	907	
Paul R. Westfall	91.1L	1-6"					9	10	1		20	25	
I. G. Zumwalt	91.6R	1-12"	NO DIVERSION										
George P. Ahlf	92.5L	1-8"					64	9			73	(4)45	
Colusa County Bank	93.0L	1-8"						18			18	22	
U. W. Brown	93.0R	1-12"					62				62	30	
I. G. Zumwalt	93.2R	1-18"	NO DIVERSION										
		1-36"											
Paul R. Westfall	93.4L	1-10"						56	6		62	75	
Tuttle Land Company	94.3R	1-15"			27	188	530	248	260	7	1260	(5)261	
		1-20"											
W. D. DeJarnett	94.6R	1-8"	NO DIVERSION (6)								(6)	(6)20	
California Lands Inc.	94.8R	1-12"	NO DIVERSION										
A. N. Lewis	95.6L	1-16"					527	452			(7) 979	536	
		1-20"											

*Mileage along river above Sacramento.

(1) Acreage divided as follows: A. F. Sutton, 36; M. P. Montgomery, 30; E. W. Tennant, 27; R. Edman, 17; J. E. Montgomery, 15; and J.Cairo,11.
(2) Acreage divided as follows: Nagle, 20; Locovitch, 15.
(3) Includes 63 acres on adjoining J. Zwald property.
(4) On adjoining lands of Colusa Development Company.
(5) An additional 20 acres served for plant at Mile 94.6R.
(6) See plant at Mile 94.3.
(7) In July 140 acre-feet were delivered to supplement supply from plant at Mile 95.8L.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion: March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Bridget Graham Estate	95.8L	1-16"				110	579	82			(1) 771	965	
I. G. Zumwalt	96.8R	1-15"				214	29			193	436	185	
H. Heitman	97.7R	1-12"				7	32	22	9	14	84	47	
Frank N. Beckley	98.0L	1-10"				7	60	49	95		211	85	
J. L. Erisey	98.3R	1-10"				5	138	66			209	105	
R. A. Sperry & Colusa Development Company	98.6L	1-15"			NO DIVERSION								
D. Boggs	98.8L	1-18"					200				200	(2)300	
Cheney Slough Irrigation Company	99.0R	1-36"				405	202	46	27	27	707	(3)378	
		2-26"											
J. P. Boggs	99.1L	1-10"				35	116	87			238	135	
Terrill and Sartain	99.2L	1-20"			969	1005	1188	1184	114		4460	(4)163	463
Dave George (Bond and Cauzza)	99.8L	1-16"			35	79	78	76			268	130	
R. C. Wohlfrom (Gillenwater)	101.1R	1-20"			159	239	42	8	73		521	138	
Clara C. Packer	102.8R	1-36"					539	348	410		1297	540	
		2-18"											
		2-30"											
Charles W. Welch	103.7R	1-16"			105	102	218	61			486	567	
Compton-Delevan Irrigation Dist(5)	103.8R	2-24"			NO DIVERSION (5)						(5)	(5)	(5)
		1-36"											
C. W. Tuttle	103.9R	1-16"			17	218	312	139	35		721	282	
		1-20"											
Colusa Development Company	104.8L	1-26"			NO DIVERSION								
I. G. Zumwalt	104.8L	1-12"			NO DIVERSION								
Thousand Acre Ranch (H.W.Keller)	106.0R	1-14"				138	149	5			292	160	
California Lands Inc.	110.0R	1-12"			21	116	61	109			307	185	
California Lands Inc.	111.2R	1-6"					22	9			31	27	
--PRINCETON FERRY - MILE 112.0--													
Reclamation District 1004	112.1L	1-50"			NO DIVERSION (6)						(6)	(6)	(6)
		2-30"											
Princeton-Codora-Glenn I.D. (5)	112.4R	3-24"			NO DIVERSION (5)						(5)	(5)	(5)
I. G. Zumwalt	112.6L	1-10"				9					9	(7)115	
Edward L. Steele Est.	115.5L	1-12"				16	17				33	26	
--BUTTE CITY GAGING STATION - MILE 115.8--													
COLUSA TO BUTTE CITY Totals			0	0	1436	3347	5775	3466	1308	351	15683	6354	463
Average cubic feet per second			0	0	23	56	94	56	22	6	32		
Monthly use in per cent of seasonal			0	0	8.9	21.8	36.6	21.8	8.6	2.3			

*Mileage along river above Sacramento.

(1) See plant at Mile 95.6L

(2) Acreage all on adjoining lands of Colusa Development Company (240) and Perkey (60).

(3) Acreages served as follows: Mitchell, 80; Seaver, 238; Middlecamp, 60.

(4) Includes 30 acres on adjoining lands of J. L. Browning.

(5) See plant at Mile 154.8R.

(6) Water was diverted from Lower Butte Creek at Mile 9.3R

(7) An additional 115 acres irrigated by pumping from lake.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
R. H. Gebicke (1)	115.85L	1-14"				107	171	72	39		389	177	
--BUTTE CITY BRIDGE - MILE 115.9--													
Butte City Ranch (2)	115.9R	1-10"				45	38	68			151	27	
Butte City Ranch (2)	116.7R	1-10"				64	58	40			162	44	
California Lands Inc.	117.8R	1-10"					71	18			89	90	
C. T. White	123.7R	1-6"			NO DIVERSION								
S. Taylor	123.8R	1-3½"					1				1	2	
Princeton-Codora-Glenn I.D. (3)	123.9R	3-24"			NO DIVERSION(3)						(3)	(3)	(3)
Provident Irrigation District (3)	124.2R	1-36"			NO DIVERSION(3)						(3)	(3)	(3)
		4-42"											
Calif. Lands Inc.(Shelloe Ranch)(3)	124.4R	1-16"			NO DIVERSION(3)						(3)	(3)	
California Lands Inc.	126.3R	1-12"			NO DIVERSION(3)						(3)	(3)	
F. S. Reager	130.75R	1-6"			NO DIVERSION								
--ORD FERRY - MILE 130.8--													
M. & T.Inc. & Parrott Invest. Co.	141.5L	5-24"				50	657	1808	791		(4) 3306	(4)3954	(4)623
--OLD CHICO LANDING RAILROAD BRIDGE SITE - MILE 142.1--													
Alameda Putney	145.8L	1-6"					10	8			18	20	
Edward Fierro	146.5L	1-6"					6	7	4		17	10	
C. C. Dunning	148.9R	1-10"			17	27	28	24	8	16	120	69	
--GIANELLA BRIDGE - MILE 149.5--													
California Lands Inc.	150.0L	1-10"			35	111	125	32			303	(5)255	
Joseph Gianella	150.0L	1-10"			NO DIVERSION (6)						(6)	(7)25	
Holly Sugar Corporation	151.0R	1-12"			346	664	928	489	31		2458	(8)1048	
		1-16"											
A. Holecek	152.2R	1-6"			3	7	18	20	6		54	45	
Maas Bros.	154.6R	1-5"				3	7	3	2		15	18	
Glenn-Colusa Irr. Dist. (9)	154.8R(9)	1-42"		5013	66000	76070	81403	76879	37230	17801	(10)360396	25444	22644
		1-100"										(11)	(11)
		2-30"											
		2-50"											
		2-66"											
		4-72"											

*Mileage along river above Sacramento.

(1) New installation 1940.
(2) Temporary installation 1940.
(3) See plant at Mile 154.8R.
(4) Acreage divided as follows: M.& T.623 rice & 765 general; Parrot Inv. Co. 3189 general. Additional water received from Butte Creek as follows (Acre-feet): May 4500, June 4500, July 3240, August 2840, September 3090. Total 18170.
(5) An additional 25 acres served on adjoining J. Gianella property.
(6) Pump on Nord Slu or Pine Creek Lagoon which joins Sacramento River at Mile 147.0L. Plant is located 3 miles up slu on right bank or opposite Mile 150.0L, Sacramento River.
(7) Irrigated from plant at Mile 150.0L (California Lands Inc.)
(8) Includes 100 acres on adjoining Billiou property. This property as well as 184 acres of corporation lands has a supplemental well supply.
(9) This is common point of diversion for Glenn-Colusa, Jacinto, Compton-Delevan, Provident, Princeton-Codora-Glenn, Maxwell I.D. and California Lands Inc.
(10) Additional water from Stony Creek,by gravity, as follows (ac.ft.): April 6545, May 2162, total 8707. Includes diversion for users outside district as follows (ac.ft.): Golden State Orchards 151 and I. G. Zumwalt 2588.
(11) Rice figure includes 611 ac. for Zumwalt, also 230 ac. of duck lakes. General figure includes 224 ac. for Golden State Orchards Company.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Jacinto Irrigation District	154.8R	(1)			3144		3917	3550	2410	1577	14598	6320	
Compton-Delevan Irrigation Dist.	154.8R	(1)			2083	2459	2747	2321	764		10374		1337
Provident Irrigation District	154.8R	(1)			11518	7662	8440	8199	2132		(2)37951	331	(3)5278
Princeton-Codora-Glenn Irr. Dist.	154.8R	(1)		1037	6546	7882	9157	8323	4781	1985	39711	2530	1352
Maxwell Irrigation District	154.8R	(1)				1940	1210	654	390	1705	(4) 5899	(4)2740	520
California Lands Inc.(Shelloe Ranch)	154.8R	(1)			123	232	298	192	48		893	70	
Calif.Lands Inc.(Leonard Place)	154.8R	(1)				149		69	48	67	333	138	
Jonathon Garst	161.7L	2-16"				427	243	140	4		814	300	
--CORNING-VINA BRIDGE - MILE 166.5--													
A. F. Landis	166.7R	1-3"		2	5	6	7	7	6	1	34	5	
Mrs. Guy Whitnack	166.8R	1-2"			3	2	2	1	1	1	10	4	
--TEHAMA BRIDGE - MILE 177.5--													
E. B. Noble	184.5R	1-14"			109	107	56	83	48	6	409	98	
Coneland Water Company	187.6L	1-12"			NO DIVERSION								
Wallace Bosworth (5)	188.6L	1-8"						5	12	7	24	37	
--RED BLUFF BRIDGE - MILE 193.45--													
G. E. Sutton	196.2R	1-3"(6)			NO DIVERSION								
J. Keithdriber	196.5L	1-4"			NO DIVERSION								
S. and E. Erickson	196.6L	1-5"			4	25	25	8	11		73	30	
C. Droz	197.0L	1-8"			64	56	114	95	67	30	426	54	
W. H. Freemeyer	197.65L	1-3"			NO DIVERSION								
--RED BLUFF GAGING STATION (IRON CANYON) - MILE 198.6--													
BUTTE CITY TO RED BLUFF													
Totals			0	6052	90000	98095	109737	103115	48833	23196	479028	43885	31754
Average cubic feet per second			0	102	1464	1649	1785	1677	821	377	986		
Monthly use in per cent of seasonal			0	1.3	18.6	20.9	22.7	21.3	10.4	4.8			
C. C. Budd (7)	206.75L	1-10"			NO DIVERSION								
--BEND FERRY BRIDGE - MILE 207--													
Mrs. A. A. Keene	209.0L	1-2½"			NO DIVERSION								
J. F. Nunes	213.0R(8)	1-7"				5	20				25	35	
F. L. Jelly	213.5L	1-3"(9)						2			2	7	
--JELLYS FERRY - MILE 215.6--													

*Mileage along river above Sacramento.

(1) Same plant as that of Glenn-Colusa Irrigation District.
(2) District operates plants on Colusa Trough to supplement diversions from river.
(3) Includes 567 acres of rice outside of district.
(4) General crop figure includes 2040 acres of gun clubs for which diversion was started in September.
(5) Formerly E. Sluiters.
(6) Replaces 6" unit.
(7) Formerly C. W. Griffin.
(8) Plant moved from Mile 215.5R.
(9) Replaces 2" unit.

(8) Plant moved [illegible]
(9) Replaces 2" unit.

TABLE 61 (CONTINUED)

SACRAMENTO RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
J. F. Nunes	216.0R	1-3"	NO DIVERSION										
W. A. Hunaeus	216.4L	1-3"						3	3		6	6	
T. A. Haakonson	217.5L	1-3½"			2	6	37	19	1		65	54	
J. L. Haskins	218.0L	1-5"					43	10			53	52	
Rio Alto Rancho	221.0R	1-10"	NO DIVERSION										
--BALLS FERRY BRIDGE - MILE 224.5--													
--ANDERSON BRIDGE - MILE 232.9--													
L. C. Smith	233.0L	1-6"	NO DIVERSION										
Menzel Estate	240.2L	1-12"			130	398	329	173	195		1225	135	
Anderson-Cottonwood Irr. Dist.(1)	240.5L	1-24"			1120	2352	2409	2220	2490	1002	11593	(2)	
Jack Graf (3)	241.5L	1-8"					32	25	21		78	30	
--REDDING - ALTURAS BRIDGE - MILE 242.0--													
--REDDING - YREKA BRIDGE - MILE 245.9--													
Columbia Construction Company (4)	245.4L	1-16"									(4)	(4)	
		1-18"											
Anderson-Cottonwood Irrigation D.	246.0R	Gravity			10791	19092	19040	18859	18228	16120	(5)102130	(6)9360	
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 246.25--													
John Diestelhorst	246.3R	1-10"			4	14	27	32	168	10	(7) 255	17	
--OLD REDDING - YREKA BRIDGE - MILE 246.4--													
City of Redding	246.7	2-6"	20	44	79	109	124	119	66	59	620	Municipal	
RED BLUFF TO REDDING													
Totals			20	44	12126	21976	22061	21462	21172	17191	116052	9696	-
Average cubic feet per second			0.3	0.7	197	369	359	349	356	280	239		
Monthly use in per cent of seasonal			-	0.1	10.5	18.9	19.0	18.5	18.2	14.8			
TOTAL DIVERSIONS - SACRAMENTO TO REDDING													
Totals			1802	18073	182534	218505	249012	228765	119951	43988	1062630	119730	64391
Average cubic feet per second			29	304	2969	3672	4050	3720	2016	715	2187		
Monthly use in per cent of seasonal			.2	1.7	17.2	20.6	23.4	21.5	11.3	4.1			

*Mileage along river above Sacramento.

(1) Plant installed in 1940 as substitute for flume from main canal on right bank of river.
(2) See diversion at Mile 246.0R.
(3) Formerly Graf and Graf.
(4) Plant newly installed. Diversion for gravel washing purposes only.
(5) Considerable return water from this diversion reaches the Sacramento River as seepage or direct spill in drains and creek channels between Redding and south of Cottonwood.
(6) This is the total acreage served by this diversion and the plant at Mile 240.5L.
(7) The major portion of this diversion is returned directly to the river.

TABLE 62

*COLUSA TROUGH DIVERSIONS - 1940

Water User	**Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion: March to: October Acre-feet:	Acreage Irrigated		
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice	Gun Club
--COLUSA TROUGH GAGING STATION - MILE 0.--														
I. G. Zumwalt	2.2L	1-15"			566	854	905	905	425		3655		(1)338	
		1-20"												
		1-36"												
A. D. J. Land Company (Kindred)	3.0L	(2)1-12"						80			80	200		
Maxwell I. D. Plant 2A	7.0R	1-15"			NO DIVERSION (3)						(3)	(3)	(3)	
		1-26"												
		1-36"												
Maxwell I. D. Plant 3A	(4)7.0R	1-20"			NO DIVERSION (3)						(3)	(3)	(3)	
S. Ashe	7.65R	1-10"			NO DIVERSION									
S. Ashe	8.0L	1-20"			NO DIVERSION									
El Dorado Sportsman Club	9.5R	1-15"							100	160	260			25
M. A. Rourke	10.5L	1-20"			NO DIVERSION									
Provident I. D. (Delevan Pump)	Opp.13.5(5)	1-20"		404	2205	2628	2294	2407	832		(6)10770	(6)	(6)	
--LATERAL HIGHWAY - BUTTE CITY TO WEST SIDE - MILE 20.5--														
Provident I.D.(Willow Cr.Plant)	Opp.20.5(7)	(8)1-24"			107	1839	1971	2027	401	116	(6) 6461	(6)	(6)	
		(8)1-36"												
Henry Jameson Estate	22.0R	(9)1-18"		320	580	680	780	730	310	10	3410		362	
Provident I. D. (Drain #55)	Opp.24.2(10)	Gravity		542	2401	2324	2401	2401	2324	2401	(6)14794	(6)	(6)	
Provident I. D. (Drain #13)	Opp.27.0(11)				NO DIVERSION REPORTED (6)						(6)	(6)	(6)	
Total Acre-feet			0	1266	5859	8325	8351	8550	4392	2687	(12)39430	200	700	25
Average cubic feet per second			0	21	95	140	136	139	74	44	81			
Monthly use in per cent of seasonal			0	3.2	14.6	21.6	21.0	21.4	11.4	6.8				

*Main drain of Reclamation District 2047.

**Mileage along Colusa Trough above Colusa-Williams Highway.

(1) All on adjacent West Coast Life Insurance land.

(2) Unit replaces 7-inch unit and 28-inch box pump.

(3) See Sacramento River diversion at Mile 154.8R.

(4) Plant is on Lateral E (Stone Corral Creek) and is 3/4 mile west of Plant #2A (Mile 7.0R).

(5) Plant is on Hunter Creek at SW Corner Section 36, T 18 N, R 3 W.

(6) See Provident Irrigation District diversion at Mile 154.8R.

(7) Plant is on Willow Creek at SW Corner NE¼, Section 33, T 19 N, R 2 W.

(8) Replace 12" unit formerly used.

(9) One 18" unit removed 1940.

(10) Works are on Drain #55 and are in SW¼ NW¼, Section 86, Glenn Ranch survey.

(11) Works are on Drain #13 and are in SW¼ SW¼, Section 51, Glenn Ranch survey.

(12) A large portion of this diversion was used to supply acreages reported under Sacramento River Diversions (Provident Irrigation District 154.8R).

TABLE 63

*BACK BORROW PIT DIVERSIONS - 1940

Water User	**Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet							Total Diversion: March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 0.2--													
--KNIGHTS LANDING RIDGE CUT JUNCTION - MILE 0.4R--													
River Farms Company	0.03L	1-16"		117	1734	1730	1885	1946	414		7826	1085	1060
River Farms Company	1.45R	1-16"			NO DIVERSION								
E. L. Wallace & W. Crawford	4.35R	1-16"			NO DIVERSION								
		1-20"											
Reclamation District 108	8.8R	1-14"			NO DIVERSION								
Hershey Estate (Johnson and Peterson)	11.15R	1-12"			1173	686	341	80			2280		(1)720
		1-14"											
Hershey Estate	13.75R	1-16"			NO DIVERSION								
C. M. Mumma	14.75R	1-10"			137	147	143	152	28		607	40	102
--COUNTY LINE BRIDGE - MILE 15.25--													
M. T. Emmert (Youngmark)	15.75R	1-15"			412	556	454	442	17		1881		387
Katherine West (McCullough & Hughes)	18.1R	2-15"			599	575	531	574			2279		590
C. R.Suggest & Gregory Estate	20.0R	1-15"					293				293	360	
Gregory Estate(G. W. Knox, Jr.)	21.35R	1-16"			414	694	670	640	225		2643		400
Bean & Brandenberg	22.15R	1-14"			NO DIVERSION								
J. W. Browning Company	22.65L	1-24"			NO DIVERSION								
--HANNUM BRIDGE - MILE 22.8--													
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 23.0--													
H. Balsdon	24.6L	1-20"				65	678	540	226		1509	(2)680	
A. M. Dobrowsky	24.7L	1-8"			NO DIVERSION								
--GRIMES-COLLEGE CITY CAUSEWAY - (SOUTH LINE OF RECLAMATION DISTRICT 2047) - MILE 25.5--													
Fred Schutz(W.L.Morris & Sons)	26.4L	1-16"				145	354	511			1010	(3)590	
		1-20"											
A. Davis Estate	29.1R	1-12"				105	111	94			310	(4)375	
--WALLACE CROSSING - MILE 29.2 - (OLD MERIDIAN-WILLIAMS BRIDGE)--													
Belle Moore	32.6L				PLANT REMOVED								
W. H. O'Hair	36.65R	1-20"			NO DIVERSION								
--COLUSA - WILLIAMS HIGHWAY - MILE 37.0--													
--COLUSA TROUGH GAGING STATION AT "COLUSA-WILLIAMS HIGHWAY"--													
Totals			0	117	4469	4703	5460	4979	910	0	20638	3130	3259
Average cubic feet per second			0	2	73	79	89	81	15	0	42		
Monthly use in per cent of seasonal			0	0.6	21.5	23.3	26.3	23.9	4.4	0			

*Carries return water from Colusa Basin along West Border of Reclamation Districts 108 and 787 and thence to discharge to Sacramento River at Knights Landing or partial diversion via Knights Landing Ridge Cut.

**Mileage along Borrow Pit from outfall gate just above junction of Borrow Pit with Sacramento River at Knights Landing.

(1) Divided as follows: Peterson 242, Johnson 478.

(2) Includes 40 acres each on adjoining Mumma and Atran lands.

(3) Includes acreages on adjoining lands as follows: Jarvis and McAravy 90, Bartnett and A. Scarlett 400.

(4) Includes 200 acres on adjoining Wallace property.

TABLE 64

LOWER BUTTE CREEK AND BUTTE SLOUGH DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet							Total Diversion March to October Acre-feet	Acreage Irrigated		
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice	**Gun Club
Lower Butte Creek														
--SACRAMENTO RIVER JUNCTION - MILE 0--														
Reclamation District 833	1.5L	1-8"	NO DIVERSION											
Reclamation District 833	2.9L	1-36" box				81	463	521			1065	600		
West Butte Farms Company	3.85L	1-8"	NO DIVERSION											
Reclamation District 1004 (1)	3.9R		PLANT DISMANTLED											
Butte Lodge Outing Club	4.0R	1-22"	NO DIVERSION (2)								(2)			(2)900
El Anzar Duck Club	5.35L	1-12"					103	103			206	240		
Reclamation District 1004 (1)	9.3R	Gravity				558	2169	1840	2331	1935	8833	1020		(3)985
Butte Basin Gun Clubs (4)	10. (4)	Gravity							6475	5634	(5)12109			5000
White Mallard Duck Club (6)	10.2R	1-36"			102	65	90				257	130		
Murdock Land Company	14.4R	1-12"					175	115			290	150		
--GRIDLEY ROAD - MILE 15.4--														
Murdock Land Company	19.3R	1-14"			27	156	117	103	90	35	528	115		
--BIGGS - AFTON ROAD - MILE 19.4--														
Glenn Rice Farms	20.4R	1-24"	NO DIVERSION											
--RICHVALE - BUTTE CITY ROAD - MILE 22.5--														
O. W. Baker and Sons, Inc.	23.0R	(7)1-12"			198	1237	1278	898	784		4395		407	

*Approximate mileage from junction with Sacramento River.

**Only diversions which occurred prior to November 1st are given for gun club acreage. In most instances diversions for this purpose extended into November and December.

(1) Reclamation District 1004 diversion points are: Sacramento River 112.1 Left and Butte Creek Mile 3.9 Right and 9.3 Right.

(2) See diversion at Mile 9.3R.

(3) An additional 900 acres served for plant at Mile 4.0 R and 675 acres of the general crop land flooded after harvest.

(4) In addition to gun clubs under other diversions listed, this comprises the group of clubs diverting Butte Creek water by gravity from the main or interconnecting channels (Sanborn Slough, etc.) in the vicinity of Mile 10. Through R. D. 833 canals, most of the clubs in this group receive also drainage and Feather River water diverted for the clubs by Western Canal. These diversions are principally in the fall months. For diversions via Western Canal see table of Feather River Diversions, Mile 59.7R. The area flooded by this group is estimated to be approximately 5000 acres. The clubs included are Wild Goose, Last Chance, Berry and Keller, Tule Goose, Bettens, Greenhead, Field and Tule, North Butte, Henshaw, Sacramento Outing, Anderson, West Butte, and Colusa Shooting.

(5) See Feather River diversions, Mile 59.7R.

(6) Formerly listed among group of gun clubs diverting at Mile 10.

(7) 12" unit added 1940.

TABLE 64 (CONTINUED)

LOWER BUTTE CREEK AND BUTTE SLOUGH DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated		
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice	**Gun Club
Butte Slough														
Butte Slough Irrigation Co.Ltd. (Diversion to Sutter By-Pass)(1)	0.3 West	Gravity									(1)	(2)		
M. Marty	0.3 West	1-12"				7	36	17			60	54		
G. S. and D. C. Smith	1.4 East	1-8"					63	72			135	120		
--MAUSON BRIDGE - MILE 2.1--														
J. E. Smith	3.0 West	1-10"					29	7	5		41	(3)55		
I. E. Nall	3.5 West	1-10"						34	32		66	59		
Ullrey Bros.	3.7 West				PLANT	REMOVED								
P. A. Reische	4.1 West	(4) 1-10"					17	92			109	(5)169		
E. V. Jacobs	4.8 West	1-10"			NO	DIVERSION								
Armstrong, Hensen, Locovitch	5.1 West	1-12"						29			29	(6)50		
W. Nall	6.3 West	1-7"			NO	DIVERSION								
T. J. Hageman	6.8 West	1-5"			NO	DIVERSION								
		3-8"												
--OLD LONG BRIDGE - MILE 7.5 WEST--														
Totals (Lower Butte Creek and Butte Slough)			0	0	327	2104	4540	3831	9717	7604	28123	2762	407	6885
Average cubic feet per second			0	0	5	35	74	62	163	124	58			
Monthly return in per cent of seasonal			0	0	1.1	7.5	16.0	13.4	35.2	26.8				

*Approximate mileage from junction with Sacramento River.

**Only diversions which occurred prior to November 1st are given for gun club acreage. In most instances diversions for this purpose extended into November and December.

(1) Butte Slough Irrigation Company maintains a dam on Butte Slough just above its junction with Sacramento River and thereby diverts water via Butte Slough to East and West Borrow Pits of Sutter By-Pass near "Long Bridge". The total water so diverted is shown in Table 89. Rediversions from West Borrow Pit of Sutter By-Pass are made. See Sutter By-Pass Diversions, Table 65.

(2) See acreages under rediversions - West Borrow Pit Sutter By-Pass. A considerable additional but indefinite acreage was served by sub-irrigation and direct diversions from flow diverted to East Borrow Pit of Sutter By-Pass which is joined by Feather River return flow entering via Wadsworth Canal, Table 90. See East Borrow Pit Sutter By-Pass Diversions, Table 65.

(3) On adjoining lands as follows: Miller 27 and Straub 28.

(4) Replaces 12" unit which was lost when levee broke.

(5) Includes acreages on adjoining lands as follows: C. P. Reische 63, Oramemen 3, Feith 3, and Ullrey 22, who formerly diverted at Mile 3.7 West.

(6) All on Hensen lands.

TABLE 65

BY-PASS AND DRAINAGE CHANNEL DIVERSIONS - 1940

Water User	Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated		
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice	Gun Club
West Borrow Pit of Sutter By-Pass														
	(1)													
--WEST BORROW PIT GAGING STATION - MILE 0.4--														
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 2.5--														
C. Fred Holmes	7.1*	1-10"						74			74	200		
--KNIGHTS LANDING - MARYSVILLE CAUSEWAY - MILE 12.7--														
--SOUTH LEVEE TISDALE BY-PASS - MILE 18.9--														
--RECLAMATION DISTRICT 1660 GRAVITY RETURN - MILE 19.3--														
State Recl. Board Tr. #29	26.3*	30" box			NO DIVERSION									
State Recl. Board Tr. #27	26.8*	1-6"			NO DIVERSION									
D. C. Smith, E. I. McGrath and S. A. McKeehan (2)					NO DIVERSION	(2)					(2)	(2)		
Butte Slu Irr. Co. Ltd. (3)	28.4	Gravity			480	2652	3530	4529	1297		12488	4846		
Fred and George Tarke	28.6	2-10"			NO DIVERSION									
Frye Bros.	29.0	1-7"			NO DIVERSION									
--NEW COLUSA - MARYSVILLE HIGHWAY - MILE 29.1--														
--NORTHERN ELECTRIC RAILROAD CROSSING - MILE 29.15--														
East Borrow Pit of Sutter By-Pass														
	(4)													
R. E. Hughes	0.4S*	1-14"				1	202	368	144	7	722	260		
R. E. Hughes	0.1S*	1-16"			NO DIVERSION									
--GAGING STATION "WILLOW SLOUGH AT CHANDLER" - MILE 0--														
R. E. Hughes	0.5N*	(5)1-16"					257	66	8		331	408		
--RECLAMATION BOARD DRAINAGE PLANT #1 - MILE 1.4N--														
E. H. Christensen	(6)1.4N(2.7)	(7)1-12"			111	289	137	190	223		950	(8)	(8)	
A. W. Kimerer	(6)1.4N(3.3)	1-14"			NO DIVERSION									
E. H. Christensen and Son	(6)1.4N(3.3)	1-16"			283	800	1343	353	861	503	4143	(9)105	(9)347	
Nelson Bros.	(6)1.4N(3.3)	1-12"				6	78				84	60		
R. E. Hughes	1.5N*	1-14"			49	518	433	428	235		1663	237	300	
		(10)1-16"												

(1) Mileage is given northerly from drainage plant of Reclamation District 1500. Mile 9.15 West Borrow Pit is opposite Chandler. Asterisk indicates area irrigated is within By-Pass area.
(2) See diversion at Mile 28.4.
(3) Diversion possible because of diversion from Butte Slough (Table 89).
(4) Mileage is given northerly or southerly from Chandler. Chandler is opposite Mile 9.15 West Borrow Pit. Asterisk indicates area irrigated is within By-Pass area.
(5) Replaces 14" unit.
(6) Plant is on drain canal which enters By-Pass at this point. Figure in () indicates distance along drain from By-Pass.
(7) Plant reinstalled. Brought for East Borrow Pit 2.9N*.
(8) See plant (3.3).
(9) This is the total acreage served by this plant and the one at (2.7).
(10) Unit temporarily installed.

TABLE 65 (CONTINUED)

BY-PASS AND DRAINAGE CHANNEL DIVERSIONS - 1940

Water User	Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet: Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Total Diversion: March to October Acre-feet	Acreage Irrigated: General	Rice	Gun Club
East Borrow Pit of Sutter By-Pass (Continued)														
	(1)													
Arnold Christensen	2.2N				PLANT DISMANTLED									
State Reclamation Board	2.3N*	1-10"									(2)	(2)		
State Reclamation Board	2.65N*	1-10"					34	35			(3) 69	(3) 130		
R. E. Hughes	2.9N*	(4) 1-14"			NO DIVERSION									
R. E. Hughes	3.85N*	(5) 1-14"					355	315			670	213		
R. E. Hughes	4.0N*	1-14"					125				125	150		
--KNIGHTS LANDING - MARYSVILLE CAUSEWAY - MILE 4.4N--														
R. E. Hughes	4.5N*	1-14"				155		122			277	270		
State Reclamation Board	6.6N*				PLANT DISMANTLED									
--DRAINAGE PLANT #2 - MILE 10.0N--														
--EAST LEVEE OF WADSWORTH CANAL - MILE 16.0N--														
--DRAINAGE PLANT #3 - MILE 16.5N--														
Spurgeon Gun Club (6)	10.0N	1-6"					3	351	188		542			300
		1-12"												
State Recl. Board Tr. #33	17.0N*	1-30"			NO DIVERSION									
State Recl. Board Tr. #31	17.8N*	1-12"			NO DIVERSION									
State Recl. Board Tr. #26 & 30	18.5N*	1-12"			NO DIVERSION									
R. H. Morehead	18.75N	1-10"			NO DIVERSION (7)							(7)		
Meyer, Platter, Morehead, DeWitt Bros, Epperson and Middleton	19.1N	1-8"				412	670	395			1477	(8) 587		
		1-14"												
State Reclamation Board	19.2N*	1-10"			NO DIVERSION									
State Reclamation Board	19.97N*	1-3"			NO DIVERSION									
--NEW COLUSA - MARYSVILLE HIGHWAY - MILE 19.98N--														
--NORTHERN ELECTRIC RAILROAD CROSSING - MILE 20.0N--														
Sacramento Slough														
	(9)													
C. Fred Holmes	1.4R	1-24"					66	96			162	325		

(1) Mileage is given northerly or southerly from Chandler. Chandler is opposite Mile 9.15 West Borrow Pit. Asterisk indicates area irrigated is within By-Pass area.
(2) See plant at 2.65N*.
(3) This is the combined acreage and diversions for this point and 2.2N*. Pump was moved back and forth.
(4) 12" unit moved to plant 1.4N (2.7).
(5) One 14" and 24" China pump removed 1940.
(6) New installation 1940.
(7) See diversion at Mile 19.1N.
(8) Divided as follows: Meyer 90, Morehead 100, Meyer and DeWitt Bros. 146, Epperson 149, Middleton Estate 102.
(9) Mileage is given easterly from drainage plant of Reclamation District 1500 which is at head of slough.

TABLE 65 (CONTINUED)

BY-PASS AND DRAINAGE CHANNEL DIVERSIONS - 1940

Water User	Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated		
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice	Gun Club
Knights Landing Ridge Cut (1)														
	(2)													
--RECLAMATION DISTRICT 730 DRAIN PLANT NO. 2 - MILE 3.8--														
Ralph W. Pollock	4.55L	1-12"			30	122	62	59	5		278	125		
Hershey Estate (Darnielle)	4.7L	1-15"				228	389	224	41	11	893	309		
Sieber Bros.	4.7R	1-6"				1	17	4	7		29	18		
--WEST LEVEE YOLO BY-PASS - MILE 6.3--														
Frank Fisher, Henry Rich and E. L. Wallace	6.3 (3)	Gravity			NO DIVERSION									
Yolo By-Pass (East Borrow Pit or Tule Canal) (4)														
	(5)													
Robert Swanston (6)	1.8S	1-10"					170	75			245	200		
Robert Swanston	0.7S	(7)1-14"					238	216			454	(8) 270		
Robert Swanston	0.3S				PLANT REMOVED									
State of California (Harbinson)	0.02S	1-14"			NO DIVERSION									
--NORTH LEVEE SACRAMENTO BY-PASS - MILE 0.0--														
Robert Swanston	1.8N*	1-20"			NO DIVERSION									
California Packing Corporation	2.4N	1-20"			5	4	587	63	534		1193	(9)775		
California Packing Corporation	3.4N	1-8"					34		36		70	171		
Smith and Roberts	5.9N	(10)1-14"			7	94	79	54	23		257	123		
--SACRAMENTO-WOODLAND HIGHWAY - MILE 6.18--														
--SACRAMENTO-WOODLAND RAILROAD CROSSING - MILE 6.2--														

(1) Flow is principally Colusa Basin drainage diverted to the Ridge Cut by checking at the Knights Landing outfall gates on the Back Borrow Pit of Reclamation District 787. See Table 100.
(2) Mileage is given southerly from head in Back Borrow Pit near Knights Landing.
(3) See Yolo By-Pass diversions Mile 10.0N and 10.1N.
(4) Diversions from East Borrow Pit of Yolo By-Pass are primarily from water diverted through Knights Landing Ridge Cut (Table 100).
(5) Mileage is given northerly or southerly from north levee of Sacramento By-Pass. Asterisk indicates land irrigated is in By-Pass area.
(6) New installation 1940. Pump same as one used at Mile .7S in 1939.
(7) 10" unit removed and same 14" unit used during 1940 at Mile 0.7S, 1.1S and 1.4S.
(8) A total of 530 acres were planted of which 360 were irrigated - 270 from borrow pit and 90 from well.
(9) An additional 200 acres irrigated from interior drain.
(10) Replaces 10" unit.

BY-PASS AND DRAINAGE CHANNEL DIVERSIONS - 1940

Water User	Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated		
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice	Gun Club
Yolo By-Pass (East Borrow Pit or Tule Canal) (1)														
	(2)													
Julius Hauser	7.0N*	1-14"					324				324	240		
--RECLAMATION DISTRICT 1600 DRAINAGE PLANT - MILE 10.0--														
Frank Fisher and Henry Rich	10.0N(3)	1-18"			NO DIVERSION									
Frank Fisher and Henry Rich	10.1N*	Gravity			NO DIVERSION									
E. L. Wallace (4)	10.1N*	Gravity												
--FREMONT WEIR (EAST END) - MILE 12.3--							92				92	270		
Back Borrow Pit Reclamation District 1000														
	(5)				NO DIVERSION									
Totals - By-Pass and Drainage Channel Diversions														
West Borrow Pit of Sutter By-Pass			0	0	480	2652	3530	5083	1297	0	13042	5046	0	0
East Borrow Pit of Sutter By-Pass			0	0	443	2181	3634	2275	1822	698	11053	2420	647	300
Sacramento Slough			0	0	0	0	66	96	0	0	162	325	0	0
Knights Landing Ridge Cut			0	0	30	351	468	287	53	11	1200	452	0	0
Yolo By-Pass (East Borrow Pit or Tule Canal)			0	0	12	98	1524	408	593	0	2635	2049	0	0
Back Borrow Pit Reclamation District 1000			0	0	0	0	0	0	0	0	0	0	0	0
Totals			0	0	965	5282	9222	8149	3765	709	28092	10292	647	300
Average cubic feet per second			0	0	16	89	150	133	63	12				
Monthly use in per cent of seasonal			0	0	3.5	19.2	32.4	28.7	13.6	2.6	58			

(1) Diversions from East Borrow Pit of Yolo By-Pass are primarily from water diverted through Knights Landing Ridge Cut (Table 100).
(2) Mileage is given northerly or southerly from north levee of Sacramento By-Pass. Asterisk indicates land irrigated is in By-Pass area.
(3) Area usually served is within District 1600 and water is backed up through drainage plant.
(4) Area irrigated is on C. A. Hershey et al. lands.
(5) Mileage is given easterly from Sacramento River.

TABLE 66

FEATHER RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Sutter Basin Corporation	0.6R	1-16"			NO DIVERSION								
Henry Rutz (1)	1.55L	1-8"				33	10	47	13		103	64	
Sutter Basin Corporation	2.60R	1-20"					1000	1404			2404	1748	
		1-26"											
California Lands Inc.	6.44L				PLANT DISMANTLED								
M. Scheiber	7.7L	1-10"			44	70	184	202	208	8	716	(2)200	
--NICOLAUS GAGING STATION - MILE 9.3--													
--NICOLAUS BRIDGE - MILE 9.4--													
Bercut Richards Co.	9.75R	1-20"				44	295	187	109		635	160	
Garden Highway Mutual Water Co.	13.1R	1-20"			111	635	906	521	126	83	2382	929	
		1-24"											
Feather River Water Co.	16.35R	1-14"				169	381	216			766	185	
Plumas Mutual Water Co.	17.5L	1-22"		62	138	1243	1240	614	226	110	3633	1244	
G. C. Shannon	18.75R	1-6"			5	73	98	57		7	240	88	
Oswald Water District	21.4R	1-16"			296	630	914	410	291		2541	(3)618	
Alicia Mutual Water Co.	24.0L	(4)1-20"			649	974	1464	1176	568		4831	704	330
Cunningham Bros.	25.2R	1-10"					55				55	50	
Levee District #1	26.8R	Gravity			NO DIVERSION								
R. Saturi	27.0L				PLANT REMOVED								
--MOUTH OF YUBA RIVER - MILE 27.3R--													
--YUBA CITY - MARYSVILLE BRIDGE - MILE 28.0--													
J. L. Sullivan Jr.	33.9R	1-10"	93		42	202	159	52		21	569	185	
Sutter Butte Canal Co. (Sunset Plant)(5)	38.1R	1-26"			NO DIVERSION (5)						(5)	(5)	(5)
		2-42"											
J.L.Sullivan Jr. & C.J.Mathew	(6)43.7L(04)	1-18"			67	226	244	255	127	26	945	355	
Thomas Mathew	(6)43.7L(07)	1-5"				19	24	4	2		49	23	
Moznett & Wetmore Sub. #1	(6)43.7L(2)	1-10"		8	58	188	164	90	7		515	178	
Manual A. Barba (Borges)	(6)43.7L(23)	1-8"		18	40	63	40	53	55		269	80	
A. P. Barba	47.9L	1-12"			NO DIVERSION								

*Mileage along river above mouth.

(1) Formerly Punter and Rutz.

(2) Includes 40 acres on adjoining Garwood lands.

(3) This acreage received some additional water from wells.

(4) New unit installed to replace 30" and 26" units.

(5) See Sutter Butte Canal Company's diversion at Mile 58.1 Right.

(6) Plant diverts Feather River water backed into Honcut Slough. Slough is tributary to Feather River at Mile 43.7Left. Mileage of plant above mouth of Honcut Slough is indicated in (). All plants on left bank of slough.

TABLE 66 (CONTINUED)

FEATHER RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion: March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
E. F. Biggs	48.3L	1-10"					15	121			136	362	
Edward Dunning	49.0L	1-8"				30	151	11			192	55	
Clyne Ranch (Penecaldo)	51.0R	1-6"				19	47	6			72	(1)31	
C. E. Porter (Bettencourt)	51.1L	1-7"			9	32	59	47	31	15	193	53	
Edward Steadman	51.4R	1-10"				27	95	56			178	(2)120	
California Lands Incorporated	51.6R				PLANT DISMANTLED								
Federal Land Bank (3)	52.1L	1-10"				70		51			121	100	
California Lands Incorporated	52.5L	1-6"				5	11	8			24	42	
F. L. Morris	52.7L	1-8"				38	38		35		111	70	
Frank Dutra	52.9R	1-6"			NO DIVERSION								
Ruby Chambers	53.1R	1-6"				7	46	8			61	38	
Budh Singh Banes	54.7R	1-8"					84	10	9		103	50	
Hearst Estate	55.1L	1-14"	95			252	320	118	27		812	283	
L. A. Kister Estate	55.5L				NO AGRICULTURAL DIVERSION (4)						(4)	(4)	
Mrs. Alvin Kister	57.0L	1-8"				48	47	18	31		144	30	
Henry Hazelbusch	57.9R	1-10"			10	60	52	17			139	70	
Sutter Butte Canal Company	58.1R(5)	Gravity		1528	51993	55237	58315	52461	37887	20197	(6)277618	20588	5575
Richvale Irrigation District	58.1R(5)	Gravity		555	18890	20069	21188	19061	13765	7338	(7)100866	692	8923
Western Canal Company	59.7R	Gravity		36	12056	15039	17691	16173	5665	5891	(8)72551	722	8698
--OROVILLE BRIDGE - MILE 65--													
--U.S.G.S. GAGING STATION - MILE 70 ±													
Totals			188	2207	84408	95502	105337	93454	59182	33695	473974	30117	23526
Average cubic feet per second			3	37	1373	1605	1713	1520	995	548	975		
Monthly use in per cent of seasonal			-	0.5	17.6	20.6	22.0	19.5	12.8	7.0			

*Mileage along river above mouth.

(1) An additional 15 acres served for Edward Steadman - Mile 51.4R.

(2) Includes 15 acres served by plant at Mile 51.0R.

(3) Formerly W. E. Blower.

(4) Any diversion at this point was for dredge flotation.

(5) This is a common point of diversion for Sutter Butte Canal Company and Richvale Irrigation District.

(6) An additional 3710 acre-feet diverted in November.

(7) An additional 1348 acre-feet diverted in November.

(8) Diversions in October and 6526 acre-feet diverted in November were for gun club purposes in Butte Basin. See Lower Butte Creek diversions. (Table 64.)

TABLE 67

YUBA RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
--GAGING STATION "YUBA RIVER AT MARYSVILLE" (SEVENTH STREET BRIDGE) - MILE 0.9--													
Davis Bros.	1.6L	1-12"					35	43	23		101	40	
Charles Shinkle (Harrington)	1.8R	1-5"					19	9	1		29	10	
Marysville River Farms Co.(1)	3.0L	1-10"			115	100	150	163	73	38	639	(2)295	
Yuba River Farms Co.	3.4R	1-6"			NO DIVERSION								
E. O. Rubke	4.1L	1-8"				50	25	32	30		137	(3)65	
Earl Fruit Co. and Dinsmore	4.75L	1-10"			53	122		78			253	86	
Dantoni Orchards Co.(Earl Fruit Co.)	5.3L	1-8"			39	70		59			168	50	
Marysville River Farms Co.	5.9L				PLANT DISMANTLED								
Marysville River Farms Co.	6.35L				PLANT DISMANTLED								
--DAGUERRE POINT DAM - MILE 11.0--													
Hallwood Irrigation Co.	(4) 11.0R	Gravity		966	5986	9934	10823	7407	6908	4079	(5) 46103	4054	605
Cordua Irrigation District	(4)11.0R	Gravity		360	3184	3838	4138	4007	3745	3266	22538	(6)2620	(6)665
Yuba Consolidated Gold Field Co.	14.5L	Gravity			NO AGRICULTURAL DIVERSION								
--SMARTVILLE GAGING STATION - MILE 20--													
Totals			0	1326	9377	14114	15190	11798	10780	7383	69968	7220	1270
Average cubic feet per second			0	22	152	237	247	192	181	120	144		
Monthly use in per cent of seasonal			0	1.9	13.2	20.6	21.5	16.7	15.7	10.4			

*Approximate mileage along river above highway crossing at Marysville.

(1) Formerly listed as Davis Bros.
(2) Some additional water received from wells.
(3) Includes 45 acres on adjoining Hendricks land.
(4) Hallwood Irrigation Company and Cordua Irrigation District have a common point of diversion and common canal for about one-half mile.
(5) It is estimated that about 25 per cent of this diversion is returned to the river through direct spill.
(6) Includes 60 acres of rice and 105 acres of general crops outside of district.

TABLE 68

AMERICAN RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
--GARDEN HIGHWAY BRIDGE - MILE 0.2--													
--AUBURN BOULEVARD BRIDGE (16th STREET) - MILE 1.9--													
--SACRAMENTO - NORTHERN RAILROAD BRIDGE - MILE 2.0--													
--WESTERN PACIFIC RAILROAD BRIDGE - MILE 2.1--													
North Sacramento Lands Co.	2.4R	1-6"						3			3	(1)	
North Sacramento Lands Co.	2.55R	1-5"	NO DIVERSION										
North Sacramento Lands Co.	2.65R	1-7"					6				6	(2)36	
G. A. Meister	3.1L	1-10"	NO DIVERSION										
--SOUTHERN PACIFIC RAILROAD BRIDGE - MILE 3.5--													
G. A. Meister	3.7L	1-4"		3	3						6	6	
		1-6"											
G. A. Meister	4.1L	1-10"	NO DIVERSION										
C. Swanston & Sons (3)	4.2R	1-10"					33	5	19	10	67	(4)173	
C. Swanston & Sons (3)	5.3R	1-10"	33	103	129	64	28				357	(5)	
C. Swanston & Sons (3)	5.5R	1-6"					18	1	10	15	44	(5)	
W. S. Kendall Estate	5.7L	(6) 1-10"					87	52	36		175	110	
--GAGING STATION - "AMERICAN RIVER AT SACRAMENTO" - MILE 6.1--													
S. H. Cowell	7.1L	1-7"	NO DIVERSION										
E. Clemens Horst Co.	7.5R	1-8"	6	74	63	10					153	104	
Haggin Hop Farm(John I.Haas)(7)	7.8R	1-5"		15	23	13					51	44	
Hagginbottom Land Co.	8.05R(8)	1-10"	NO DIVERSION										
J. H. Kerby	9.0L	1-6"		37	57	24					118	43	
Hagginbottom Land Co.	9.2R	1-12"	NO DIVERSION										
Collins Ranch (9)	9.2L	1-8"	NO DIVERSION										

* Mileage along river above mouth.

(1) See plant at Mile 2.65R.

(2) This is the total acreage served by this plant and the one at Mile 2.4R.

(3) Installed 1939 but not previously reported.

(4) This is the total acreage served by this plant and the ones at Mile 5.3 and 5.5R.

(5) See plant at Mile 4.2R.

(6) New unit; replaces old unit of same size.

(7) Formerly Hagginbottom Land Company.

(8) Mileage corrected from 7.95R.

(9) Formerly W. Wright.

TABLE 68 (CONTINUED)

AMERICAN RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Mrs. C. E. Coleman (1)	9.35L	1-5"				17	21				38	(2)50	
Mrs. C. E. Coleman (1)	9.5L	1-5"				18	31				49	(3)	
Mrs. C. E. Coleman (1)	9.55L	1-5"				5	10	6	5		26	6	
Henry Cowell	9.6L	1-6"			NO DIVERSION								
Frank E. Krause	10.2R	1-5"				14	49				63	35	
Guy H. Roddan	10.3L	1-10"	3	4	9	9	7	7	4	3	46	6	
Gold Nugget Orchard Co.	10.4R	1-5"				31	28				59	17	
Hagginbottom Land Co.	10.5R	1-6"			NO DIVERSION								
Mucke Sand and Gravel Co.	11.2L	1-6"	1	2	5	6	2	6	3	1	26	20	
J. T. Gore Estate	11.5L	1-6"			NO DIVERSION								
William A. Meyer (Nakatomi)	11.7L	1-4"				9	33	16			58	27	
Harry Naketomi	11.7L	1-5"			3	5	57	20			85	32	
H. T. Danielson	13.1R	1-5"				9	6	2	3		20	10	
P. Osterli	13.2R	1-6"				40	49	29			118	46	
Mary Deterding	13.9R	1-6"				101	226	7			334	77	
Mary Deterding	14.7R	1-4"			NO DIVERSION								
Mary Deterding	15.1R	1-6"				13	23				36	15	
Carmichael Irrigation District	16.0R	1-6"	40	333	429	703	827	773	578	426	(4) 4109	(5)	
		2-12"											
William H. Devlin	17.1R	1-6"				4		1			5	4	
--GAGING STATION - AMERICAN RIVER AT FAIROAKS - MILE 19.2--													
Totals			44	339	488	1216	1785	1038	686	456	6052	861	0
Average cubic feet per second			1	6	8	20	29	17	12	7	12	(6)	
Monthly use in per cent of seasonal			0.7	5.6	8.0	20.1	29.5	17.2	11.3	7.6			

*Mileage along river above mouth.

(1) Formerly C. E. Wells.

(2) This is the total acreage served by this plant and the one at Mile 9.5L.

(3) See plant at Mile 9.35L.

(4) In addition approximately 250 acre-feet per month were received from Fairoaks Water Company during January, February, March, October, November and December.

(5) 2200 acres classed as suburban lands. No details of irrigation available.

(6) Note that approximately 2200 acres classed as suburban lands are not included

TABLE 69

DELTA UPLANDS DIVERSIONS FROM OLD SAN JOAQUIN RIVER - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
East Contra Costa I.D.	(1)36.5L	1-24"		111	3745	4153	5837	3084	1872	856	(2)19658	12865	
		2-18"											
		2-30"											
Byron Bethany I.D.	(3)40.9L	1-26"			1880	2170	3160	2330	1760	890	12190	5696	
		1-30"											
Federal Land Bank	(4)44.6L	1-7"			NO DIVERSION								
E. H. Stevenson Estate	45.3L	1-12"			NO DIVERSION								
H. Lindeman	47.2L	1-12"				84	72	24	127	25	332	190	
Gus Lindeman	47.2L	1-10"			NO DIVERSION								
West Side I. D.	(5)47.65L	7-15"		904	2714	3055	3325	3058	1391	772	15219	6777	
Vance Brown (6)	48.7L	1-8"			4	16	11	11	8	3	53	61	
Naglee Burke I. D.	50.4L	1-16"			885	1114	1309	1318	781	659	6066	(7)2568	
		1-18"											
Freemont Irrigation Assoc.	50.9L	1-14"			246	295	258	347	171	101	1418	(8)600	
Joe Freitas	51.0L	1-8"			9	9	9		4		31	35	
Attilio Casserini	51.2L	1-8"			8		8	8			24	40	
Excelsior Ranch #2	52.4L	1-10"			36	47	102	37	34		256	177	
--TOM PAINE SLOUGH - MILE 54.3--													
Totals			0	1015	9527	10943	14091	10217	6148	3306	55247	29009	0
Average cubic feet per second			0	17	155	184	229	166	103	54	114		
Monthly use in per cent of seasonal			0	1.9	17.1	20.3	25.2	18.3	11.3	5.9			

*Distance along river from its mouth 4½ miles below Antioch. Mileage as established by War Department Survey of 1913-15.

(1) To junction of Old River and Indian Slough. Pumping plant is located two and one-half miles west along Indian Slough.
(2) An additional 4000 acre-feet pumped from wells and interior drains.
(3) To junction of Old River and Italian Slough. Pumping plant is located 2 3/4 miles southwest along Italian Slough and extension cut.
(4) Plant is on cut which joins river at Mile 44.6 Left.
(5) To junction of Old River with Intake Cut. Pumping plant is located one mile south along Intake Cut.
(6) Formerly Noy Welty.
(7) An additional 7 acres served for Freemont Irrigation Association - Mile 50.9L.
(8) Includes 7 acres served by Naglee Burke Irrigation District - Mile 50.4L.

TABLE 70

DELTA UPLANDS DIVERSIONS FROM TOM PAINS SLOUGH - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion: March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Stimson Estate Company	0.7S	2-18"			147	251	490		95	95	1078	(1)1225	
Stimson Estate	1.2S	1-18"					30	37	101	8	176	(2)	
Holly Sugar Corporation	(3)2.1S	1-10" box			31	30	44				(4) 105	(5)153	
		1-12"											
Tracy Clover I. D.	(3)2.1S	1-16"			NO DIVERSION								
Pescadero R.D.#2058 Plant #1	2.9S	1-12"		18	129	75	171	117	38	65	613	(6)2629	
Pescadero R.D. #2058 Plant #3	6.3S	1-24"		93	971	1209	1078	1160	733	570	5814	(7)	
Pescadero R.D. #2058 Plant #5	8.3S	1-12"		12	163	266	228	188	161	71	1098	(7)	
Pescadero R.D. #2058 Plant #5A	9.0S	1-12"		36	68	143	88	110	5	64	514	(7)	
--SOUTHERN PACIFIC RAILROAD CROSSING - MILE 9.1S--													
--LINCOLN HIGHWAY - MILE 9.9S--													
Totals			0	159	1509	1974	2129	1612	1133	873	9389	4007	0
Average cubic feet per second			0	3	24	33	35	26	19	14	19		
Monthly use in per cent of seasonal			0	1.7	16.1	21.0	22.6	17.2	12.1	9.3			

*Distance along Tom Paine Slough from its mouth which is at Mile 54.3 on Old San Joaquin River (War Department Survey of 1913-15).

(1) This is the total acreage served by this plant and the one at Mile 1.2S and includes 325 acres of "outside" lands and 100 acres partially served by wash water from Holly Sugar Company, Mile 2.1S, which was available after August 1.

(2) See plant at Mile 0.7S.

(3) To junction of Tom Paine Slough and dredger cut. Pumping plant is located 1½ miles south along dredger cut.

(4) Diversion after July 19 used in sugar factory for washing and cooling.

(5) Area served by wells after July 19.

(6) This is the total uplands area (South of Tom Paine Slough) irrigated from all Pescadero Reclamation District plants on Tom Paine Slough.

(7) See plant at Mile 2.9S.

TOTAL 71

DELTA UPLANDS DIVERSIONS FROM SAN JOAQUIN RIVER - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
--GARWOOD BRIDGE - MILE 45.3--													
Katten and Morengo Ranch	45.45R	1-8"			64	78	73	63	4		282	90	
A. Jury	45.5R	1-6"			8	7	7	12	5		39	25	
C. R. Van Buskirk	45.6R	1-5"			3	68	38	59	29		197	62	
		1-8"											
Mrs. John D. McDougall (1)	46.3R	(2)2-6"			33	143	249	84	8		517	180	
Ivy Rainey	46.65R	1-6"					7	6			13	12	
Wilhoit and Hammill	46.85R	1-10"			77	50	20	22	83		252	120	
L. F. Grimsley	47.2R	1-6"			6	7	11	10	6		40	44	
Wolfinger Bros.	47.3R	1-10"				25	30	30	25		110	40	
Alma A. Haack	48.0R	1-12"		1	30	85	89	113	79	13	410	190	
H. G. Learned (Lee Young)	48.3R	1-4"			5	6	7	10			28	9	
H. G. Learned (I. Yoshido)	48.5R	1-3½"		1	3	5	8	11	3	3	34	16	
Joe Calcagno	48.5R	1-6"			1	4	28	24	29	19	(3) 105	95	
F. Piccardo, J. Vigliani and J. Calcagno	(4)48.55R	1-6"	3	4	11	19	27	17	18	15	114	(5)33	
G. B. Figari	48.6R	1-5"				10	25	20			55	50	
M. O. Couper	49.0R	1-10"box			NO DIVERSION								
Mettler, Cross and Drury (S. B. Chapman)	49.5R	1-14"			35	31	25	25	9	27	152	40	
A. A. Rodgers	50.1R	1-10"			34	36	44	38	39	31	222	45	
--BRANDT BRIDGE - MILE 50.2--													
Frank Reichmuth (N. Lagler)	50.4R	1-8"			33	11	45	50		1	140	37	
Emil Brandt (6)	(7) 50.6R	(7) 1-8"			25	23	28	26	19	16	137	60	
C. E. Brandt (6)	50.8R	1-6"								11	11	(8)10	
C. E. Brandt (9)	51.8R	1-12"								13	13	(10)	
California Lands Inc.	(11)52.2R	1-12"			NO DIVERSION								
A. Geraldi (12)	(13)52.5R	1-5"		1		2	2	5	1		11	18	
F. C. Roberts (9)	52.65R	1-6"					1	4			5	9	
F. C. Roberts (14)	52.8R	1-8"			2	6	7	15			30	70	

*Distance along San Joaquin River from its mouth four and one-half miles below Antioch. (Mileage as established by War Department Survey of 1913-15).

(1) Formerly Paul Weston.
(2) Six-inch unit added to plant.
(3) Additional water received from plant at Mile 48.55R for use on 8 acres.
(4) Mileage formerly reported as 48.5R.
(5) See plant at Mile 48.5R.
(6) Formerly Brandt Bros.
(7) Location of plant changed and 6" unit replaced.
(8) This is the total acreage served by this plant and the one at Mile 51.8R.
(9) New installation 1940.
(10) See plant at Mile 50.8R.
(11) Mileage formerly given as 52.4R.
(12) Formerly Julia Battilana.
(13) Mileage formerly given as 52.9R.
(14) Plant installed in 1934 but not previously reported.

TABLE 71 (CONTINUED)

DELTA UPLANDS DIVERSIONS FROM SAN JOAQUIN RIVER - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
California Lands Inc.	53.2R	1-12"			NO DIVERSION								
Arthur Green	53.4R	1-8"		3	9	18	10	13	5	7	65	25	
M. Dos Reis	53.7R	1-12"				43	148	137	23		351	310	
R. E. Albertson	54.9R	1-10"			NO DIVERSION								
--JUNCTION WITH MIDDLE RIVER - MILE 56.2L--													
Oakwood Stock Farm	57.0R	1-14"			281	162	309	227	211		1190	(1)203	
James Tobin	57.15R	1-7"			NO DIVERSION								
A. J. Thompson (2)	57.3R	1-3"			NO DIVERSION								
A. J. Thompson	57.3R	1-5"			NO DIVERSION								
A. Calori	57.45R	1-3"			NO DIVERSION								
G. Gardella Company	57.5R	1-4"		9	11	12	12	7	7	2	60	12	
V. Sanguenetti	58.4R	1-2½"			1	1	2	1			5	4	
G. B. Figari	58.6R	1-3"			1	2	1	1			5	4	
R. Mauro	58.7R	1-4"			NO DIVERSION								
--MOSSDALE BRIDGE - MILE 58.9 - RECORDING GAGE--													
C. C. Abersold	59.25R	1-6"	1	9	12	28	22	24	11	8	115	50	
H. A. Neistrath	59.3R	1-14"			103	135	117	137	85		577	140	
H. A. Neistrath	(3)60.1R	1-6"			8	26	24	16	18		92	52	
--PARADISE DAM - (HEAD OF PARADISE CUT) - MILE 62.2L--													
Banta Carbona I. D.	67.5L	1-36"		4590	5939	5655	10741	6258	2396	1760	37339	14932	
		2-20"										(4)	
		3-24"											
Reclamation District #2075	71.0R	1-16"		20	239	313	614	378	140	6	1710	1020	
Mortensen, Borges & Whitman	73.2R	1-12"					34	135	47		216	360	
J. Lawrence	75.0R	1-4"			NO DIVERSION								
Henry Gard	75.1R	1-6"			NO DIVERSION								
J. W. Cannon	75.2R	1-4"			NO DIVERSION								
S. G. Paxton	75.25R	1-5"			NO DIVERSION								
R. R. Swank	75.35R	1-4"			NO DIVERSION								
R. N. Jansen	75.45R	1-6"			NO DIVERSION								
Ralph Martin	75.7R	1-7"			NO DIVERSION								
Ralph Martin	76.2R	1-6"			NO DIVERSION								
--U.S.G.S. GAGING STATION - SAN JOAQUIN RIVER NEAR VERNALIS - MILE 76.7--													
Totals			4	4638	6974	7011	12805	7978	3300	1932	44642	18457	0
Average cubic feet per second			-	78	113	118	208	130	55	31	92		
Monthly use in per cent of seasonal			-	10.7	15.4	16.1	28.4	17.7	7.5	4.2			

*Distance along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage as established by War Department Survey of 1913-15).

(1) Acreage divided between owners as follows: Oliveira 153, Silveria 50.

(2) Formerly T. J. Dutnall Estate.

(3) Up Walthall Slough .2 mile and opposite this mileage on river.

(4) Includes 1587 acres served outside of District.

TABLE 72

SAN JOAQUIN RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet: Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Total Diversion March to October Acre-feet	Acreage Irrigated: General	Rice
--U.S.G.S. GAGING STATION - "SAN JOAQUIN RIVER NEAR VERNALIS" - MILE 76.7--													
--STANISLAUS RIVER - MILE 79.7R--													
--MAZE ROAD BRIDGE - MILE 81.85--													
W. C. Blewett Estate	81.95L	3-12"	54	138	453	382	463	480	306	105	2381	525	
El Solyo Ranch	82.0L	1-12"	101	476	1781	1501	1904	1687	1600	1242	10292	3565	150
		3-18"											
--GAGING STATION - "SAN JOAQUIN RIVER AT HETCH HETCHY WATER SUPPLY CROSSING" - MILE 82.65--													
--TUOLUMNE RIVER - MILE 91.0R--													
West Stanislaus I. D.	91.8L	3-26"	376	1983	5845	9110	15054	8216	3531	717	44832	(1)20719	
El Pescadero Ranch #1	(2)91.8L	1-12"					61	26			87	35	
El Pescadero Ranch #2	(2)91.8L	1-14"				21	9	22			52	66	
Burkhard Investment Co.	(2)91.8L	1-14"			5	72	33	126	20	44	300	160	
El Pescadero Ranch #3	(2)91.8L	1-12"		3	17	32	37	30	7	126	75		
--LAIRD SLOUGH BRIDGE - GAGING STATION - "SAN JOAQUIN RIVER NEAR GRAYSON" - MILE 96.05--													
Rancho El Pescadero	98.9L				PLANT DISMANTLED								
--PATTERSON BRIDGE - MILE 104.4--													
Patterson Water Company	104.4L	1-14"	24	1547	6611	6526	7098	5360	4106	640	31912	12375	
		1-18"											
		4-26"											
Turlock Garden Land Co.(Jones)	(3)104.5L	1-10"			10	31	21	31	11	20	124	85	
Mortgage Guarantee Co.	106.5R	(4)1-6"					10	10			(5) 20	(5)20	
		1-10"											
Patterson Ranch Co.	109.8L	1-12"		326	702	1100	1518	1481	1026	477	6630	(6)1391	320
		2-16"											
E. Ustick	112.55R	(7)1-16"		59	59	106	94	78	95	67	(8) 558	240	

*Mileage along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage as established by War Department Survey of 1913-15). Prior to 1936 mileage was given above Durham Ferry Bridge, Mile 76.7.

(1) Includes 1846 acres outside of district.
(2) Pump is on cut leading to West Stanislaus Irrigation District plant.
(3) Erroneously listed as "Left bank" in 1939 report.
(4) Temporarily installed 1940.
(5) No record available. Use of water and acreage estimated by observation.
(6) Includes 40 acres outside of district.
(7) New unit November 1939 to replace 12" unit.
(8) Some additional water received from Turlock Irrigation District spill.

TABLE 72 (CONTINUED)

SAN JOAQUIN RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
--CROWS LANDING BRIDGE - MILE 113.4--													
Laura C. Johnson	113.5R	1-10"			NO DIVERSION								
A. J. Silveria	113.85R	1-6"					7	6		2	15	17	
A. J. Silveria	114.35R	1-8"			1	5	13	8	7	3	37	15	
F. Dutcher (1)	114.95R	1-10"			NO DIVERSION								
L. B. Crow	116.05R	1-14"		15	40	64	74	146	60	48	447	85	
Oscar Hogan	116.45R	1-12"			NO DIVERSION								
C. L. Olinger	116.95R	1-12"			NO DIVERSION								
--U.S.G.S. GAGING STATION - "SAN JOAQUIN RIVER NEAR NEWMAN" - MILE 123.7--													
--MERCED RIVER - MILE 123.75R--													
Stevinsen Water District	129.4R	1-10"			NO DIVERSION								
--FREMONT FORD BRIDGE GAGING STATION - MILE 129.5--													
--DELTA BRIDGE (TURNER ISLAND) GAGING STATION - MILE 158.7--													
Totals			555	4547	15524	18950	26396	17707	10769	3365	97813	39373	470
Average cubic feet per second			9	76	252	318	429	288	181	55	201		
Monthly use in per cent of seasonal			0.6	4.7	15.7	19.8	26.7	17.9	11.2	3.4			

*Mileage along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage as established by War Department Survey of 1913-15).
(1) Formerly King Ranch.

TABLE 73

TABLE 73

MERCED RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
--GAGING STATION - MERCED RIVER NEAR MOUTH - MILE 1.1--													
Stevinson Water District	3.8R	1-15"			153	290	281	242	148		1114	440	
Andrew Rayle (1)	4.0L	1-8"				28	10		6		44	15	
Andrew Rayle (1)	4.2L	1-4"			NO DIVERSION								
H. De Angeles	5.8L	1-10"			81	70	57	60	31	5	304	82	
J. F. Peck	6.1L	1-18"			NO DIVERSION								
Stevinson Water District	6.55L	1-15"			NO DIVERSION								
Francis Hartman	8.5L	1-12"			NO DIVERSION (2)						(2)	(2)10	
Mary Collier	8.85L	1-8"		2	2	46	13	5	7	11	86	(3)50	
Grace McCullogh	9.4L	1-10"		30	274	359	301	186	126	52	1328	358	
R. W. Adams and J. B. Silva	10.35L	1-8"	2	53	438	367	356	242	143	29	1630	506	
		1-10"											
W. D. Adams (4)	10.8R	1-8"					14				14	42	
W. D. Adams	10.85L	1-12"		42	117	236	340	199	115	23	1072	403	
C. G. McLaughlin	11.4L	1-8"			NO DIVERSION								
C. G. McLaughlin	11.55L	1-4"			NO DIVERSION								
L.E. Milliken & Edna McKinley(5)	11.6L	1-10"			66	152	118	72	4		412	145	
J. Rigello	11.6L	1-12"			NO DIVERSION								
--NEW MILLIKEN BRIDGE - MILE 11.65--													
A. J. Azevedo (Husman)	12.35L	1-10"		58		20	34	63		14	189	63	
Pacific Coast Joint Stock Land Bank	12.85L	1-10"			19	114	47	2			182	100	
California Lands Inc.	16.5L	1-12"		15	41	64	95	38	70		323	60	
Merced River Farms Co.	17.05L	1-6"			6	20	19	1			46	18	
--U.S.G.S. GAGING STATION - "MERCED RIVER NEAR LIVINGSTON" - MILE 17.1--													
R. G. Woodward	17.3L	1-4"			NO DIVERSION								
J. Clark	17.7L	1-3"					2	1			3	7	
		1-6"											
O. B. Daniels	17.7L	1-5"				8	8	8	7	15	46	7	
Federal Land Bank (6)	(7)18.4L	1-4"				2	2	2	3	1	10	20	
		1-6"											
C. P. Hockett (8)	18.45L	1-4"			2	4	5	5	4	3	23	5	
George Bloss	20.3R				PLANT REMOVED								
John Reininghaus	20.4L	1-6"			NO DIVERSION								
W. J. Hoskins	20.65R	1-3½"			1	3	2	2	1	1	10	6	
--SOUTH PACIFIC RAILROAD (MAIN LINE) - MILE 21.05--													

*Mileage along river above mouth.

(1) Formerly E. C. Brown.
(2) Served from plant at Mile 8.85L.
(3) An additional 10 acres served for plant at Mile 8.5L.
(4) Installed in 1938 but not previously reported.
(5) Formerly H. F. Milliken Estate.
(6) Formerly Hockett and Simpkins.
(7) Pump moved from Mile 18.7L.
(8) New installation 1940.

TABLE 73 (CONTINUED)

MERCED RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
A. C. Jorgensen (1)	21.1R	1-6"	NO DIVERSION										
A. C. Jorgensen (1)	21.75R		PLANT REMOVED										
A. C. Jorgensen (1)	22.0R		PLANT REMOVED										
A. C. Jorgensen (1)	22.2R	1-12"			8	24		36	2	21	91	20	
A. C. Jorgensen (1)	23.3R	1-6"	NO DIVERSION										
M. McConnell	23.4L	1-5"	NO DIVERSION										
W. F. McConnell	24.2L	1-5"	NO DIVERSION										
W. F. McConnell	24.5L	1-6"	NO DIVERSION										
California Lands Inc.	24.6R	1-6"			4				25	5	34	(2)100	
California Lands Inc.	25.0R	1-5"		2	10	8	5	2			27	(3)	
California Lands Inc.	25.5R	1-6"		5	11	5	8	6	6		41	(3)	
Merced River Farms Assoc.	26.3R	1-8"			158	102	85	51	45		441	98	
W. C. Magneson	26.55R	1-5"			6	14	13	8	2		43	(4)21	
W. C. Magneson	27.0R	1-6"				1	2	2	1		6	(5)	
--SANTA FE RAILROAD CROSSING - MILE 27.05--													
							53	36	49		138	80	
W. C. Magneson	27.6R	1-10"			18	6	15	14	8	4	78	30	
M. Nishihara	27.8R	1-4"		13	4	8	4				16	5	
Y. Tanabe	28.1R	1-6"	NO DIVERSION										
G. H. Lovely	28.4R	1-4"	NO DIVERSION										
J. Campadonica	28.6R	1-6"			20	35	50	22	33	11	171	90	
D. S. Enright	28.6R	1-5"											
		1-8"			10	64	16	32	22	36	180	46	
C. L. Mehrton	29.1R	1-7"			17	45	34	42		1	139	40	
Tony Demchilli	29.75R	1-6"			25	33	44	25			127	(6)100	
American Trust Co.	29.9R	1-6"				20	13	5			38	15	
California Lands Inc.	30.2L	1-6"			44	61	43	45	43		236	(7)	
American Trust Co.	30.95R	1-12"				58		75			133	35	
California Land Inc.	31.1L	1-8"			NO DIVERSION								
T. H. Carlos	31.5R	1-6"											
		1-8"											
--SOUTHERN PACIFIC RAILROAD (OAKDALE BRANCH) - MILE 32.52--							24				24	30	
B. H. Arkellian	32.9R	1-8"(8)			6	8	55	20		10	99	26	
B. H. Arkellian	33.55R	1-7"					38	48	48	75	209	50	
C. P. Stout	39.2L	1-24" box											
--GAGING STATION "MERCED RIVER AT YOSEMITE VALLEY RAILROAD CROSSING" - MILE 42.1--													
Totals			2	220	1541	2275	2206	1597	949	317	9107	3123	0
Average cubic feet per second			-	4	25	38	36	26	16	5	19		
Monthly use in per cent of seasonal			-	2.7	16.7	25.3	24.0	17.3	10.7	3.3			

*Mileage along river above mouth

(1) Formerly Wm. Collier.
(2) This is the total acreage served by this plant and the ones at Miles 25.0 and 25.5R.
(3) See plant at Mile 24.6R.
(4) This is the total acreage served by this plant and the one at Mile 27.0R.
(5) See plant at Mile 26.55R.
(6) This is the total acreage served by this plant and the one at Mile 30.95R.
(7) See plant at Mile 29.9R.
(8) Replaced 6" unit in 1939.

TABLE 74

TABLE 74

TUOLUMNE RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion: March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
E. T. Mapes	1.9R	1-14"		13	31	65	103	44	10	34	301	100	
J. deSouza and J. B. Silva	2.2R	1-6"			NO DIVERSION								
E. B. Henry	3.1R	1-16" box			17	22	28	11	14		92	50	
--GAGING STATION - "TUOLUMNE RIVER AT TUOLUMNE CITY" - MILE 3.35--													
Bancroft Fruit Farms	4.1R	1-10"			91	49	32	54	35	23	284	(1) 245	
Bancroft Fruit Farms	5.0R	1-10"	3	6	66	61	79	91	24	27	357	(2)	
Randolph Marketing Co.	7.1R	1-10"			219		177	36	55	59	546	90	
J. J. and E. J. Schivo	7.8L	1-10"			NO DIVERSION								
W. F. Duffy	7.9R	1-4"			NO DIVERSION								
W. F. Duffy	8.4R	1-10"			71	131	82	54	65	3	406	85	
Otis Burch	9.2L	1-4"					11	12	1	1	24	25	
A. Holmes	10.2R	1-11"			39	25	42	78	37	2	223	60	
--GAGING STATION "TUOLUMNE RIVER AT MODESTO" - MILE 15.75--													
--SOUTHERN PACIFIC RAILROAD (MAIN LINE) - MILE 15.8--													
--DRY CREEK INFLOW - MILE 16.5R--													
Mrs. L. R. Hughson	20.3R	1-8"			NO DIVERSION								
W. J. Leckron	20.5R	1-10"			11	10	26	12	11		70	52	
--SANTA FE RAILROAD - MILE 21.6--													
P. L. Alexander (3)	25.0L	1-6"				1	11	7			19	27	
P. L. Alexander (3)	26.0L	1-7"							23		23	50	
P. L. Alexander (3)	26.1R	1-6"			NO DIVERSION								
L. Firpo (4)	27.1L	1-6"			5	5	5	5	3		23	90	
--SOUTHERN PACIFIC RAILROAD (OAKDALE BRANCH) - MILE 31.5--													
--GAGING STATION "TUOLUMNE RIVER AT HICKMAN BRIDGE" - MILE 31.7--													
George H. Sawyer	39.8L	1-6"			27	46	46	32	57	2	210	198	
--GAGING STATION "TUOLUMNE RIVER AT ROBERTS FERRY BRIDGE" - MILE 39.9--													
Totals			3	19	577	415	642	436	335	151	2578	1072	0
Average cubic feet per second			-	-	9	7	10	7	6	3	5		
Monthly use in per cent of seasonal			-	0.7	22.2	16.6	24.6	16.8	13.2	5.9			

*Mileage along river above mouth.

(1) This is the total acreage served by this plant and the one at Mile 5.0R.

(2) See plant at Mile 4.1R.

(3) New installation 1940.

(4) Plant installed 1939 but not reported.

TABLE 75

STANISLAUS RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Frank Coker	1.1R	1-6"						3			3	6	
Mrs. E. W. Hawkins	1.6R	1-4"(1)						13			13	25	
J. Chisholm	2.9R	1-8"			NO DIVERSION								
J. W. Smith	3.1R	1-6"			NO DIVERSION								
Will Hawkins	3.2R	1-4"			NO DIVERSION								
Hatmark Ranch	5.25L	2-14"			25	141	170	170	75	71	652	130	
--GAGING STATION - "STANISLAUS RIVER AT HATMARK RANCH" - MILE 5.3 (ABANDONED SEPTEMBER 30, 1940)--													
--GAGING STATION STANISLAUS RIVER AT "BRET HARTE PUMP" - MILE 5.9R (ESTABLISHED SEPTEMBER 30, 1940)--													
Bret Hart Water Users Assoc. (R. D. #2064)	5.9R	1-16"	197	320	861	710	814	620	490	255	4267	1022	
McMullin Recl. Dist #2075	5.95R	2-16"	9	168	539	1135	1404	913	189	154	4511	1490	
Henry Pelucca	6.7L	1-15"			69	28	107	45	34	28	311	65	
J. W. Updike	7.4L	1-8"			NO DIVERSION								
C. C. Updike	8.2L	1-12"			NO DIVERSION								
Caswell Bros.	9.8R	1-14"	11	116	182	249	351	304	221	145	1579	283	
Pacific States Savings and Loan Co. (2)	10.0R	1-10"			NO DIVERSION								
D. F. Koetitz	10.1L	1-10"	61		161	186	192	149	115	78	942	300	
D. F. Koetitz	10.4L	1-18"			NO DIVERSION								
Joseph Hertle (2)	10.5L	1-10"			5	16	13	12	13	5	64	33	
--SOUTHERN PACIFIC RAILROAD BRIDGE (MAIN LINE) - MILE 15.9--													
--GAGING STATION "STANISLAUS RIVER NEAR RIPON" - MILE 16.0--													
J. E. Alldrin	18.5R	1-12"			24	40	17	31	33		145	125	
G. R. Stoddard	19.9L				PLANT DISMANTLED								
Palo Alto Co.	20.75R	1-14"			122	301	197	167	96	3	886	240	
Heath Ranch	20.9L	1-5"			10	13	20	34			77	10	
Earl Fruit Co.	21.75R	1-8"				61	42	23			126	90	
Cornelious de Boer	22.0L	1-5"			NO DIVERSION								
Riverside Ranch	22.3R	1-5"				9	6				15	5	
		1-6"											
		1-10"											
--MODESTO-ESCALON BRIDGE - MILE 28.15--													
--SANTA FE RAILROAD CROSSING - MILE 31.85--													
--GAGING STATION "STANISLAUS RIVER AT RIVERBANK" (BURNEYVILLE BRIDGE) - MILE 32.0--													
Oakdale I.D. (Riverbank Pump)(3)	32.9L	1-14"	17	145	305	284	246	254	109		(3) 1360	1700	
Oakdale I.D.(Kaufman Pump)(3)	35.9L	1-14"			118	203	108	125			(3) 554	692	
Oakdale I.D. (Brady Pump)(3)	37.0L	1-14"			18	38	22	23	3		(3) 104	536	
Oakdale I.D. (Orange Blossom Pump)(2) (3)	44.≠ R	1-10"					64	73			(3) 137	150	
--SOUTHERN PACIFIC RAILROAD (OAKDALE BRANCH) - MILE 39.0--													
--GAGING STATION "STANISLAUS RIVER AT ORANGE BLOSSOM BRIDGE" - MILE 44.7--													
Totals			217	682	2143	3330	3858	2924	1741	851	15746	6902	0
Average cubic feet per second			4	11	35	56	63	48	29	14	32		
Monthly use in per cent of seasonal			1.5	4.2	13.5	21.5	24.2	18.5	11.2	5.4			

*Mileage along river above mouth.

(1) Replaces 7" unit

(2) New installation 1940.

(3) Oakdale Irrigation District maintains plants at Miles 32.9L, 35.9L, 37.0L and 44. to supplement the gravity supply.

TABLE 75

STANISLAUS RIVER DIVERSIONS - 1940

Water User	*Mile and Bank	Number and Size of Pump	Monthly Diversions in Acre-feet								Total Diversion March to October Acre-feet	Acreage Irrigated	
			Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.		General	Rice
Frank Coker	1.1R	1-6"						3			3	6	
Mrs. E. W. Hawkins	1.6R	1-4"(1)						13			13	25	
J. Chisholm	2.9R	1-8"			NO DIVERSION								
J. W. Smith	3.1R	1-6"			NO DIVERSION								
Will Hawkins	3.2R	1-4"			NO DIVERSION								
Hatmark Ranch	5.25L	2-14"			25	141	170	170	75	71	652	130	
--GAGING STATION - "STANISLAUS RIVER AT HATMARK RANCH" - MILE 5.3 (ABANDONED SEPTEMBER 30, 1940)--													
--GAGING STATION STANISLAUS RIVER AT "BRET HARTE PUMP" - MILE 5.9R (ESTABLISHED SEPTEMBER 30, 1940)--													
Bret Hart Water Users Assoc. (R. D. #2064)	5.9R	1-16"	197	320	861	710	814	620	490	255	4267	1022	
McMullin Recl. Dist #2075	5.95R	2-16"	9	168	539	1135	1404	913	189	154	4511	1490	
Henry Pelucca	6.7L	1-15"			69	28	107	45	34	28	311	65	
J. W. Updike	7.4L	1-8"			NO DIVERSION								
C. C. Updike	8.2L	1-12"			NO DIVERSION								
Caswell Bros.	9.8R	1-14"	11	116	182	249	351	304	221	145	1579	283	
Pacific States Savings and Loan Co. (2)	10.0R	1-10"			NO DIVERSION								
D. F. Koetitz	10.1L	1-10"		61	161	186	192	149	115	78	942	300	
D. F. Koetitz	10.4L	1-18"			NO DIVERSION								
Joseph Hertle (2)	10.5L	1-10"			5	16	13	12	13	5	64	33	
--SOUTHERN PACIFIC RAILROAD BRIDGE (MAIN LINE) - MILE 15.9--													
--GAGING STATION "STANISLAUS RIVER NEAR RIPON" - MILE 16.0--													
J. E. Alldrin	18.5R	1-12"			24	40	17	31	33		145	125	
G. R. Stoddard	19.9L				PLANT DISMANTLED								
Palo Alto Co.	20.75R	1-14"			122	301	197	167	96	3	886	240	
Heath Ranch	20.9L	1-5"			10	13	20	34			77	10	
Earl Fruit Co.	21.75R	1-8"				61	42	23			126	90	
Cornelious de Boer	22.0L	1-5"			NO DIVERSION								
Riverside Ranch	22.3R	1-5"				9	6				15	5	
		1-6"											
		1-10"											
--MODESTO-ESCALON BRIDGE - MILE 28.15--													
--SANTA FE RAILROAD CROSSING - MILE 31.85--													
--GAGING STATION "STANISLAUS RIVER AT RIVERBANK" (BURNEYVILLE BRIDGE) - MILE 32.0--													
Oakdale I.D. (Riverbank Pump)(3)	32.9L	1-14"		17	145	305	284	246	254	109	(3) 1360	1700	
Oakdale I.D.(Kaufman Pump)(3)	35.9L	1-14"				118	203	108	125		(3) 554	692	
Oakdale I.D. (Brady Pump)(3)	37.0L	1-14"				18	38	22	23	3	(3) 104	536	
Oakdale I.D. (Orange Blossom Pump)(2) (3)	44.7R	1-10"						64	73		(3) 137	150	
--SOUTHERN PACIFIC RAILROAD (OAKDALE BRANCH) - MILE 39.0--													
--GAGING STATION "STANISLAUS RIVER AT ORANGE BLOSSOM BRIDGE" - MILE 44.7--													
Totals			217	682	2143	3330	3858	2924	1741	851	15746	6902	0
Average cubic feet per second			4	11	35	56	63	48	29	14	32		
Monthly use in per cent of seasonal			1.5	4.2	13.5	21.5	24.2	18.5	11.2	5.4			

*Mileage along river above mouth.
(1) Replaces 7" unit
(2) New installation 1940.
(3) Oakdale Irrigation District maintains plants at Miles 32.9L, 35.9L, 37.0L and 44. to supplement the gravity supply.

CHAPTER IV

MEASUREMENTS OF RETURN WATER

Sacramento Return Waters

In the Sacramento Valley the flow of all well defined channels carrying irrigation waters returned to the Sacramento River is measured and recorded. Table 77 lists these channels in downstream order and gives the total flow as computed from the measurements. The report for 1940 gives, for most of the channels, the flow for the entire year.

Between Colusa and Red Bluff there are no large well defined return flow channels. Records or estimates of natural inflow from streams in this stretch of the river were, however, obtained. Above Red Bluff, from a point below Cottonwood to Redding, there is considerable return from the Anderson-Cottonwood Irrigation District but it is not recorded.

Return Flow from Other than Sacramento River Sources

In the water returned to the Sacramento River as included in Table 77 it should be noted that practically all of that entering the river through Butte Slough is derived from Feather River diversions through the Western and Sutter Butte canals. Of the discharge entering through Sacramento Slough, that portion flowing down the East Borrow Pit of Sutter By-Pass, is also practically all of Feather River origin. (See Table 96.)

Relation of Sacramento Return Water to Irrigation Draft

Tables 78 and 79 record the Sacramento River return water for the period June to November, inclusive, 1940, and indicate the relation between the return and the diversions from which it was derived. Due to high water

conditions prevailing in the Spring and in December of that year it was not practicable to attempt to determine the return flow for the period January to May inclusive or for December. Since, in Tables 78 and 79 it is the purpose to show the return water from Sacramento River diversions only, the inflow from Butte Slough, that portion of Sacramento Slough derived from Feather River sources (Table 96) and from the Feather and American Rivers has been excluded. In Table 78 is shown the relation to the diversions of that return water only which was measured at the well defined channels. With the records available of the discharge of the Sacramento River at Red Bluff, Butte City, Colusa, Wilkins Slough, Knights Landing, and Verona and all diversions between these points, it is possible to approximate the total water returned to the river between each of these points, including not only the flow in the definite channels which were measured, but all seepage, ground water return, etc., which could not be directly measured. The figures for the return water computed in this manner and the relation of this return to the draft is shown in Table 79. It should be noted, however, that the return shown for the Verona-Sacramento section is only that contributed by the measured drains since, as explained in Chapter II, the total return in this section including all accretions, is not susceptible of computation in the manner outlined because of the fact that no record of low water flow actually measured at Sacramento is available.

The data in Tables 78 and 79 show that seepage, groundwater return, etc., (for the period July-September, inclusive) which could not be directly measured, amounted to 11 per cent of the irrigation draft, the direct return in definite channels 37 per cent, the total return being 48 per cent. The data in Table 79 shows the return flow in the Sacramento River for the period

June to November, inclusive, 1940. The return flow for the balance of the year has not been computed as the flows in the stream were large and there was much rainfall and local drainage so that it would not be practical with the data available to attempt to determine the return flow for the period not shown in the Table.

Draft Return Water Relation for Particular Sacramento Valley Areas

In the Sacramento Valley there are certain units or districts which are set apart physically by levees or otherwise, so that the direct return water in each district may be readily segregated when the records of all diversions to and discharges from the units are available. Included in such units are the areas above the Colusa-Williams Highway Crossing of Colusa Trough, Reclamation District 70, Reclamation District 108, Reclamation District 1500 and Reclamation District 1000. The relation between draft and return water for the Colusa Trough area is shown in Table 80 and for Reclamation Districts 70, 108, 1500 and 1000 in Tables 81, 82, 83 and 84 respectively. As in the case of the return water computations on the Sacramento River no attempt has been made to present the data for the entire year as there probably was much seepage into the districts due to high river stages. Should it be desired to make a detailed study of these return and seepage flows for the entire year the annual pumping from the various districts is given in the return flow tables and the annual precipitation records for rainfall stations in the valley were given in Tables 103 to 113.

Tables 87 to 102A, inclusive, present in detail the discharge records for the Sacramento Valley return water channels.

San Joaquin Return Waters

In the 1940 San Joaquin Valley return water measurements, the gaging stations were located at the same points as in previous years beginning with 1928, and the same methods were followed. A continuous record of the discharge during the entire year was obtained at most stations on each stream. An upper and lower station were maintained on each stream, to-wit: San Joaquin, Merced, Tuolumne, and Stanislaus River. On all of the streams continuous records of discharge were also obtained at intermediate stations - four on the San Joaquin River, (1) at Fremont Ford Bridge, (2) just below the junction with the Merced River (maintained by the U. S. Geological Survey and referred to as "San Joaquin River near Newman"), (3) near Grayson (Laird Slough), and (4) at the Hetch Hetchy Water Supply Crossing below the Tuolumne River inflow; one on the Merced River near Livingston (U. S. Geological Survey station), three on the Tuolumne River, one at Roberts Ferry, one at Hickman Bridge, one at Modesto, and two on the Stanislaus River, one at Burneyville Bridge and one near Ripon. Measurements and records of all pumping diversions between stations on each stream were obtained, thereby completing the necessary data for the computations of the return water. The records for the gaging stations are given in Chapter II, Tables 20 to 41, inclusive, and the diversion records for the San Joaquin streams above Durham Ferry Bridge, are given in Chapter III, Tables 71 to 75 inclusive.

Table 85 tabulates the results of the San Joaquin return water measurements and Table 86 shows a comparison of the return water with the irrigation draft in the San Joaquin Valley.

Comparative Sacramento and San Joaquin Return Water, 1924-1940

Comparative figures, 1924 to 1940, for the Sacramento and San Joaquin seasonal return water in per cent of the irrigation draft are shown in Table 76. Figures for the seasonal stream flow in per cent of the 40 year mean 1889-1929, of the Sacramento River at Red Bluff and the San Joaquin River and its three main tributaries above the Vernalis gaging station are given also in order to show what relation, if any, there may have been between the variation from year to year in the run-off at Red Bluff and the return flow percentages for the period July to September. This is shown graphically in Plate I. However the July to September 1940 return flow expressed in percentage of diversion for the same period departs rather markedly from the average curve.

The year 1940 is practically the same as 1927 as far as seasonal runoff at Red Bluff expressed in per cent of 40-year mean is concerned. In 1927 the June to September return flow measured in definite return flow channels amounted to 39 per cent of the amount of water diverted during the same period. When all measured return and unmeasured accretions are considered, the return flow for the June to September period amounts to 66 per cent of the diversions for the same period. When we consider 1940 we find that the June to September return flow in the definite channels amounted to 37 per cent of the diversions which compares very favorably with 39 per cent measured in 1927, but on the other hand, when we consider all unmeasured accretions in addition to return flow the return flow figure is 55 per cent when expressed in terms of diversions for the period June to September.

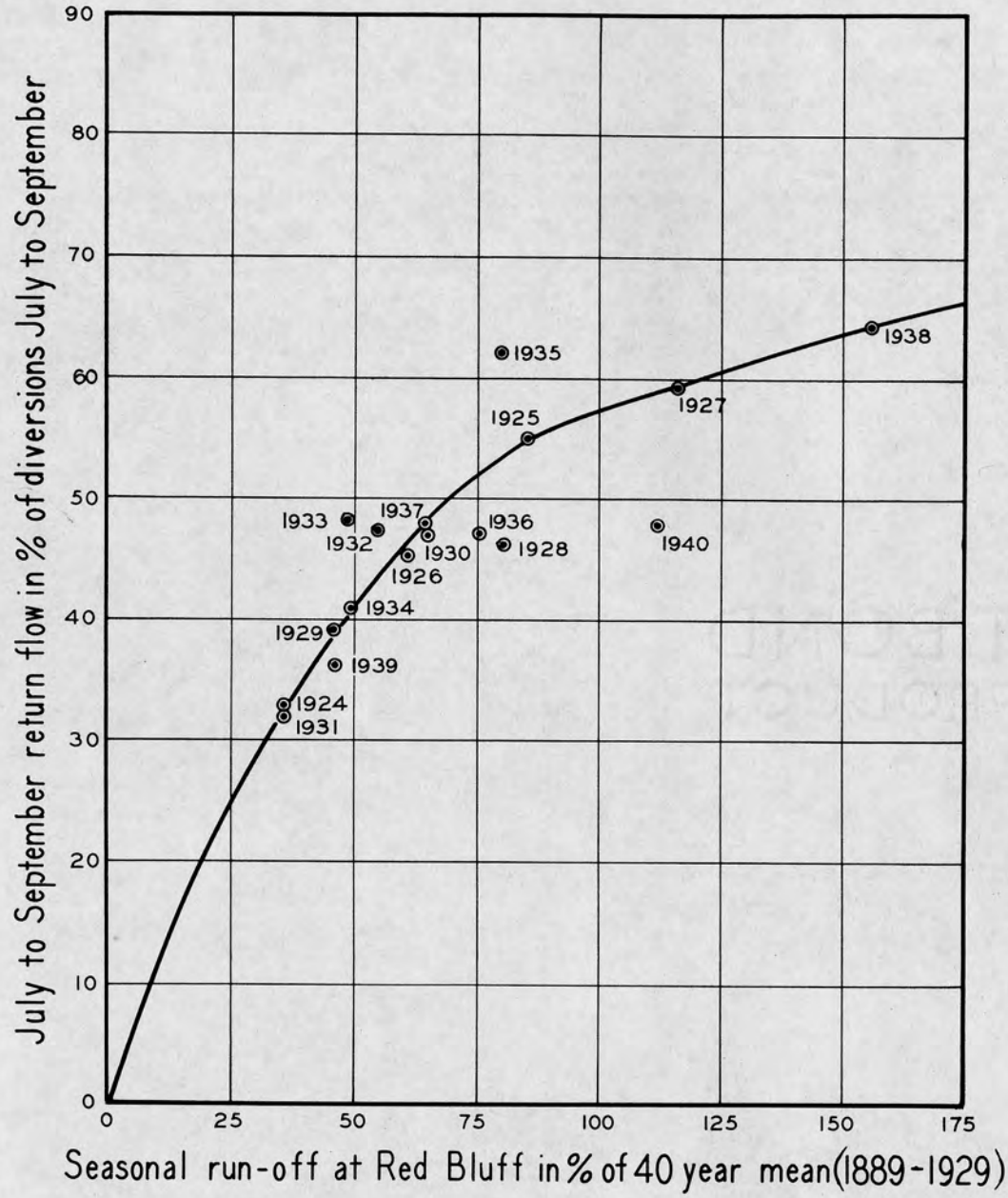
From the above examples it is apparent that the June to September or July to September return flow is markedly affected by the stages prevailing

in the river channel during the late spring. Consequently the water which we measure and consider as return flow is not strictly return flow from irrigation use but is a combination of the irrigation return and bank storage.

Plate I indicates very clearly that during years of good runoff the July to September return flow is greater than in years of low runoff.

In the case of the San Joaquin return water data there appears to be no such definite relation between the seasonal flow of the San Joaquin River and its tributaries in per cent of normal and the return water percentages. This may be due to the regulation which occurs in Lake McClure reservoir on the Merced River, Don Pedro Reservoir on the Tuolumne River and Melones Reservoir on the Stanislaus River. It is to be noted that in some years the period used in the comparison of return flow and diversions makes considerable difference in the percentage figures, and further, that for the period August-September only, the percentage is nearly always greater than when the July-September period is used. As there may be a considerable lag between the diversions and corresponding return flow, the figures in the last column of Table 76 were compiled to show the August-September return flow in per cent of the July-August diversions. These percentages still seem to bear no definite relation to the seasonal runoff percentages but their variation from year to year is somewhat reduced and a more or less constant percentage of return flow is indicated.

The average percentage of diversions occurring as return water in the San Joaquin River is shown to be considerably smaller than that for the Sacramento River. This difference may probably be attributed to the fact that,



SACRAMENTO-SAN JOAQUIN WATER SUPERVISION

SACRAMENTO RIVER

RELATION BETWEEN SEASONAL RUN-OFF AT RED BLUFF IN PER CENT OF 40 YEAR MEAN AND JULY TO SEPTEMBER RETURN FLOW IN PER CENT OF JULY TO SEPTEMBER DIVERSIONS

whereas due to basin topography practically all drainage from Sacramento River diversions is quickly returned to the river; in the San Joaquin Valley considerable of the return water may never reach the river because of its contributing to underground water and being recovered by drainage pumps in low areas of many of the irrigation districts for re-use in their irrigation canal.

TABLE 76

SACRAMENTO AND SAN JOAQUIN RETURN WATER PERCENTAGES 1924-1940

Year	Sacramento River			San Joaquin River and Tributaries					
	Seasonal Run-off at Red Bluff in per cent of normal *	Return Water in per cent of Diversions		Seasonal Run-off in per cent of Normal S.J.River and Tributaries**	Return Water in per cent of Diversions				Aug.-Sep. Return in per cent of Jul.-Aug. Diversions
		Jun.-Sep. inc.	Jul.-Sep. inc.		Jun.-Sep. inc.	Jul.-Sep. inc.	Aug.-Sep. inc.	Jul.-Oct. inc.	Aug.-Oct. inc.	
1924	36	33	33	24		35	41			29
1925	86		55 (1)	86			38			23
1926	61	49	45	55		28	32			22
1927	117	66	59	100			32			23
1928	82	49	46	67		28	28			23
1929	47	42	39	44		19	21			16
1930	65	55	47	50	20	21	22			17
1931	36	33 (2)	32	26	23(3)	27	40			18
1932	54	56	47	101			26		29	21
1933	49	56	48	52		22	20	25	25	17
1934	48	45	41	35	20(4)	21	28	25(5)	33	16
1935	80		62	98		30	24	34	31	19
1936	76	56	47	100		31	25	35	32	20
1937	64		48	100		35	28	38	35	22
1938	157		64	172			41		47	29
1939	47	38	36	44	20	20	23	24	29	17
1940	112	55	48	101		25	25	27	29	19

* 40-year mean (1889-1929) of natural run-off. For comparison of 40 and 50 year means, see Table 1.

** 40-year mean (1889-1929) of natural run-off at foothill stations of San Joaquin, Merced, Tuolumne and Stanislaus Rivers. For comparison of 40 and 50 year means, see Table 2.

(1) July-October, inclusive, 59.
(2) May-September, inclusive, 34.
(3) May-September, inclusive, 19.
(4) May-September, inclusive, 20.
(5) June-October, inclusive, 23; May-October, inclusive, 21.

TABLE 77

WATER DISCHARGED TO THE SACRAMENTO RIVER ABOVE SACRAMENTO AS MEASURED AT DEFINITE RETURN FLOW CHANNELS
1940

Return Flow Channel	Table No.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	June to October	July to October
		Acre-feet													
Butte Slough (1)	88	17900	2080	11430	1170	9210	20590	6890	8890	8480	3600	1680	5080	48450	27860
R. D. 70 Drain	91	760	1310	0	0	520	0	680	1290	1110	550	0	1210	3630	3630
R. D. 108 Drain	92	4680	5870	10190	5460	5870	6020	6040	6770	5820	1680	640	7460	26330	20310
Colusa Basin Drainage(2)	94	0	0	0	0	15070	38040	21730	26620	31520	13990	16240	2060	131900	93860
Sycamore Slough	94A	0	0	0	0	240	260	150	700	700	90	510	160	1900	1640
Sacramento Slough (3)	95	(4)	(4)	(4)	(4)	(4)	(4)	34680	33510	39230	11480	17030	(4)	---	118900
R. D. 1001 Drain (5)	102B	1010	5340	8910	7510	1110	430	150	140	220	290	270	7550	1230	800
R. D. 1000 Drain #3	102A	0	490	5520	3350	1420	770	90	370	1190	330	330	3050	2750	1980
R. D. 1000 Drain	102	2650	9420	10180	5900	1450	0	0	0	120	0	0	7850	120	120
Totals		--	--	--	--	--	--	70410	78290	88390	32010	36700	--	--	269100

(1) This flow is practically all from lands irrigated by Feather River diversions.
(2) A portion of the water which normally should return to the Sacramento River at this point is diverted to the Knights Landing Ridge Cut. (See Table 100)
(3) This is the combined daily flow as given in Tables 97 and 99 and includes return water from Feather River diversions. (See Tables 96 and 98)
(4) See footnote Table 95.
(5) Discharged to main drain between Reclamation District 1000 and 1001, thence to Sacramento River at Mile 19.6L.

TABLE 78

RELATION BETWEEN RETURN WATER AND DRAFT, SACRAMENTO RIVER, RED BLUFF TO SACRAMENTO
(USING ONLY RETURN WATER WHICH ENTERED THROUGH DEFINITE RETURN CHANNELS*) - 1940

Return Flow Channel	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	January to December	June to Sept.	July to Sept.
	Acre-feet														
Reclamation District 70 Drain	760	1310	(1)	(1)	520	0	680	1290	1110	550	0	1210	--	3080	3080
Reclamation District 108 Drain	4680	5870	10190	5460	5870	6020	6040	6770	5820	1680	630	7460	66490	24650	18630
Colusa Basin Drainage**	0	0	0	0	15300	40530	24260	30800	34300	14090	16750	2220	178250	129890	89360
Sacramento Slough	(2)	(2)	(2)	(2)	20500	22460	26800	27250	31500	5610	3100	(2)	--	108010	85550
Reclamation Dist. 1000 Drains	2650	9920	15710	9250	2870	770	90	370	1320	330	330	10900	54510	2550	1780
Total Return	--	--	--	--	--	69780	57870	66480	74050	22260	20810	--	--	268180	198460
Diversions (Red Bluff to (Sacramento	0	0	1780	18030	170400	196500	227000	207300	98800	26800	0	0	--	729600	533100
Return in % of diversions	--	--	--	--	--	36	25	32	75	83	--	--	--	37	37

NOTE: In order to show return water from Sacramento River irrigation only, the discharge to the river of Butte Slough is excluded, as is also the portion of the return through Sacramento Slough derived from Feather River diversions (Table 96) and the surplus water diverted to Sutter By-Pass from Butte Slough.

* As distinguished from use of all accretions as indicated in Table 79.
** Figures for May to November include water diverted to Knights Landing Ridge Cut (Table 100) and outflow from Sycamore Slough (Table 94A).

(1) Plant not operated. District flooded.
(2) See footnote Table 95.

TABLE 79

RELATION BETWEEN RETURN WATER AND DRAFT, SACRAMENTO RIVER, RED BLUFF TO SACRAMENTO
(INCLUDING ALL ACCRETIONS)* - 1940

River Section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov	Dec.	Jan-Dec
	Acre-feet												
Return Flow													
Red Bluff to Butte City						43400	27600	14200	1300	1400	0		
Butte City to Colusa						9850	5280	9070	2310	350	31000		
Colusa to Wilkins Slough						9700	6600	420	5500	2900	5700		
Wilkins Slough to Knights Ldg.						29600	33400	37400	38700	7700	36200		
Knights Landing to Verona	- - - - - -		(1)	- - - - - - - - -		54400	32500	21100	18800	3120	57300	- - -	(1) - -
Verona to Sacramento						800	100	400	1200	300	300		
Total Return						147750	105480	82590	67810	15770	130500		
Total Diversion													
Red Bluff to Sacramento	0	0	1782	18029	170408	196529	226951	207303	98779	26797	(2)10000	0	
Return in per cent of draft						75	46	40	69	59	-		
Monthly return in % of seasonal						-	-	-	-	-	-		

River Section	Return flow Acre-feet		Red Bluff to Lower End of Section						In River Section			Red Bluff to Lower End of Section		
			Return flow Acre-feet		Diversions Acre-feet		Return flow in % of diversion		January to December			January to December		
	June to Sept.	July to Sept.	June to Sept.	July to Sept.	June to Sept.	July to Sept.	June to Sept.	July to Sept.	Return	Diversion	Return in % of Diver.	Return	Diversion	Return in % of Diver.
Red Bluff to Butte City	86500	43100	86500	43100	359780	261685	24	16						
Butte City to Colusa	26510	16660	113010	59760	373676	272234	30	22						
Colusa to Wilkins Slough	22220	12520	135230	72280	569448	416548	24	13						
Wilkins Slu to Knights Ld	139100	109500	274330	181780	627745	458928	44	40	- - - - -	(1)	- - - - -	- - - - -	(1)	- - - - -
Knights Ldg. to Verona	126800	72400	401130	254180	655348	478041	61	53						
Verona to Sacramento**	2500	1700	403630	255880	729562	533033	55	48						
Total	403630	255880												
Diversions (Red Bluff to (Sacramento	729562	533033												
Return in % of diversions	55	48												

NOTE: In the return water here shown, the discharge to the Sacramento River of the Feather and American rivers is excluded as is also the discharge of following return water channels, Butte Slough and that portion of the discharge of Sacramento Slough derived from Feather River waters. Also inflow from Mill, Antelope, and Deer creeks between Red Bluff and Butte City has been excluded.

(1) Due to high water which occurred in spring of 1940 and in December no attempt was made to determine return flows and percentages for those periods. (2) Estimated.

* As the return water in this table between any two stations is computed as the difference in discharge between the upper and lower station, making due allowance for the intervening diversions, the results include both those accretions entering from definite return channels which have been measured and accretions due to seepage, groundwater return, etc., which cannot be directly measured.

** See discussion in text of Chapters II and IV.

** See discussion in text of Chapter

TABLE 80

RELATION BETWEEN THE RETURN WATER IN COLUSA TROUGH AT COLUSA-WILLIAMS HIGHWAY
AND
THE PRINCIPAL DIVERSIONS FROM WHICH THE RETURN WATER WAS DERIVED-1940
(Acre-feet except as noted)

Diversion	Mile and Bank	May	June	July	Aug.	Sep.	Oct.	June to Sept. (inc.)	July to Sept. (inc.)	Acreage Irrigated General	Acreage Irrigated Rice
Sacramento River (Table 61)											
Glenn Colusa Irrigation District	154.8R	66000	76070	81403	76879	37230	17801	271582	195512	25444	22644
Jacinto Irrigation District	154.8R	3144	0	3917	3550	2410	1577	9877	9877	6320	0
Compton Delevan Irrigation District	154.8R	2083	2459	2747	2321	764	0	8291	5832	0	1337
Provident Irrigation District	154.8R	11518	7662	8440	8199	2132	0	26433	18771	331	5278
Princeton-Codora-Glenn Irrigation Dist.	154.8R	6546	7882	9157	8323	4781	1985	30143	22261	2530	1352
Maxwell Irrigation District	154.8R	0	1940	1210	654	390	1705	4194	2254	2740	520
Colusa Trough Plants (Table 62)	--	5859	8325	8351	8550	4392	2687	29618	21293	200	700
Total diversions		95150	104338	115225	108476	52099	25755	380138	275800	37565	31831
Return Flow											
Colusa Trough at Colusa-Williams Highway (1)		-	32000	28300	30870	27680	9045	118850	86850		
Colusa Trough diversions		5859	8325	8351	8550	4392	2687	29618	21293		
Total return (Acre-feet)		-	40325	36651	39420	32072	11732	148468	108143		
Total return (Average cubic feet per second)		-	678	596	641	539	191	614	593		
Return in per cent of diversions		-	39	32	36	62	46	39	39		

(1) Record of flow in Colusa Trough is only available for the period May 13 to December 19 inclusive (Table 87)

TABLE 81

RELATION BETWEEN DIVERSIONS FROM AND RETURN TO THE SACRAMENTO RIVER FROM RECLAMATION DISTRICT #70 FOR 1940

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	Jul.-Sep. inc.	Acreage Irrigated	
	Acre-feet															Gen.	Rice
Diversions (1)	0	0	0	0	1650	3260	6910	7270	2690	30	0	0	21810	21810	16870	7140	600
Return water (2)	---	---	---	---	520	0	680	1290	1110	550	0	---	---	---	3080		
Return in % of diversion	---	---	---	---	32	--	10	18	41	--	---	---	---	---	18		
Return in % of annual diversions	---	---	---	---	2.4	--	3.1	5.9	5.1	2.5	---	---	---	---	14		
Drainage rediverted (3)	0	0	0	0	0	0	1534	1646	400	0	0	0	3580	3580	3580		
Rainfall (4)																	

NOTE: Flood stages prevailed in spring and winter. District was flooded March 1st.
(1) The diversions comprise those from the Sacramento River, left bank, Mile 67.5 to Mile 83.5 (Table 61) and those from Butte Slough, Mile 0.3W to 7.5W (Table 64).
(2) The return water is the discharge to the Sacramento River through the drainage plant of Reclamation District 70 at Mile 68.8L (Table 91). This is a combined drainage and irrigation plant which also discharges into an irrigation canal at the plant.
(3) This is the water re-used within the district. It has not been taken into account in the percentage computations.
(4) Rainfall not taken into account in percentage figures. See Tables 103 to 113 for daily rainfall records.

TABLE 82

RELATION BETWEEN DIVERSIONS FROM AND RETURN TO THE SACRAMENTO RIVER FROM RECLAMATION DISTRICT #108 FOR 1940

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	Jul.-Sep. inc.	Acreage Irrigated	
	Acre-feet															Gen.	Rice
Diversions (1)	0	0	0	2080	19340	16310	17270	13340	3340	100	0	0	81540	81540	33950	4270	9610
Return water (2)	---	---	---	5460	5870	6020	6040	6770	5820	1680	635	---	---	---	18630		
Return in % of diversion	---	---	---	---	30	37	35	51	174	---	---	---	---	---	55		
Return in % of annual diversions	---	---	---	6.7	7.2	7.4	7.4	8.3	7.1	2.1	0.7	---	---	---	23		
Drainage rediverted (3)																	
Rainfall (4)																	

NOTE: Flood stages prevailed in spring and winter
(1) The diversions comprise those from the Sacramento River, right bank, from Mile 43.1 to Mile 63.2 (Table 61).
(2) The return water is the discharge to Sacramento River of Reclamation District 108 drain at Rough and Ready Bend (Table 92) and on Back Borrow Pit (Table 93).
(3) No report of any rediversion of drainage water.
(4) Rainfall not taken into account in percentage figures. See Tables 103 to 113 for daily rainfall records.

TABLE 81

RELATION BETWEEN DIVERSIONS FROM AND RETURN TO THE SACRAMENTO RIVER FROM RECLAMATION DISTRICT #70 FOR 1940

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	Jul.-Sep. inc.	Acreage Irrigated	
	Acre-feet															Gen.	Rice
Diversions (1)	0	0	0	0	1650	3260	6910	7270	2690	30	0	0	21810	21810	16870	7140	600
Return water (2)	---	---	---	---	520	0	680	1290	1110	550	0	---	---	---	3080		
Return in % of diversion	---	---	---	---	32	--	10	18	41	--	---	---	---	---	18		
Return in % of annual diversions	---	---	---	---	2.4	--	3.1	5.9	5.1	2.5	---	---	---	---	14		
Drainage rediverted (3)	0	0	0	0	0	0	1534	1646	400	0	0	0	3580	3580	3580		
Rainfall (4)																	

NOTE: Flood stages prevailed in spring and winter. District was flooded March 1st.
(1) The diversions comprise those from the Sacramento River, left bank, Mile 67.5 to Mile 83.5 (Table 61) and those from Butte Slough, Mile 0.3W to 7.5W (Table 64).
(2) The return water is the discharge to the Sacramento River through the drainage plant of Reclamation District 70 at Mile 68.8L (Table 91). This is a combined drainage and irrigation plant which also discharges into an irrigation canal at the plant.
(3) This is the water re-used within the district. It has not been taken into account in the percentage computations.
(4) Rainfall not taken into account in percentage figures. See Tables 103 to 113 for daily rainfall records.

TABLE 82

RELATION BETWEEN DIVERSIONS FROM AND RETURN TO THE SACRAMENTO RIVER FROM RECLAMATION DISTRICT #108 FOR 1940

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.-Dec. inc.	Mar.-Oct. inc.	Jul.-Sep. inc.	Acreage Irrigated	
	Acre-feet															Gen.	Rice
Diversions (1)	0	0	0	2080	19340	16310	17270	13340	3340	100	0	0	81540	81540	33950	4270	9610
Return water (2)	---	---	---	5460	5870	6020	6040	6770	5820	1680	635	---	---	---	18630		
Return in % of diversion	---	---	---	---	30	37	35	51	174	---	---	---	---	---	55		
Return in % of annual diversions	---	---	---	6.7	7.2	7.4	7.4	8.3	7.1	2.1	0.7	---	---	---	23		
Drainage rediverted (3)																	
Rainfall (4)																	

NOTE: Flood stages prevailed in spring and winter
(1) The diversions comprise those from the Sacramento River, right bank, from Mile 43.1 to Mile 63.2 (Table 61).
(2) The return water is the discharge to Sacramento River of Reclamation District 108 drain at Rough and Ready Bend (Table 92) and on Back Borrow Pit (Table 93).
(3) No report of any rediversion of drainage water.
(4) Rainfall not taken into account in percentage figures. See Tables 103 to 113 for daily rainfall records.

TABLE 85

RETURN FLOW IN SAN JOAQUIN VALLEY STREAMS - 1940

(Acre-feet)

River Section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
SAN JOAQUIN RIVER												
Fremont Ford Bridge to Vernalis	-3600	170	9100	-15600	-27200	-8600	-11400	-2190	160	-130	-970	-8800
Fremont Ford Bridge to Newman	300	6400	14720	54150	13120	23230	33720	19400	14970	12980	8720	2650
Newman to Grayson	700	-31900	-12000	18690	3970	12640	7900	3520	9260	8910	3150	1240
Grayson to Hetch Hetchy Crossing	-12700	-16900	-30900	-44100	-48370	23880	5970	990	-3790	-5120	5980	-11530
Hetch Hetchy Crossing to Vernalis	-15270	-42230	-19080	13180	-58480	51160	36200	21720	20604	15380	16640	16390
Total net return flow*	0	0	550	4550	15520	18950	26400	17710	10770	3360	0	0
Total diversions												
STANISLAUS RIVER												
Orange Blossom Bridge to Hatmark Ranch								5480	5430	4540	1290	40
Orange Blossom Bridge to Riverbank					-12700(1)	27510(1)	16790(1)	9850	7190	6640	7290	4090
Riverbank to Ripon Bridge	- - -	-NO	RECORD	- - -	20120	10260	4500	2020	2630	2750	890	1540
Ripon Bridge to Hatmark Ranch					7420	37770	21290	17350	15250	13930	9470	5670
Total net return flow**	0	0	217	682	2140	3330	3860	2920	1740	850	0	0
Total diversions												
TUOLUMNE RIVER												
La Grange Bridge to Tuolumne City	1640	3200	-7600	6100	-10500	-9300	2260	2490	6100	3370	3640	3810
La Grange Bridge to Roberts Ferry Bridge	6210	-40400	2000	21100	23430	22350	4210	2840	3870	3080	5070	9140
Roberts Ferry Bridge to Hickman Bridge	NO	RECORD		35200	-1980	16620	15460	10200	9240	13150	7730	15710
Hickman Bridge to Modesto	28110(2)	25400(2)	35000(2)	29800	1086	8570	4910	7140	4510	7110	3110	-3160
Modesto to Tuolumne City	35960	11800	29400	92210	12040	38240	26840	22680	23720	26700	19550	25500
Total net return flow**	0	0	-	20	580	420	640	440	340	150	0	0
Total diversions												
MERCED RIVER												
Yosemite Valley Railroad to Mouth	11210	18810	11500	37920	30140	17860	12710	10930	10700	8990	6470	12070
Yosemite Valley Railroad to Livingston	-440	-6800	-1600	-4800	-6100	7990	9220	6850	3960	3540	2870	1040
Livingston to mouth	10770	12010	9900	33120	24040	25850	21930	17780	14660	12530	9340	13110
Total net return flow**	0	0	-	220	1540	2280	2210	1600	950	320	0	0
Total diversions												

*The return flow figure is obtained by making due allowance for diversions and deducting all measured inflow from tributaries, but it is apparent that there is a large unmeasurable accretion from lands irrigated from the tributaries. Inflow of Dry Creek treated as Tuolumne River return water. During periods of high flow a large portion of the water passing Fremont Ford bridge is in the Mud Slough channels and spreads over a large area.

**The excessive return flow in relation to diversions here shown is due to large irrigation district diversions which are made above upper station shown for each stream. This return flow enters the channels below the initial gaging stations on each.

(1)Orange Blossom Bridge to Ripon Bridge.
(2)Hickman Bridge to Tuolumne City.

TABLE 86

COMPARISON OF DIVERSIONS AND RETURN FLOW - SAN JOAQUIN VALLEY 1940
(Quantities in acre-feet except as noted)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.-Dec.
DIVERSIONS													
San Joaquin River near Friant (1)(2) (Miller & Lux, etc.)	116000	143600	209300	249300	406900	331100	114500	84910	63610	48230	45200	108400	1921050
Merced at Exchequer(1)(Merced I.D.etc.)	1210	56250	115900	194100	262300	146400	104600	86900	59090	26070	2400	1600	1056820
Turlock Irrigation District Canal (1)	4640	16470	21830	63180	95610	109500	73590	69040	50610	25010	28740	830	559050
Modesto Irrigation District Canal (1)	11870	770	15260	32840	59200	69210	37090	45480	35430	31420	540	60	339170
South San Joaquin & Oakdale I.D.Canal(1)	3360	0	11580	32410	54940	57660	47870	42940	16940	6970	4110	1900	280680
Oakdale Irrigation District Canal (1)	0	0	200	12640	22460	22700	23120	21050	12160	*4000	*3000	*1000	122330
Pumping Diversions-Tables 72,73,74,75.	0	0	780	5470	19780	24970	33100	22660	13790	4680	0	0	125230
Total diversions - acre-feet	137080	217090	374850	589940	921190	761540	433870	372980	251630	146380	83990	113790	4404330
Total diversion - average c.f.s.	2230	3770	6100	9910	14980	12800	7060	6070	4230	2380	1410	1850	6080
RETURN FLOW													
San Joaquin River near Vernalis (1)	254000	493100	902300	965200	873900	645600	122700	72920	100400	98600	102000	184900	4815620
Pumping diversions-Tables 72,73,74,75	0	0	780	5470	19780	24970	33100	22660	13790	4680	0	0	125230
Undiverted Flow (3)													
at Fremont Ford Br.(San Joaquin R.)	118940	195440	287800	223960	277300	262720	45160	7840	8620	7670	3850	71170	1510470
at La Grange (Tuolumne River)	22640	170800	263800	172000	201700	146200	300	5400	29400	21300	44500	57760	1135800
at Yosemite Val.R.R.Crossing(Merced R.)	8960	53180	104900	153500	153000	46600	2030	1000	540	330	560	3920	528520
at Orange Blossom Br.(Stanislaus R.)	(4)51170	(4)144300	(4)229220	(4)210750	281200	61810	1700	1590	1310	4120	9810	24160	1021140
Power release and spill (3)													
Net return - acre-feet (5)	52290	-70620	17360	210460	-19520	153240	106610	79750	74320	69860	43280	27890	744900
Net return - average c.f.s.	850	-1230	282	3540	-317	2580	1730	1300	1250	1140	730	454	1030
Return in % of diversions	---	---	---	---	---	20	25	21	30	48	52	25	17
Monthly return in % of seasonal	7.0	-9.5	2.3	28.2	-2.6	20.7	14.3	10.7	10.0	9.4	5.8	3.7	

NOTE: For periodic relation between diversion and return flow, see Table 76.

(1) U.S.G.S. station.

(2) The entire flow of the river is considered as being diverted after July.

(3) It is assumed that the stations which are above the valley diversions and below the foothill diversions represent all undiverted flow and include all spill or power release.

(4) Flow below Melones dam corrected for canal diversions.

(5) Includes any valley floor run-off and all accretions.

* Estimated.

TABLE 87

DISCHARGE OF COLUSA TROUGH AT COLUSA-WILLIAMS HIGHWAY - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1						919	440	479	563	191	178	71
2						906	430	481	566	172	284	69
3						825	414	498	564	161	436	68
4						722	414	496	564	144	384	67
5						705	426	497	589	130	278	68
6						632	430	497	616	120	242	67
7						542	444	496	630	138	229	65
8						483	455	496	638	142	234	63
9						462	450	519	628	144	276	68
10						422	450	524	622	150	240	71
11						432	434	512	600	159	216	71
12						444	448	494	612	168	185	69
13					*370	431	472	488	623	168	163	69
14					361	430	474	480	613	174	143	79
15					396	448	476	478	598	174	117	83
16					418	496	455	490	555	159	115	106
17					468	502	462	482	500	161	113	124
18					452	492	478	488	494	167	111	372
19					426	498	470	496	456	165	108	**887
20					468	500	460	507	390	177	98	
21					486	500	465	492	356	180	94	
22					486	501	468	492	317	176	90	
23					527	500	465	484	310	172	88	
24					554	516	460	484	240	195	84	
25					544	524	452	507	224	142	83	
26					542	517	478	512	249	98	79	
27					558	465	504	492	222	69	76	
28					587	440	500	552	212	59	75	
29					572	432	506	548	212	75	75	
30					619	447	501	552	195	104	73	
31					868		485	556		126		
Mean						538	460	502	465	148	166	
Ac. Ft. for Month						32000	28300	30870	27680	9045	9850	

*Beginning of record for season.

**Recorder removed because of impending high water. (See Tables 94 and 100)

NOTE: This is return water flowing in the main drain of Reclamation District 2047; it is drainage chiefly from lands irrigated by Glenn-Colusa, Provident, Princeton-Codora-Glenn, Compton-Delevan and Maxwell Irrigation Districts.

TABLE 88

DISCHARGE OF BUTTE SLOUGH TO SACRAMENTO RIVER - 1940

Jan.	Monthly Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	1995	0	0	553	133	155	184	0	0	0
2			1722	588		773	137	156	190	65	0	65
3			1351	0		792	92	132	186	65	0	65
4			693		FLOW	717	20	121	187	65	0	0
5			0			684	73	131	195	65	0	0
6					NO	688	81	133	203	0	0	0
7						598	106	133	208	65	0	0
8	FLOW					561	114	133	209	65	65	65
9					0	469	113	133	1086	65	0	0
10					195	436	66	133	65	65	65	0
11	NO				130	397	63	133	65	65	0	0
12					0	375	68	162	130	65	0	0
13		FLOW	FLOW	FLOW	637	264	90	168	130	65	0	0
14					65	160	113	141	130	0	65	0
15	0				130	205	113	131	130	0	65	0
16	637				146	207	113	126	130	0	65	195
17	735	NO	NO	NO	175	160	112	148	65	65	0	130
18	868				124	174	112	155	65	65	0	130
19	910				139	236	113	155	130	0	0	0
20	910				127	183	113	151	65	65	130	0
21	987				81	157	146	143	0	65	65	0
22	1022				56	136	150	144	0	0	65	0
23	987				65	182	125	144	0	65	0	0
24	1022				156	198	125	133	130	0	0	0
25	945				250	218	125	133	65	130	65	0
26	0				304	220	125	156	65	130	65	0
27	0				307	222	156	157	130	195	0	637
28	0	0			311	144	140	160	65	255	0	130
29	0	1050			399	121	133	156	65	65	65	255
30	0			0	394	150	148	162	0	0	65	693
31	0		0		452		155	164		0		195
Mean	291	36	186	20	150	346	112	145	142	59	28	83
Ac.Ft. for Month	17900	2080	11430	1170	9210	20590	6890	8890	8480	3600	1680	5080

NOTE: This is the discharge to the Sacramento River at Mile 84 Left and is measured at and regulated by the gravity culverts at the mouth of the Slough. This flow together with that shown in Tables 89 and 90 is made up almost entirely of return water from lands irrigated by Feather River diversions during the summer months. Discharge from the Sacramento River over Moulton and Colusa weirs is shown in Tables 89A and 89B.

TABLE 89

DISCHARGE OF BUTTE SLOUGH TO SUTTER BY-PASS*- 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	58	11300	*169000	22300	610	90	145	104	112	0	160	193
2	176	7800	109100	47600	520	77	152	112	112	0	176	211
3	360	5700	95300	40000	440	71	145	97	104	0	184	211
4	6400	4650	61200	30500	480	71	184	112	104	0	184	202
5	6800	7600	33900	18000	500	71	202	112	112	0	184	193
6	15900	15400	20200	13100	520	71	193	112	112	0	202	176
7	13600	21600	14000	8600	550	65	176	112	104	0	211	160
8	13600	25200	8600	5900	440	65	168	120	112	0	229	152
9	14100	24400	5200	3920	328	65	160	112	100	0	238	145
10	15400	19700	3440	2830	288	59	145	112	90	0	248	138
11	28500	14100	1940	1940	258	54	168	120	80	0	278	138
12	34900	9700	960	1230	229	54	160	120	70	0	295	138
13	32100	6600	700	820	193	49	168	112	60	0	318	138
14	23300	5400	570	570	176	97	168	112	50	0	328	131
15	15100	5400	450	450	131	112	160	112	40	0	328	110
16	10100	7400	450	450	110	90	160	120	30	0	328	36
17	6800	6400	450	450	117	97	160	112	20	0	328	29
18	4550	6100	350	350	138	120	160	112	12	0	340	42
19	2880	11700	350	350	145	112	160	112	0	2	328	238
20	1810	14600	350	1220	152	120	160	104	0	2	308	670
21	1120	11300	270	1120	160	104	160	112	0	2	278	1880
22	790	8100	270	1070	168	104	145	112	0	2	298	6100
23	580	6100	270	950	184	112	145	112	0	2	298	26900
24	440	4550	270	900	193	160	104	104	0	0	288	54000
25	380	3400	210	820	193	160	112	120	0	0	278	66000
26	690	2620	210	820	144	145	112	120	0	2	248	79000
27	3680	2960	210	790	144	138	104	120	0	21	220	85000
28	23700	18600	270	760	144	145	104	112	0	39	202	85000
29	31200	127000	350	730	120	160	112	104	0	21	176	85000
30	23000		2380	700	83	138	112	104	0	117	168	76000
31	15400		6500		90		112	104		152		59000
Mean	11210	14320	12440	6975	256	99	149	112	47	12	255	20240
Ac.Ft. for Month	689100	823900	764900	415000	15760	5900	9160	6870	1730	718	15170	1244000

*Butte Slu levee broke at a point about 3.5 miles above Long Bridge at 1:30 A.M. March 1, 1941 and allowed a large flow of water to enter R.D. 70 and 1660. This flow by-passed the Long Bridge station and ultimately reached the Sutter By-Pass in the vicinity of its junction with the Tisdale By-Pass. An estimate of this flow is given in Table 89C. The flow over Tisdale weir is given in Table 89D. To arrive at a figure for flow in Sutter By-Pass opposite R.D.1500 combine the flows in Tables 89,89C,89D, and 90.

NOTE: This is the discharge from Butte Slu to the Sutter By-Pass. During low flow periods gates at mouth of slough are regulated (Table 88) which forces water under Long Bridge as shown in this table. Normal and summer flows are primarily from Feather River sources. During flood periods Sacramento River water enters Sutter Basin above Butte City by bank spill and over Moulton and Colusa weirs.

TABLE 89A

DISCHARGE OVER MOULTON WEIR - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	13200	13200	0	0	0	0	0	0	0	0
2	0	0	9900	9400								
3	50	0	7900	4700								
4	550	0	4400	710								
5	900	50	710	50								
6	70	7100	0	0								
7	0	50										
8	0	50										
9	0	0										FLOW
10	250											
11	1800											
12	900											
13	0											
14												NO
15												
16												
17												
18	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	
19												
20												
21												
22	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0
23												4400
24												12300
25												13200
26	0	0										17000
27	2850	120										18200
28	3800	13800										14800
29	430	19200	0									16500
30	0		150	0		0			0			13200
31	0		8600		0		0	0		0	0	3200
												0
Mean	374	1392	1447	935	0	0	0	0	0	0	0	3639
Ac.Ft. for Month	23000	80000	89000	55700	0	0	0	0	0	0	0	224000

NOTE: Discharge based upon measurements made and curves developed by Corps of Engineers, U. S. Army.

TABLE 89B

DISCHARGE OVER COLUSA WEIR - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	47500	52000	0	0	0	0	0	0	0	0
2	600	0	44000	46000								
3	12500	0	37000	40000								
4	19500	1900	39000	31500								
5	21000	16500	30000	26000								
6	16500	19500	19500	18000								
7	2000	18000	11500	11500								
8	1000	18000	7000	7500								
9	12500	14000	3500	7500								FLOW
10	18000	7000	1500	5500								
11	19500	2000	250	3000								
12	23000	250	0	1000								
13	12500	0		0	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	NO
14	1500	300										
15	0	10500										
16		4000										
17		100										
18		6000										
19	FLOW	19500	FLOW	FLOW	NO	NO	NO	NO	NO	NO	NO	0
20		8500										1300
21		2500										3200
22		100										1300
23	NO	0	NO	NO								26000
24		0										49000
25	0	0										50000
26	1400	0										52000
27	23000	4500	0									53000
28	31500	47000	5500									48500
29	16500	49000	9500									49500
30	4000		19500	0		0			0		0	48500
31	100		44500		0		0	0		0		40000
												22000
Mean	7630	8590	10300	8320	0	0	0	0	0	0	0	14300
Ac.Ft. for Month	469000	494000	634000	495000	0	0	0	0	0	0	0	881000

NOTE: Discharge based upon measurements made and curves developed by Corps of Engineers, U. S. Army.

TABLE 89C

DISCHARGE FROM BUTTE SLOUGH INTO RECLAMATION DISTRICT 70 AND 1660 FOR 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	74000	40000	0	0	0	0	0	0	0	0
2			77900	40000								
3			20900	36600								
4			22800	28900								
5			28400	23300								
6			17500	11800								
7			5400	6800								
8			2900	3800								
9			2600	3280								
10			2260	3270								
11			2870	3480								
12			3000	3270								
13	FLOW	FLOW	2910	2960	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW
14			2880	2800								
15			2840	370								
16			2760	280								
17			2600	250								
18	NO	NO	2620	320	NO	NO	NO	NO	NO	NO	NO	NO
19			2550	300								
20			2480	0								
21			2560									
22			2490									
23			2420	FLOW								
24			2420									
25			2410									
26			2480									
27			2410	NO								
28			2490									
29		0	3880									
30			3870	0		0			0		0	
31	0		8900		0		0	0		0		0
Mean	0	0	10270	7060	0	0	0	0	0	0	0	0
Ac.Ft. for Month	0	0	631700	420100	0	0	0	0	0	0	0	0

NOTE: Break occurred at 1:30 A.M., March 1, and was closed April 19th. This is an estimate of flow through break in levee based upon measured flow at Long Bridge (3.5 miles below break) and recorded gage heights at Nawson Bridge (2 miles above break). No measurements of flow through break were made at high stages.

TABLE 89D

DISCHARGE OVER TISDALE WEIR - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	6300	72000	24500	0	0	0	0	0	0	0	0
2	1100	3400	59000	30000								
3	10800	1780	87000	32000								
4	12700	5500	55000	24500								
5	12700	15900	32000	20000								
6	13600	17000	20000	18200								
7	11800	17000	15900	17000								
8	9700	17000	14800	15900								
9	13600	15900	13600	14800								FLOW
10	14800	14800	12700	14800								
11	15900	12700	10800	13600								
12	17000	9700	8800	12700								
13	15900	6300	7000	10800	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	NO
14	11800	4600	4600	8800								
15	6300	13600	2800	7900								
16	1780	13600	1300	5500								
17	200	9700	300	4100								
18	0	12700	0	2800	NO	NO	NO	NO	NO	NO	NO	
19		17000		760								
20		14800		0								0
21		11800										10800
22		8800										7000
23	NO FLOW	4600	NO FLOW									11800
24		2800		FLOW								17000
25	0	1300										22000
26	400	2800										26000
27	12700	11800	0	NO								28500
28	18200	21000	10800									35000
29	17000	55000	14800									36500
30	13600		17000	0		0			0			38000
31	9700		21000		0		0	0		0	0	27000
Mean	7780	12000	15500	9290	0	0	0	0	0	0	0	17000
Ac.Ft. for Month	479000	693000	954000	553000	0	0	0	0	0	0	0	8920
												549000

NOTE: Discharge based upon measurements made and curves developed by Corps of Engineers, U. S. Army.

TABLE 90

DISCHARGE OF WADSWORTH CANAL TO SUTTER BY-PASS - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	31	127	550	671	53	99	81	81	87	81	65	30
2	61	108	470	637	64	93	81	81	81	75	71	30
3	97	259	440	621	64	93	81	75	81	81	65	30
4	520	332	400	460	64	87	81	81	87	81	59	35
5	217	217	370	267	69	81	81	81	87	81	59	35
6	158	193	340	158	64	75	75	81	99	81	163	35
7	304	170	304	117	64	69	81	81	93	81	72	30
8	688	158	182	108	59	69	81	81	93	81	65	30
9	570	137	117	100	59	64	75	81	99	81	60	30
10	621	92	100	92	64	69	69	81	99	75	50	30
11	490	85	92	85	64	69	69	81	106	75	40	30
12	345	78	85	78	64	69	69	81	106	75	35	30
13	267	170	78	78	75	69	75	81	106	81	30	30
14	217	587	78	72	75	69	75	81	106	81	30	30
15	182	257	72	72	81	69	81	84	122	75	30	50
16	158	158	72	65	81	69	81	81	139	75	30	72
17	137	345	72	60	81	69	81	81	114	132	30	127
18	117	243	72	60	75	75	81	81	106	71	30	205
19	108	158	72	60	75	69	81	81	93	59	30	170
20	100	127	127	55	81	75	81	81	69	59	30	100
21	92	108	205	55	81	69	87	81	69	59	30	671
22	85	92	304	50	81	69	81	84	69	59	30	790
23	85	85	400	50	87	81	75	84	75	59	30	738
24	85	92	505	50	87	81	75	84	81	65	30	720
25	304	117	637	50	93	75	75	87	81	71	30	720
26	505	360	755	50	93	75	81	87	75	65	30	715
27	317	671	874	50	87	69	81	90	75	59	30	710
28	217	995	1012	45	87	64	81	87	75	59	30	500
29	182	750	1137	26	81	69	87	84	81	65	30	400
30	148		1190	20	93	75	81	81	81	65	30	380
31	127		959		99		81	81		59		300
Mean	243	251	389	145	76	74	79	82	91	73	45	252
Ac.Ft. for Month	14940	14420	23940	8650	4650	4420	4850	5050	5420	4490	2670	15480

NOTE: This is the discharge (measured at Weir #4) to the East Borrow Pit of the Sutter By-Pass at Mile 16.0 (north from Chandler). This flow is made up entirely of Feather river drainage or return flows. This flow and the flow from Butte Slough (Table 89) make up the entire Feather River contribution to the Sutter By-Pass. See footnote Table 89.

TABLE 91

DISCHARGE OF RECLAMATION DISTRICT 70 DRAIN - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	17	26	7	16	0	0
2	3	19			0		17	29	26	15		0
3	0	23			0		12	24	25	15		0
4	11	0			15		13	20	21	13		0
5	9	18			51		7	15	24	13		0
6	0	25			53		2	24	12	12		0
7	8	25			52		2	23	6	12		0
8	13	25			52		2	19	7	10		0
9	17	17			39		1	20	2	6		6
10	23	13			0		2	20	15	8		0
11	27	0					2	24	16	10		3
12	26	5					2	24	0	10		3
13	20	25	FLOW (1)	FLOW (1)			2	5	0	6	FLOW	3
14	13	25				FLOW	2	3	55	6		3
15	18	24					3	19	54	8		0
16	14	32					2	19	29	10		0
17	9	33	NO	NO			2	23	25	12		0
18	0	33			FLOW	NO	2	22	25	10	NO	0
19	0	34					5	22	23	8		0
20	0	34					3	21	21	10		3
21	19	34					32	21	19	10		8
22	19	32					22	24	20	0		14
23	0	23			NO		8	15	20	13		27
24	0	24					32	28	20	26		39
25	20	22					36	24	23	18		39
26	21	27					22	19	19	0		72
27	0	19					26	15	15	0		78
28	20	64					17	15	10	0		78
29	28	7					7	30	10	0		78
30	27			0		0	9	30	10	0	0	78
31	16		0		0		30	27		0		78
Mean	12	23	0	0	8	0	11	21	19	9	0	20
Ac.Ft. for Month	756	1310	0	0	520	0	676	1290	1110	549	0	1210

NOTE: This is the drainage from Reclamation District 70 returned to the Sacramento River at Mile 68.8 Left. Discharge to Sacramento River both by pumping and controlled gravity flow. This is a combination irrigation and drainage plant and discharges both to the Sacramento River and to an irrigation canal.

(1) Butte Slough levee broke at 1:30 A.M. March 1st and flooded district. Break closed April 19th. Water drained by gravity from district into Tisdale and Sutter By-Pass.

TABLE 92

DISCHARGE OF RECLAMATION DISTRICT 108 DRAIN AT ROUGH AND READY BEND - 1940

Day	Daily Diversions in Acre-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	535	314	102	236	82	107	107	40	0	0
2	0	0	539	250	0	247	87	105	109	42	0	0
3	144	101	691	178	104	204	90	105	107	35	0	0
4	131	190	409	163	0	157	77	105	110	32	0	0
5	0	0	317	140	89	158	85	105	111	40	0	0
6	0	103	210	66	50	156	87	105	110	40	0	0
7	135	0	161	282	89	141	91	105	105	40	0	0
8	0	91	155	96	75	0	94	108	184	42	0	0
9	216	0	142	92	0	163	95	109	71	50	0	0
10	214	99	135	91	99	134	95	109	84	55	234	0
11	208	142	80	91	0	94	97	109	131	44	86	0
12	172	0	90	91	105	80	98	110	71	37	0	0
13	146	0	91	0	0	87	100	110	85	32		0
14	170	92	86	105	157	93	101	112	139	32		0
15	0	91	76	116	141	0	100	115	217	37		0
16	0	0	51	177	102	103	101	116	30	42		0
17	0	101	119	80	0	13	103	113	60	40		83
18	152	185	0	0	158	95	105	110	144	30		149
19	0	62	90	75	101	40	105	109	46	12	FLOW	0
20	0	66	71	0	0	96	104	108	59	12		168
21	148	0	0	77	160	52	102	110	137	12		191
22	0	98	92	47	106	94	100	113	135	18	NO	301
23	0	74	0	0	160	50	100	113	13	30		280
24	0	0	101	48	157	95	104	112	132	32		324
25	135	93	69	0	0	57	105	111	7	18		323
26	96	87	61	98	205	68	106	112	99	0		360
27	98	244	76	0	159	77	107	112	40	0		373
28	104	509	64	73	159	94	106	114	60	0		420
29	0	533	62	0	151	71	105	116	207	0		362
30	0		208	0	160	80	105	113	22	0		237
31	92		357		171		106	114		0	0	188
Mean	76	102	166	92	95	101	98	110	98	27	11	121
Ac.Ft. for Month	4680	5870	10190	5460	5870	6020	6040	6770	5820	1680	635	7460

NOTE: This is the drainage from Reclamation District 108 discharged to the Sacramento River at Mile 44.0 Right. Discharge through siphon and by pumping. Additional drainage from Reclamation District 108 is sometimes discharged to Back Borrow Pit at Mile 20.2 Left. See Table 93.

TABLE 93

DISCHARGE OF RECLAMATION DISTRICT 108 DRAIN ON BACK BORROW PIT - 1940

Day	Daily Diversions in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	2	4	0	0
2								0	2	4		
3								0	2	4		
4								0	2	4		
5								0	2	4		
6								0	2	3		
7								0	2	2		
8								0	2	1		
9								3	2	1		
10								3	2	0		
11								2	2			
12								1	2			
13	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW	1	2		FLOW	FLOW
14								1	2			
15								1	2			
16								1	2			
17	NO	NO	NO	NO	NO	NO	NO	1	2		NO	NO
18								1	2	FLOW		
19								1	3			
20								1	3			
21								1	3			
22								1	3	NO		
23								1	3			
24								1	4			
25								1	4			
26								1	4			
27								1	4			
28								1	4			
29		0						1	5			
30				0		0		1	5		0	
31	0		0		0		0	1		0		0
Mean	0	0	0	0	0	0	0	1	3	1	0	0
Ac.Ft. for Month	0	0	0	0	0	0	0	56	161	54	0	0

NOTE: This drain at Mile 20.2L supplements the main drainage plant of Reclamation District 108 on Sacramento River at Rough and Ready Bend (see Table 92).

TABLE 94

DISCHARGE OF COLUSA BASIN DRAINAGE TO SACRAMENTO RIVER AT KNIGHTS LANDING - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	0	0	0	502	465	365	645	247	200	61
2						710	465	365	605	249	230	61
3						765	420	405	589	220	336	61
4						710	390	405	605	161	494	50
5						620	365	425	565	114	705	50
6						580	325	425	605	77	671	50
7						540	325	425	660	50	693	50
8						435	365	425	700	76	651	50
9					FLOW	305	365	413	750	126	627	50
10						332	365	425	780	170	333	50
11						360	365	445	700	196	322	50
12						495	365	433	612	211	551	50
13					NO	620	365	425	644	217	742	41
14						780	365	425	684	220	230	41
15						840	365	425	692	222	200	50
16						780	165	425	720	221	174	50
17						780	285	425	652	211	125	50
18					0	840	285	425	553	544	104	174
19					228	840	325	425	494	486	88	0
20					212	780	325	445	430	356	74	
21					500	780	325	445	380	306	88	
22					598	715	365	445	360	291	74	
23					680	715	405	445	340	256	50	
24					585	665	405	445	322	262	61	FLOW
25					650	665	325	445	305	313	61	
26					722	665	325	445	305	317	61	
27					506	715	325	445	271	249	61	NO
28					636	620	325	457	312	169	61	
29		0			665	530	365	485	334	182	61	
30				0	954	495	365	505	278	172	61	
31	0		0		653		365	485		164		0
Mean	0	0	0	0	245	639	353	433	530	228	273	34
Ac.Ft. for Month	0	0	0	0	15070	38040	21730	26620	31520	13990	16240	2060

NOTE: This is the drainage from Colusa Basin passing down the Back Borrow Pit of Reclamation Districts 108 and 787 and entering the Sacramento River at Mile 34.15 Right, just above the Knights Landing gaging station. It includes any drainage from Reclamation District 787 entering the Back Borrow Pit via Sycamore Slough outlet. Irregularities in the flow are due to checking operations at the Knights Landing outfall gates whereby a portion of the flow of the Back Borrow Pit is diverted to the Knights Landing Ridge Cut. This diversion is shown in Table 100. Additional water returned to Ridge Cut below outfall gates. Total flow to Sacramento River is sum of Tables 94 and 94A.

TABLE 94A

DISCHARGE OF SYCAMORE SLOUGH TO FLOW OF COLUSA BASIN DRAINAGE - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	0	0	0	10	0	9	15	2	9	5
2						6		8	16	2	10	5
3						7		8	16	2	10	5
4						8		8	16	1	1	5
5						10		8	16	1	1	5
6						13		8	16	1	2	5
7						16		8	17	0	5	5
8					FLOW	16		9	17	0	12	5
9						16		14	18	0	12	5
10						16		21	19	0	12	5
11						16		23	19	1	12	5
12						0		10	13	1	12	4
13	FLOW	FLOW	FLOW	FLOW	NO		FLOW	12	12	1	12	4
14								14	12	1	12	4
15								14	10	0	10	4
16								14	8	0	10	4
17	NO	NO	NO	NO			NO	14	7	0	10	4
18					0	FLOW		14	7	0	10	4
19					15			13	7	0	9	0
20					14			13	8	0	9	
21					10			13	8	0	9	
22					7	NO		13	8	0	8	
23					7			12	9	0	8	
24					6			10	9	1	8	FLOW
25					6			9	9	1	8	
26					6		0	8	9	2	7	
27					5		26	8	9	4	7	
28					5		18	7	9	4	7	NO
29		0			10		12	8	8	5	7	
30					16	0	10	10	4	7	7	
31	0		0	0	16		9	13		8		0
Mean					4.0	4.5	2.4	11.4	11.7	1.5	8.5	2.7
Ac.Ft. for Month					244	256	149	700	696	89	508	165

NOTE: This water is discharged below outfall gates and is not included in the flow shown in Table 94.

TABLE 95

DISCHARGE OF SACRAMENTO SLOUGH TO SACRAMENTO RIVER (ABOVE VERONA) - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1							672	503	915	267	99	373
2							720	514	603	252	138	212
3							650	468	725	238	341	179
4							742	583	785	230	414	179
5							604	474	775	108	460	179
6							589	466	872	307	377	179
7							843	488	943	177	279	179
8							614	505	859	225	414	312
9							658	513	734	254	538	164
10							680	463	700	252	531	194
11							625	666	790	179	463	179
12	RECORD	RECORD	RECORD	RECORD	RECORD	RECORD	618	486	779	274	279	194
13							566	500	771	263	279	179
14							701	500	794	241	254	164
15							482	492	728	223	254	369
16							558	512	684	189	212	190
17							554	476	732	194	454	138
18	NO	NO	NO	NO	NO	NO	562	651	729	189	194	262
19							529	466	708	117	194	
20							481	469	677	170	179	
21							578	520	562	170	194	
22							481	537	571	150	194	NO RECORD
23							501	552	504	141	194	
24							497	525	517	145	444	
25							503	843	488	122	179	
26							481	456	452	60	212	
27							167	673	402	112	322	
28						628	744	501	386	178	194	
29						616	476	600	304	145	164	
30						783	491	769	290	127	138	
31							480	725		91		
Mean							576	545	659	187	286	
Ac.Ft. for Month							35390	33510	39240	11490	17030	

NOTE: This is return water discharged to Sacramento River via Sacramento Slough at Mile 21.2 Left. This is the sum of the flow measured at two points: Outlet of Reclamation District 1500 Drain (Table 97) and West Borrow Pit of Sutter By-Pass 1.4 miles above Reclamation District 1500 Drain (Table 99). The flow in Table 99 includes the flow in Table 98. It is not possible to record the flow in Sacramento Slough when any of the following conditions prevail: (1) high flows in the Sutter By-Pass or (2) when back water enters from Sacramento River. During flood flow periods the Slough is entirely submerged as it lies within the Sutter By-Pass area. The flow of Sutter By-Pass is shown in Table 99. See footnote of that table.

TABLE 96

SACRAMENTO SLOUGH - COMPONENT PARTS OF FLOW - 1940

Acre-feet

	From Table No.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
From Feather River via Butte Slu (1)	89					15760	5900	9160	6870	1730	718	15170	
From Sacramento R. via Moulton Weir						0	0	0	0	0	0	0	
From Sacramento R. via Colusa Weir						0	0	0	0	0	0	0	
From Sacramento R. via Butte Slu						0	0	0	0	0	0	0	
From Butte Slu via R.D.70 levee break	89C	NOTE: Due to high water in the spring and fall no attempt made to segregate flows for these periods.				0	0	0	0	0	0	0	
From Feather River via Wadsworth canal (1)	90					4650	4420	4850	5050	5420	4490	2670	
From Sacto. R. via Tisdale Weir						0	0	0	0	0	0	0	
From Sacramento R. via R.D. 1500	97					18620	20420	21830	22710	25160	3930	2050	
From Feather River via Sutter By-Pass at Chandler	98					14560	7670	(2)8590	(2)6260	(2)7740	(2) 5880	(2)13930	
From Sacramento and Feather Rivers via Sutter By-Pass at R.D. 1500	99					N.R.	N.R.	13560	10800	14080	7560	14980	
Sacramento Slough	95					(3)(6)40890	(3)(6)32780	(4)35390	(4)33510	(4)39240	(4)11490	(4)17030	
Sacramento River Water						20480	22460	26800	27250	31500	5610	3100	
Feather River Water						(5)20410	(5)10320	8590	6260	7740	5880	13930	
Diversions East Borrow Pit	65					443	2181	3634	2275	1822	698	0	
Diversions West Borrow Pit	65					480	2652	3530	5083	1297	0	0	
Total Diversions						923	4833	7164	7358	3119	698	0	

(1) These flows after serving irrigation demands together with any accumulated drainage and a portion of the flow shown in Table 89 is again recorded in Table 98 and Table 99.
(2) Included in flow shown in Table 99.
(3) Tables 89, 90 and 97 combined.
(4) Tables 97 and 99 combined.
(5) Tables 89 plus 90 combined.
(6) 10% added to Reclamation District 1500 to allow for accretions in West Borrow Pit above discharge point.

TABLE 97

DISCHARGE OF RECLAMATION DISTRICT 1500 DRAIN - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	0	1030	441	163	364	362	309	605	116	0	161
2	0	0	1024	436	60	746	410	320	324	125	0	0
3	208	199	574	409	145	462	371	289	471	111	129	0
4	170	147	393	371	140	455	511	419	554	113	0	0
5	96	98	427	303	357	456	373	323	521	0	83	0
6	0	0	384	344	150	449	358	315	593	208	0	0
7	253	266	405	316	189	410	564	337	602	78	0	0
8	178	201	355	229	193	377	335	354	665	87	0	161
9	262	269	315	304	212	402	379	362	503	75	0	0
10	324	318	292	285	212	280	401	312	390	73	154	0
11	345	391	272	287	223	330	371	502	511	0	86	0
12	345	279	262	258	565	342	364	335	525	95	0	0
13	285	156	173	187	251	306	312	349	517	84	0	0
14	383	217	221	337	323	319	470	349	563	77	0	0
15	151	353	290	162	328	219	251	341	601	59	0	205
16	168	279	151	182	334	376	327	333	405	51	0	39
17	174	234	160	181	394	260	342	297	478	56	223	0
18	170	449	168	181	294	288	350	487	475	51	0	98
19	170	155	171	176	459	331	350	315	454	0	0	91
20	188	259	171	149	340	314	302	305	398	71	0	100
21	263	219	170	137	305	283	414	356	308	71	0	105
22	92	356	102	150	314	231	287	373	444	51	0	543
23	50	141	159	101	329	382	307	373	292	42	0	332
24	71	198	155	162	342	115	303	346	286	46	250	361
25	133	358	151	166	235	255	339	649	276	45	0	1108
26	128	235	202	165	561	266	317	292	258	0	0	618
27	169	578	185	109	340	275	3	509	208	52	110	1042
28	273	962	147	278	354	287	580	337	192	61	0	933
29	145	1059	229	160	244	275	312	388	153	46	0	495
30	151		562	163	623	442	327	459	111	36	0	435
31	156		623		410		316	415		0		424
Mean	177	289	320	238	303	343	355	369	423	64	34	234
Ac.Ft. for Month	10910	16610	19680	14140	18620	20420	21830	22710	25160	3930	2050	14380

NOTE: This is the drainage from Reclamation District 1500 discharged to West Borrow Pit of Sutter By-Pass and thence via Sacramento Slough (in the By-Pass) to Sacramento River. This is one of the sources measured to obtain the total flow in Sacramento Slough. See Table 95.

TABLE 98

DISCHARGE OF SUTTER BY-PASS - EAST BORROW PIT (WILLOW SLOUGH AT CHANDLER) - 1940

Day	Daily Diversions in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1					473	206	196	116	165	73	57	208
2					424	206	153	107	135	57	107	197
3					374	198	133	98	98	57	175	197
4					394	150	133	89	116	57	208	197
5					419	94	146	73	145	57	219	197
6					424	77	174	73	175	57	252	197
7					444	78	207	73	197	81	252	197
8					369	79	205	73	197	155	252	186
9					389	79	203	73	155	145	252	186
10					264	68	197	81	135	155	263	186
11					*222	25	186	89	135	145	263	186
12					180	25	175	89	107	145	263	186
13					169	25	155	89	98	145	263	175
14					143	25	145	89	107	135	252	175
15					143	25	135	89	107	125	252	175
16					150	59	135	89	107	107	252	175
17					169	107	125	89	107	107	252	165
18					172	111	73	89	107	107	252	165
19					180	118	73	89	125	107	263	**165
20					146	144	73	89	155	81	263	
21					69	166	81	89	155	57	263	
22					28	165	155	89	155	57	263	
23					104	163	145	89	145	57	263	
24					157	163	125	98	135	57	252	
25					187	174	116	125	107	73	252	
26					214	237	107	125	107	107	252	
27					211	264	116	125	107	89	230	
28					209	239	116	145	107	81	219	
29					206	201	116	175	107	81	208	
30					203	198	116	175	107	89	208	
31					206		116	175		116		
Mean					(1) 237	129	140	102	130	96	234	
Ac.Ft. for Month					14560	7670	8590	6260	7740	5880	13930	

*Beginning of record for season. (1) Record prior to May 11th computed.
**Recorder removed because of approaching high water. For flow in Sutter By-Pass during high water period see Table 89.

NOTE: This is return water originating primarily from Feather River diversions and is the net flow of Wadsworth Canal (Table 90) and a portion of the flow from Butte Basin shown in Table 89 after the diversions shown in Table 65 (East Borrow Pit) have been served.

TABLE 99

DISCHARGE OF SUTTER BY-PASS - WEST BORROW PIT 0.4 MILE ABOVE RECLAMATION DISTRICT 1500 DRAINAGE PLANT - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1							310	194	310	151	99	212
2							310	194	279	127	138	212
3							279	179	254	127	212	179
4							231	164	231	117	414	179
5							231	151	254	108	377	179
6							231	151	279	99	377	179
7							279	151	341	99	279	179
8							279	151	194	138	414	151
9							279	151	231	179	538	164
10							279	151	310	179	377	194
11							254	164	279	179	377	179
12							254	151	254	179	279	194
13		(For period when no record is shown see footnote)					254	151	254	179	279	179
14							231	151	231	164	254	164
15							231	151	127	164	254	164
16							231	179	279	138	212	151
17							212	179	254	138	231	138
18							212	164	254	138	194	164
19							179	151	254	117	194	
20							179	164	279	99	179	
21							164	164	254	99	194	
22							194	164	127	99	194	
23							194	179	212	99	194	
24					463		194	179	231	99	194	
25							164	194	212	77	179	
26							164	164	194	60	212	
27							164	164	194	60	212	
28						341	164	164	194	117	194	
29						341	164	212	151	99	164	
30						341	164	310	179	91	138	
31							164	310		91		
Mean							221	176	236	123	252	
Ac.Ft. for Month							13560	10800	14080	7560	14980	

NOTE: This is the flow in the West Borrow Pit below the confluence of the East Borrow Pit flow entering via Willow Slough. This flow is joined by the discharge through R. D. 1500 drainage plant and the combined flow is thence discharged via Sacramento Slough (in the By-Pass) to Sacramento River. This is one of the sources measured to obtain the total flow in Sacramento Slough. See Table 95. For balance of year when no record is given, see Tables 89, 89C, 89D and 90. Their combined flows make up the flow at this point. During extreme stages the Feather River at Nicolaus (Table 14) should be added in.

TABLE 100

DISCHARGE OF KNIGHTS LANDING RIDGE CUT AT WEST LINE OF YOLO BY-PASS - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1		2190	3900			21	31	49	45	2	0	0
2			9500			33	31	50	41	2		
3			15000			36	28	51	40	1		
4			18000			34	25	52	39	0		
5						29	23	54	39			
6						26	22	55	40			
7						23	23	55	42			
8						17	24	54	44			FLOW
9						8	25	54	45			
10					96	14	26	56	46			
11					98	23	26	57	44			
12		RECORD	RECORD	RECORD	98	32	26	57	41	FLOW	FLOW	NO
13					99	42	26	56	42			
14					92	48	29	55	43			
15					70	53	31	54	44			
16	2060				53	50	35	55	44			
17					43	51	45	55	42			
18		NO	NO	NO	35	52	50	55	39	NO	NO	
19					27	52	56	55	36			0
20					17	50	59	57	34			133
21					7	49	61	58	31			770
22					3	47	62	59	30			1340
23					2	46	54	59	29			1790
24					2	44	50	57	27			1800
25					1	43	47	57	26			1500
26					0	45	46	60	26			1800
27					0	45	46	61	24			2000
28					0	41	47	62	16			2300
29	1930				0	36	48	65	6			4100
30					0	33	49	68	3		0	5500
31					0		51	62		0		6500
Mean						37	39	57	35	.2	0	953
Ac.Ft. for Month						2230	2380	3480	2080	10	0	58600

NOTE: This is Colusa Basin drainage (Table 94) diverted to the Ridge Cut above the outfall gates on the Back Borrow Pit of Reclamation District 108. Summer diversion is made possible by blocking the gates. Water so diverted is available for Yolo By-Pass diverters (Table 65).

TABLE 101

DISCHARGE OF YOLO BY-PASS*- 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	1	7400	300000	200000	955	64	35	45	49	35	7	7
2	1	6030	177000	177000	768	64	31	45	45	31	7	7
3	2	3700	182000	168000	686	59	28	49	42	28	7	7
4	8	2860	160000	137000	613	54	25	49	38	28	7	6
5	250	2860	120000	106000	613	42	22	49	31	25	7	6
6	1030	3700	88500	79000	613	35	20	45	28	22	7	6
7	1360	7400	70000	64500	540	28	14	38	25	20	8	6
8	2860	16600	59200	54100	540	22	8	38	25	17	8	6
9	6350	17700	54100	51600	540	20	6	35	22	15	8	5
10	16600	16600	46600	42000	613	17	5	35	22	14	8	5
11	23500	11100	21000	21000	686	15	2	35	22	14	8	5
12	42000	7400	15500	16600	613	14	1	35	20	12	8	4
13	49100	4990	8950	12500	613	14	1	35	20	12	8	4
14	34200	3130	6030	7400	613	14	1	35	20	12	8	4
15	17700	3700	4990	6350	540	14	0	35	20	12	8	4
16	11100	4990	3700	4990	472	14	0	31	20	10	8	4
17	4990	4220	3130	3700	408	12	1	35	42	10	8	3
18	2860	4220	2860	2380	350	10	3	38	59	10	8	4
19	2080	4220	2620	1480	250	10	7	38	54	10	8	14
20	1480	4220	1870	1180	172	12	12	38	49	8	8	856
21	1180	4220	1360	1030	210	14	20	38	45	8	8	955
22	1030	4220	1030	1030	147	15	28	38	42	8	10	3130
23	890	2860	770	1030	127	25	31	42	42	8	8	6030
24	700	1870	700	1030	107	35	35	45	42	7	8	11100
25	550	1480	700	1030	78	38	38	45	45	8	8	54100
26	770	1180	640	1180	71	42	38	45	45	7	8	79000
27	3130	4220	2220	1180	64	45	38	45	45	7	8	110000
28	3400	128000	12500	1180	64	42	38	45	45	7	7	155000
29	6350	244000	17700	1030	64	38	45	42	42	7	7	146000
30	14400		54100	1030	59	35	45	45	38	7	7	124000
31	12500		164000		54		45	45		7		85500
Mean	8460	18240	51090	38920	395	29	20	41	36	14	8	23450
Ac.Ft. for Month	520400	1049400	3141400	2315800	24280	1710	1240	2490	2150	845	462	1442200

*For the period May 1 to November 19 inclusive this station is located at the end of the Sacramento By-Pass and records all flow in Yolo By-Pass, except Putah Creek, to Delta. For period January 1 to April 30 and November 19 to December 31, inclusive, the flow is given at the Woodland-Elkhorn highway crossing. To get total flow through Yolo By-Pass into Delta combine the flow in this table with that shown in Table 101A and Putah Creek. The flow in this table includes Cache Creek, Knights Landing Ridge Cut and flow over Fremont weir.

To get flow from Sacramento Valley passing Sacramento, combine Tables 12, 101 and 101A.

TABLE 101A

DISCHARGE OF SACRAMENTO WEIR - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	150	51600	37600	0	0	0	0	0	0	0	0
2		0	29200	26200								
3		0	24900	21600								
4		0	22600	17800								
5		20	16000	13500								
6		290	11800	9700								
7	0	500	8000	7700								
8	20	520	6200	6000								
9	660	440	4300	4300								
10	690	340	3200	3660								
11	660	250	2000	3060*								
12	960	150	850	380								
13	860	0	90*	380								
14	520	80	0	420								
15	270	250		420								
16	20	180		360								
17	0	60		230								
18		80		110								
19		60		0								
20		60										
21		20										
22		0										
23												0
24												380
25												670
26		0	0									840
27	0	2500*	290									1090*
28	270	59600	860									7250
29	380	57800	820									4520
30	360		26100*	0		0			0		0	3220
31	250		74600		0		0	0		0		2360
Mean	191	4253	9142	5114	0	0	0	0	0	0	0	656
Ac.Ft. for Month	11700	245000	562000	304000	0	0	0	0	0	0	0	40300

NOTE: During the night of December 27-28, 1940, three gates failed and were not closed until January 2, 1941.

* Indicates periods during which gates were open.

TABLE 102

DISCHARGE OF RECLAMATION DISTRICT 1000 (2nd BANNON SLOUGH) - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	58	624	609	0	0	0	0	0	0	0	0
2	0	52	654	425	0							
3	0	47	657	137	89							
4	66	104	610	152	0				FLOW			
5	0	95	296	153	0							
6	0	87	159	125	0							
7	0	91	142	108	0							
8	64	78	74	133	0				NO			
9	0	85	78	231	105							FLOW
10	151	79	127	50	0							
11	144	54	89	93	105				0			
12	115	95	100	78	0				62			
13	46	61	93	86	106				0			
14	75	295	0	113	0	FLOW	FLOW	FLOW		FLOW	FLOW	NO
15	57	152	0	62	106							
16	58	89	0	32	0							
17	52	117	0	56	91							
18	52	160	0	57	45							
19	46	160	0	57	0	NO	NO	NO	FLOW	NO	NO	
20	46	88	0	57	0							
21	0	82	0	0	0							0
22	0	84	0	0	0							81
23	0	38	0	0	52				NO			332
24	0	93	0	0	15							386
25	53	230	0	0	0							561
26	50	311	102	96	0							620
27	52	642	0	66	15							620
28	58	605	91	0	0							577
29	51	620	161	0	0							467
30	51		498	0	0	0			0		0	228
31	51		580		0		0	0		0		84
Mean	43	164	166	99	24	0	0	0	2	0	0	128
Ac.Ft. for Month	2650	9420	10180	5900	1450	0	0	0	123	0	0	7850

NOTE: This is drainage from Reclamation District 1000 returned to the Sacramento River by pumping at Mile 2.1 Left. Additional water returned to Sacramento River at Mile 6.85L (See Table 102A).

TABLE 102A

DISCHARGE OF RECLAMATION DISTRICT 1000 DRAIN (#3 PLANT) - 1940

Day	Daily Diversions in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1						51	0	16	0	12	6	7
2						0		8		5	6	0
3						0		8		5	6	0
4						51		8	FLOW	5	6	7
5						0		8		6	6	7
6						52		9		6	6	7
7	Daily distribution not figured as record					52		0	NO	6	6	7
8	of automatic pump operation was not					52		0		6	5	7
9	available.					0		0	0	6	5	7
10						0		0	46	6	5	7
11						0		17	0	3	5	7
12						52		17	0	6	5	3
13						0		17	0	6	5	7
14						52	FLOW	15	0	6	6	7
15						0		18	54	5	6	4
16						11		18	50	6	6	7
17						0		7	50	6	5	7
18						0	NO	7	44	6	5	10
19						0		7	41	6	5	11
20						0		8	41	3	5	11
21						0		0	38	3	6	28
22						17			66	3	6	39
23						0			48	3	6	78
24						0		FLOW	29	5	9	81
25						0			22	6	6	161
26						0			20	3	6	255
27						0		NO	20	6	6	255
28						0	0		16	3	5	255
29						0	14		16	6	5	145
30						0	16		0	3	0	60
31							16	0		8		50
Mean	0	85	90	56	23	130	1	61	20	53	55	50
Ac.Ft. for Month	0	492	5520	3350	1420	774	92	374	1190	328	328	3050

NOTE: This is drainage from Reclamation District 1000 returned to Sacramento River by pumping at Mile 6.85L. Additional water returned to Sacramento River at Mile 2.1L (See Table 102).

TABLE 102B

DISCHARGE OF RECLAMATION DISTRICT 1001 DRAIN INTO CROSS CANAL* - 1940

Day	Daily Discharge in Second-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0	13	592	592	23	22	0	17	0	5	0	0
2	9	11	592	592	17	0	1	0		18	0	
3	10	12	592	592	8	29	2		NO FLOW	15	28	
4	9	9	211	489	14	22	0			6	0	
5	0	11	170	223	52	17	3			16	0	
6	0	11	107	141	20	12	1			9	25	
7	15	11	104	137	19	9	0		NO	17	0	
8	2	11	84	110	7	11	0	FLOW		29		
9	33	11	80	92	18	10	FLOW			0	FLOW	FLOW
10	41	11	61	86	20	0						
11	61	18	63	74	20	6	NO	NO			NO	NO
12	61	16	38	51	17	0				FLOW		
13	41	0	55	51	24	20	0				0	
14	18	43	30	65	22	10	6				27	
15	93	178	28	63	30	0	3				0	
16	5	87	40	53	0	0	0	0	7		0	
17	17	51	28	34	12	11		0	11		0	0
18	12	75	29	35	22	0		49	6	NO	0	0
19	8	47	23	33	8		FLOW	7	4		25	34
20	0	33	13	33	23	NO FLOW		0	4		11	0
21	NO FLOW	39	28	27	20		NO	0	10	0	10	18
22		24	16	33	20				12	0	4	80
23		17	25	23	11			FLOW	5	13	4	304
24		25	15	32	23	0	0		5	0	0	396
25	0	19	16	19	9	8	15		9	0		561
26	12	202	37	29	20	8	15		3	0	NO FLOW	568
27	13	571	38	25	9	8	0		0	18		592
28	11	547	53	21	22	8	0	NO	0	0		493
29	11	591	148	11	18	7	0		0	0		356
30	13		582	22	11	0	0		0	0		224
31	13		592		21		31	0		0		182
Mean	16	93	145	126	18	7.3	2.5	2.3	3.7	4.7	4.5	123
Ac.Ft. for Month	1010	5340	8910	7510	1110	432	153	145	220	290	266	7550

*Cross Canal, the main drain between Reclamation District 1090 and 1001, joins the Sacramento River at Mile 19.6L. Discharge is mainly from Feather River seepage.

TABLE 103

DAILY RECORD OF PRECIPITATION (IN INCHES) AT M & T, INC.-CHICO LANDING-1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.87	.23		.16							.20	
2	1.08										1.07	
3	.65	.85		.06								
4	1.05	.02		.07	.17	.68						
5				Tr.	.14							
6	.30	.20									.17	
7	.19										.19	
8	1.48											
9	.10											
10	.47											
11	.34											
12												
13												
14		.60										
15												
16												1.55
17		.67										
18												2.30
19												.03
20												.04
21												1.37
22												
23												.46
24										.85		.78
25	.91	.27	.32	.47						.20		.36
26	1.39	.22	.31									.40
27		2.52	.18									.65
28		2.02	.20									
29		.05	.95	.17						.70		.20
30			.82									.05
31			.65		1.07							
Total for Month	8.83	7.65	3.43	.93	1.38	.68	0	0	0	1.75	1.63	8.19
Total for Year	34.47											

* Record kept by M & T Inc. at pumping plant at junction of Chico Creek and Sacramento River.

TABLE 103A

DAILY RECORD OF PRECIPITATION (IN INCHES) AT LLANO SECO RANCHO-1940 *

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.45	.20	Tr.								.82	
2	.52	.81		.03	Tr.						.02	
3	.83	Tr.		.18	.16	.17			Tr.			
4											.06	
5	.20	.14									.25	
6	.22			.02							.19	
7	1.74										.04	
8	.07											
9	.42											
10	.28											
11												
12												
13												
14		.67										
15			.07									.36
16									Tr.			1.18
17		.78									Tr.	2.18
18												Tr.
19												.04
20												1.33
21	.11											1.42
22										Tr.		.43
23			Tr.							1.05		.81
24	.84	.19	.20							.06		.58
25	1.44	.18	.34	.46								.37
26		1.91	.20	.05								.61
27		1.78	.27									
28		.09	.74			Tr.				1.01		.16
29			1.03		.70							.09
30	.02		.77		.30							
31			.21							.23		
Total for Month	8.13	6.75	3.83	.74	1.16	.17	0	0	Tr.	2.35	1.38	9.58
Total for Year					34.09							

* Record kept by ranch. Station is at headquarters six miles below Chico Landing

TABLE 104

DAILY RECORD OF PRECIPITATION (IN INCHES) AT COLUSA-1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.58	.05				Tr.					.20	
2	.60					.03					.82	
3	.28	.59		.07								
4	.72	.28		.03	.08							
5		.01									.01	
6	.23	.04									.74	
7	.28			Tr.							.21	
8	1.88			.01								
9	.40											
10	.26		Tr.									
11	.52											
12												
13												
14		.79										
15				.07								Tr.
16			.05						.01			.14
17		.64							Tr.			.59
18											Tr.	2.18
19												.13
20												.04
21										Tr.		.95
22		Tr.										.85
23	.13											.30
24										.72		.92
25	.63	.16	.14							.16		.37
26	1.13	.12	.24	.67								.50
27		1.55	.42	.01								.57
28		1.58	.14									.05
29		.15	.35							.87		.06
30			.96		.73					.02		.08
31	.04		.49		.24							
Total for Month	7.68	5.96	2.79	.86	1.05	.03	0	0	.01	1.77	1.98	7.73
Total for Year	29.86											

*United States Weather Bureau records.

TABLE 105

DAILY RECORD OF PRECIPITATION (IN INCHES) AT MARYSVILLE-1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.72	.10		Tr.							.11	
2	1.44										.41	
3	.94	.37										
4	.99	.38		.18	.17							
5											Tr.	
6	.30	.05									.76	
7	.27	.17		.05							.48	
8	1.95			Tr.							.09	
9	.47										Tr.	
10	.16											
11	.76											
12												
13									.08			
14		1.84										
15				Tr.								
16												.12
17		.49										.96
18											.03	1.88
19												.15
20												.86
21												1.50
22												.91
23	.08											.64
24	.50									.34		.41
25	1.10	.35	.30							.31		.66
26	.02	.27	.76	.48								.84
27		1.98	1.32	Tr.								.12
28		1.33	.19									.06
29		.16	.35							.42		.14
30			2.03		.80							
31			1.22		.12							
Total for Month	9.70	7.49	6.17	.71	1.09	0	0	0	.08	1.07	1.88	9.25
Total for Year						37.44						

*United States Weather Bureau records.

TABLE 106

DAILY RECORD OF PRECIPITATION (IN INCHES) AT NOAH RANCH-1940 *

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.26	.25										
2	1.71											
3		.51										
4	1.09											
5												
6	.27	.22										
7	.68											
8	1.44											
9	1.12											
10	.18											
11												
12												
13			(NO RECORD									)
14		1.31	Station Discontinued									
15												
16												
17		.61										
18												
19												
20												
21												
22												
23	.04											
24												
25	.68	.38										
26	.57	.06										
27		2.00										
28		1.13										
29		.27										
30												
31												
Total for Month	8.04	6.74										
Total for Year	14.78											

*South end of Reclamation District 1660. One mile north of Tisdale weir. Record kept by Robert Noah.

TABLE 107

DAILY RECORD OF PRECIPITATION (IN INCHES) AT WILKINS SLOUGH-1940 *

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.43										.21	
2	.26	.40		.12								
3	1.04			.05	.05							
4												
5	.26	.16									.66	
6	.22			.05							.31	
7	1.50										.08	
8	.24											
9	.11											
10	.62		.16									
11												
12												
13		.96										
14				0.35								
15			.05									.13
16		.42										.74
17												2.00
18												
19												
20												1.10
21												.90
22	.10											.42
23										.38		.65
24	.46	.31	.25							.20		.30
25	.43	.23	.36	.45								.34
26		1.30	.94									.50
27		.83	.15									.05
28		.24	.11							.55		.08
29			.90		.52							.12
30			.34		.24							
31	.20									.05		
Total for Month	6.87	4.85	3.26	1.02	.81	0	0	0	0	1.18	1.26	7.33
Total for Year	26.58											

* Near Grimes, at Reclamation District 108 pumping plant. Record kept by District.

TABLE 108

DAILY RECORD OF PRECIPITATION (IN INCHES) - RECLAMATION DISTRICT 1500 AT HINSDALE 1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.26										.20	
2	.26	.45		.11								
3	.92	.02		.05	.11							
4		Tr.									.02	
5	.23	.24									.60	
6	.24			.05							.32	
7	1.41										.28	
8	.24											
9	.15											
10	.60		.06									
11												
12												
13		1.02										
14				.20								
15			.02									.13
16		.44										.68
17												2.10
18												.05
19												
20												1.20
21												1.25
22	.10	Tr.										.60
23	Tr.									.35		.60
24	.48	.32	.18							.16		.32
25	.33	.23	.48	.43								.42
26		1.15	.60									.64
27		1.22	.20									.07
28		.20	.15							.67		.07
29			1.40		.69							.08
30			.45		.11							
31	.20		.02							.05		
Total for Month	6.42	5.29	3.56	.84	.91	0	0	0	0	1.23	1.42	8.21
Total for Year	27.88											

*North end of Reclamation District 1500 - two miles east of Tisdale weir. Record kept by Reclamation District 1500.

TABLE 109

DAILY RECORD OF PRECIPITATION (IN INCHES)-RECLAMATION DISTRICT 1500 AT ROBBINS 1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.14											
2	.41	.42		.07							.25	
3	.65	.09		.14	.14				.06			
4		Tr.										
5	.38	.18										
6	.22			.04							.72	
7	1.14										.39	
8	.25										.05	
9	.11											
10	.80		.08									
11	.07											
12												
13		1.72										
14				.22								
15			.02									
16		.34							Tr.			.16
17												.76
18												1.40
19												.07
20												
21												.93
22	.10	.03										1.07
23	Tr.											.60
24	.46	.60	.28							.25		.63
25	.38	.31	.54	.39						.23		.65
26		2.17	.76									.52
27		1.04	.23									.63
28		.16	.15									.14
29			1.55		.60					.41		.09
30			.50		.07							.11
31	.13		Tr.							.03		
Total for Month	6.24	7.06	4.11	.86	.81	0	0	0	.06	.92	1.41	7.76
Total for Year	29.23											

*South central portion of Reclamation District 1500. Record kept by Reclamation District 1500.

TABLE 110

DAILY RECORD OF PRECIPITATION (IN INCHES) AT NICOLAUS-1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.41	.12		.06		Tr.					.03	
2	1.27	.01									.28	
3	.50	.44		.05								
4	.55	.10		.02	.20							
5		Tr.									.02	
6	.26	.14									.83	
7	.19	.02		.06							.61	
8	.92			.02							.05	
9	.74											
10	.15											
11	.95		.07									
12	.13								.03			
13	.01											
14		1.74										
15				.21								
16			.02						.02			.20
17		.51										.64
18											.02	1.17
19												.25
20												.01
21												.89
22		.02										1.35
23	.13	.05										1.02
24	.01									.34		.56
25	.42	.50	.30							.27		.46
26	.43	.34	.68	.35								.59
27	.02	1.80	.86									.59
28		1.22	.25									.15
29	.02	.18	.12							.34		.12
30			1.58		.89							.08
31			.86		.09							.04
Total for Month	7.11	7.19	4.74	.77	1.18	Tr.	0	0	.05	.95	1.84	8.12
Total for Year	31.95											

*United States Weather Bureau records.

TABLE 111

DAILY RECORD OF PRECIPITATION (IN INCHES)-RECLAMATION DISTRICT 1500-AT KARNAK-1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.32										.19	
2	.50	.51		.03								
3	.54	.14		.02	.52							
4		.38										
5	.21	.14									.83	
6	.38	.02		.03							.49	
7	.87										.07	
8	.23											
9	.15											
10	.90											
11	.25											
12												
13		1.06										
14		.07										
15			Tr.									.13
16		.42										.67
17												1.80
18												.05
19												.03
20												.89
21												1.42
22	.11											1.45
23	Tr.	.05								.22		.65
24	.35	.51	.22							.27		.98
25	.41	.13	.41	.38								.70
26		2.34	.72									.78
27		1.37	.21									.12
28		.19	.14							.28		.08
29			1.67		.50							.10
30			1.13		.10							
31	.15		.03							.01		
Total for Month	6.37	7.03	4.53	.46	1.12	0	0	0	0	.78	1.58	9.85
Total for Year	31.72											

*At Karnak - southeast corner of Reclamation District 1500. Record kept by Reclamation District 1500.

TABLE 112

DAILY RECORD OF PRECIPITATION (IN INCHES) AT KNIGHTS LANDING-1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.26	.13		Tr.							Tr.	
2	1.36										.12	
3	.40	.46		.03						Tr.	Tr.	
4	.53	.12		Tr.	.05						Tr.	
5		.08									Tr.	
6	.38	.10									.75	
7	.14			Tr.							.36	
8	1.15										.08	
9	.42											
10	.10											
11	.78											
12	.13											
13												
14		1.02										
15		.04										
16			Tr.						Tr.			.14
17		.40									Tr.	.83
18											Tr.	1.30
19												.30
20												
21												.79
22		Tr.										1.22
23	.06	Tr.										.74
24	.01	.05								.22		.61
25	.35	.47	.22							.26		.64
26	.32	.36	.36	.39								.82
27		2.10	.70									.65
28		1.06	.19									.12
29		.16	.12							.22		.11
30			1.64		.50							.07
31	Tr.		.46		.07							
Total for Month	6.39	6.55	3.69	.42	.62	0	0	0	Tr.	.70	1.31	8.34
Total for Year					28.02							

*United States Weather Bureau records.

TABLE 113

DAILY RECORD OF PRECIPITATION (IN INCHES) AT SACRAMENTO-1940*

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.52											
2	1.79	.08									.18	
3	.63	.96		.02	Tr.				Tr.		Tr.	
4	.04	.12			.18							
5	.07	Tr.							Tr.		.20	
6	.02	.20									.87	
7	1.02			.03						Tr.	.07	
8	.53			Tr.								
9	.26										Tr.	
10	1.12											
11	.40											
12	Tr.								.01			
13		1.32										
14		.48										
15			Tr.									Tr.
16		Tr.	.01						Tr.			.64
17		.46							Tr.		Tr.	.19
18	Tr.											.90
19												Tr.
20												.20
21												2.38
22	.05	.01										.84
23	.02	.06								Tr.		.77
24	.13	Tr.	.22							.67		.58
25	.82	.88	.12	.54						Tr.		1.42
26	.39	1.46	1.10	.09								.76
27		2.19	Tr.									.34
28		1.01	.21	Tr.						.01		.08
29		.02	.96			Tr.				.25		.28
30	.01		1.60		.74							.02
31	.16											
Total for Month	7.98	9.25	4.22	.68	.92	Tr.	0	0	.01	.93	1.32	9.40
Total for Year	34.71											

*United States Weather Bureau records.

CHAPTER V

USE OF WATER IN THE SACRAMENTO - SAN JOAQUIN DELTA

As outlined in detail in preceding reports, (1924 to 1933, inclusive) an investigation having as its objective a complete annual determination of the consumptive use of water in the entire Sacramento-San Joaquin Delta, comprised of experimental work to determine the unit consumptive use of water by the various irrigated crops and vegetation in the Delta and the general field work to obtain annually a complete census of the irrigated crops and water consuming areas. With the unit consumptive use of water determined by the experimental work and the complete census available, the former may be applied to the data of the latter to derive the consumptive use of water in the Delta as a whole or on individual tracts or islands.

Annual Census of Irrigated Crop Acreages and Water Consuming Areas

Detailed results of the census of the irrigated crop acreage in water consuming areas of the Delta as conducted by the Division of Water Resources are shown in the Reports for the years 1924 to 1932 inclusive and 1938, the detailed consus being omitted for the years 1933 to 1937 inclusiv and 1939 and 1940. In the course of the Delta investigations it has been found that in general all lands below certain elevation (5.0 U.S.G.S. datum) whether idle to cropped, receive and consume water derived by seepage from the adjacent channels. It was necessary therefore that all such lands be accounted for in computing the total consumptive use of water.

The cropped area is not suddenly changed from year to year so it is possible that by making detailed surveys at intervals to determine the trend of use and thereby determine the total consumptive use for any particular year.

Consumptive Use of Water in the Sacramento-San Joaquin Delta

In Table 114 is shown the unit consumptive use of water in the Sacramento-San Joaquin Delta. These unit figures are those developed from experimental data and with one exception are those which are used in the computation for Bulletin No. 27 of the Division of Water Resources. The exception was the use of water by weeds which has been increased to correspond with a total annual consumption of 2.15 acre-feet per acre. This change was based on later weed tank experiments. It is possible that a continuation of the experimental work terminated in 1932 would indicate certain other changes in these unit figures with respect to aquatic growths, weeds and open water surfaces, but other than the above mentioned change for the item of idle land with weeds, the results of the work to date would apparently afford no justification for any material revision at this time of the figures previously used.

Table 115 shows the consumptive use of water in the Sacramento-San Joaquin Delta for the period 1924-1932 inclusive and 1938.

In previous reports the total consumptive use of water has been segregated to show the use in each river delta. Previous reports have also shown a classification of the irrigated crops with respect to the peat and sedimentary soils on which they were produced.

TABLE 114

UNIT CONSUMPTIVE USE OF WATER IN SACRAMENTO-SAN JOAQUIN DELTA**
Acre-feet per Acre

Crop or Classification	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total Seasonal Use	Total Annual Use
Alfalfa	(.06)	(.08)	.10	.30	.40	.50	.65	.55	.50	.20	(.10)	(.07)	3.20	3.51
Asparagus	.05	.05	.05	.05	.08	.14	.40	.68	.55	.42	.12	.10	2.69	2.69
Beans	(.06)	(.08)	(.08)	(.16)	(.20)	.14	.24	.58	.37	(.09)	(.07)	(.05)	1.33	2.12
Beets	(.06)	(.08)	(.08)	.13	.32	.51	.61*	.53*	.20*	(.13)	(.10)	(.07)	2.30	2.82
Celery	(.04)	(.04)	(.04)	(.08)	(.10)	.10	.10	.20	.25	.30	.20	.05	1.20	1.50
Corn	(.04)	(.04)	(.04)	(.08)	(.10)	.24	.85	.84*	.40*	.10	(.10)	(.07)	2.43	2.90
Fruit	(.04)	(.04)	(.04)	.18	.32	.50	.57	.40	.23	.07	(.07)	(.05)	2.27	2.51
Grain and Hay	(.04)	(.04)	.07	.60	.83	.20	(.14)	(.23)	(.21)	(.14)	(.07)	(.05)	1.70	2.62
Onions	(.04)	(.04)	.08	.13	.27	.49	.43	.20	(.16)	(.13)	(.10)	(.07)	1.60	2.14
Pasture	.08	.10	.20	.25	.25	.25	.25	.25	.20	.15	.10	.08	2.16	2.16
Potatoes	(.06)	(.08)	(.08)	(.16)	.15	.38	.52	.30	.15	(.09)	(.07)	(.05)	1.50	2.09
Seed	(.06)	(.08)	(.08)	.10	.25	.50	.50	.50	.35	.10	(.10)	(.07)	2.30	2.69
Truck	(.06)	(.08)	.10	.10	.25	.50	.45	.45	.30	.15	.10	(.07)	2.40	2.61
Tules	.16	.09	.30	.74	1.10	1.28	1.53	1.32	1.18	.98	.59	.36	9.63	9.63
Willows	.05	.03	.09	.22	.33	.38	.46	.40	.35	.29	.18	.10	2.88	2.88
Bare Land	.04	.04	.04	.08	.10	.13	.14	.13	.11	.09	.07	.05	1.02	1.02
Idle Land with Weeds***	.07	.09	.10	.19	.24	.31	.33	.28	.19	.15	.12	.08	2.15	2.15
Open Water Surfaces	.08	.13	.23	.34	.60	.76	.84	.78	.60	.33	.14	.08	4.91	4.91

NOTE: Figures shown in brackets () represent estimated consumptive use on cropped areas before planting and after harvest. (Evaporation from bare land, use by weeds, etc.)

* Includes estimated additional use by weeds during these months.

** These are the data as determined for and published in Bulletin No. 27 - "Variation and Control of Salinity in Sacramento-San Joaquin Delta and Upper San Francisco Bay" - Table 1, except that the figures for "Idle Land with Weeds" have been increased somewhat based upon later experimental work on the use of water by weeds.

*** Average for land below elevation 5.0 U.S.G.S. datum. Use on unirrigated lands above elevation 5.0 is considered zero.

TABLE 115

CONSUMPTIVE USE OF WATER IN THE SACRAMENTO-SAN JOAQUIN DELTA
1924 to 1932 AND 1938

Year*	Water Consuming Area in Acres		Seasonal(2) Use of Water in Acre-feet		Seasonal Unit Consumption in Ac.-Ft. per Ac.		Annual (3) Use of Water in Acre-feet		Annual Unit Consumption in Acre-feet per Ac.	
	Total (1)	Irr. Crops	Total	Irr. Crops	Total	Irr. Crops	Total	Irr. Crops	Total	Irr. Crops
1924		319800		674840		2.11				
1925		315600		660900		2.10				
1926		316200		649560		2.06				
1927		315600		649090		2.06				
1928		321500		674920		2.10				
1929	420900	321800	1100140	689550	2.62	2.14	1250180	839590	2.97	2.61
1930	446800	338000	1161000	744000	2.60	2.20	1322000	895000	2.96	2.65
1931	446310	339300	1167390	756010	2.61	2.23	1319250	907870	2.96	2.68
1932	447430	336440	1181030	746800	2.64	2.22	1334060	899830	2.98	2.67
1938	448750	335670	1226850	760850	2.73	2.27	1380120	914120	3.08	2.72

* Annual census omitted for years 1933 to 1937, inclusive.

(1) Total includes interior and exterior water surface, bare and weed lands which consume seepage water, willow and tule areas, etc.

(2) Includes water used by crops and vegetation during the composite growing season and by evaporation for the entire year.

(3) Includes in addition to seasonal use, the use of water on the cropped area during the non-growing or dormant season.

NOTE: Prior to 1929 the annual census was not complete with respect to water consuming areas other than irrigated crop lands.

CHAPTER VI

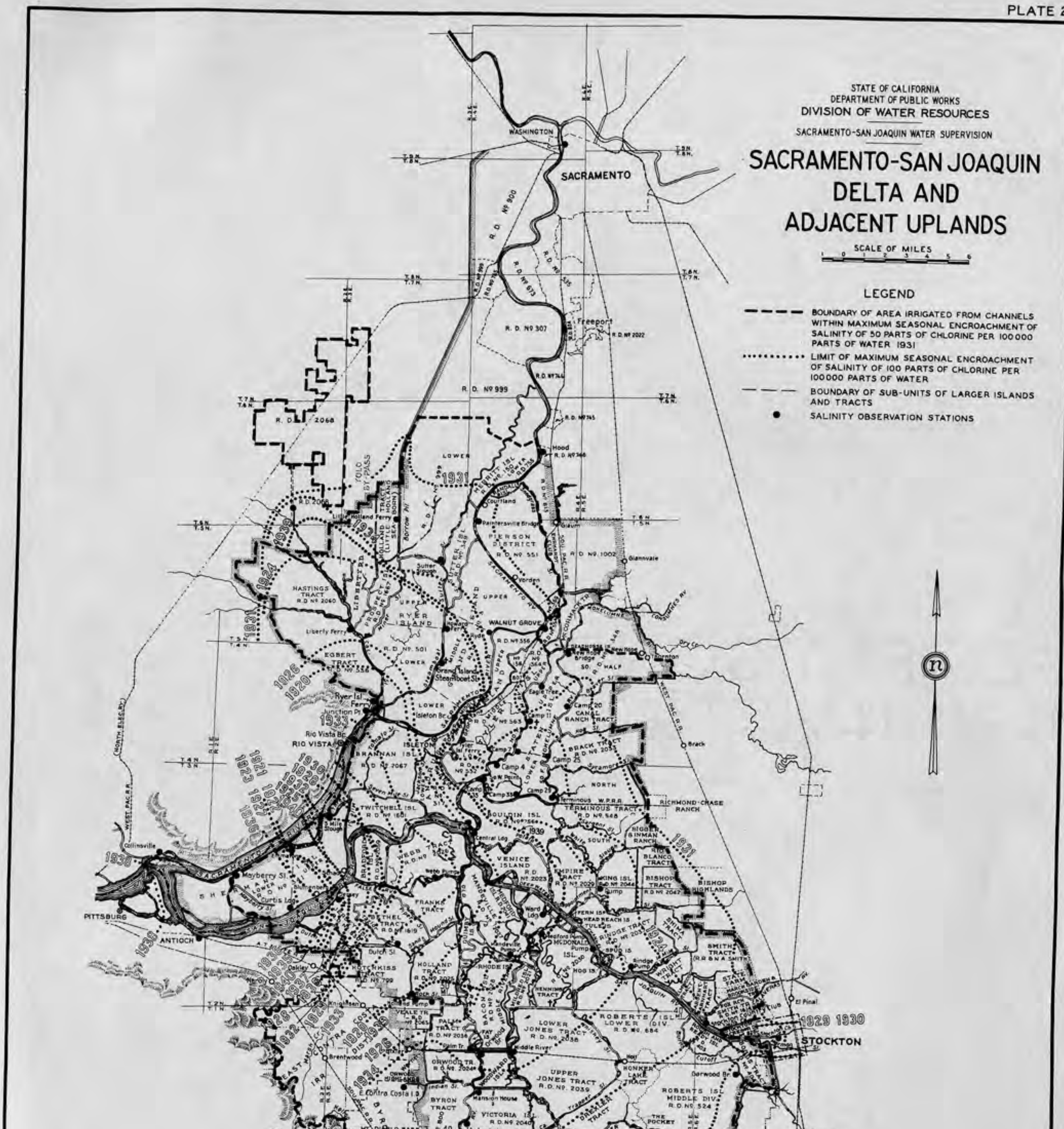
SALINITY INVESTIGATIONS

Purpose

The purpose of the salinity investigation, as outlined in previous reports, has been to record the occurrence and extent of salinity encroachment from San Francisco Bay, and to establish the relation between movement of salinity, stream flow to the Delta, and tidal action. As reported in Bulletin 27 of the Division of Water Resources, this relation was established for the conditions which obtained during the period of the special investigation for that Bulletin and upon the basis of all data available to that time. Subsequent investigations, therefore, have been directed to the maintenance of an unbroken record of the salinity, tidal and stream flow variations, essential not only in corroboration of the relation as at present established but as the basis for a check of possible modifications in the relation due to changes in channel and tidal conditions which may have taken place or will occur in the future. Also, during periods of low stream flow, the continuation of salinity sampling has been essential in keeping Delta irrigators advised of conditions through periodic bulletins so that damage from the use of water of too high salt content might be averted.

Scope

The general scope of this investigation each season has been such as to insure that samples of water to be tested for salinity would be taken at regular intervals at a sufficient number of stations throughout the Delta and upper bay region so that the advance and retreat of the salinity from early summer to late fall would be completely recorded. Plate 2 shows the limit of encroachment into the Delta of 100 parts of salinity for the years



MAXIMUM SEASONAL SALINITY ENCROACHMENT OF 100 PARTS OF CHLORINE PER 100,000 PARTS OF WATER, SACRAMENTO-SAN JOAQUIN DELTA 1920-1940

1920 to 1940 inclusive.

Twenty Bay and Delta sampling stations are maintained permanently throughout the year.

Station Maintenance and Records

As in the past the salinity sampling at all stations was done by local observers. Each observer was provided with a schedule showing the exact time for taking the samples so that, throughout the Delta at four-day intervals, all samples would be taken at approximately one and one-half hours after the same high tide. The observers were furnished with stamped containers for the sample bottles so that the latter could be mailed as filled to the laboratory at Sacramento. All testing was done at the Materials and Research Laboratory of the Division of Highways. The records of the tests of all samples taken in 1940 are given in Table 118 and Table 117 gives the location and description of each station.

The maximum salinity as recorded at the stations operated in 1940 is shown in Table 116. For comparative purposes, this table shows also the maximum salinity recorded at these stations in previous years beginning with 1930.

Salinity Bulletins

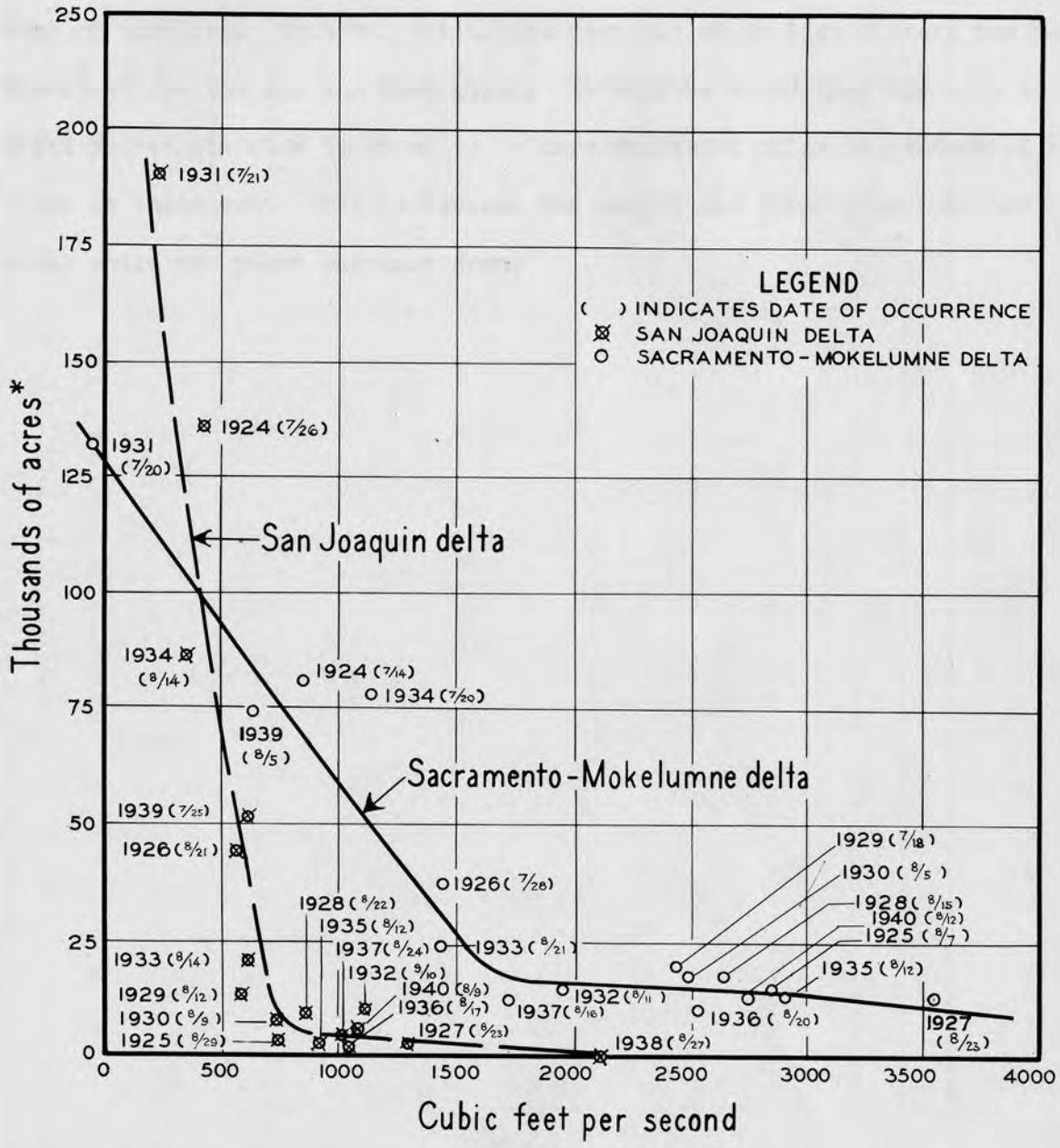
During 1940 the stream flow into the Sacramento-San Joaquin Delta did not reach a stage low enough to allow any great penetration of saline water into the Delta. For this reason it was not necessary to mail the customary salinity bulletins to the irrigators.

Area of Salinity Encroachment

There is a definite relation between the minimum ten-day stream flow to the Deltas to the area affected by salinity encroachment. This relationship is shown in Plate 3. The relation of the flow of the Sacramento and San Joaquin Rivers to the area of their respective deltas affected by salinity has been shown rather than combining the flows and treating the Delta as one area. Inspection of the plate indicates that when the flow to either delta drops below a certain point, the rate of salinity encroachment greatly accelerates. This point for the Sacramento-Mokelumne Delta is about 1750 cubic feet per second and for the San Joaquin Delta about 750 cubic feet per second. This shows that with a combined flow into the Delta, measured at Sacramento and Vernalis, of 2500 cubic feet per second, the whole delta with the exception of 25000 acres in the extreme lower end is protected from a salinity encroachment greater than 100 parts of chlorine per 100,000 parts of water. It also shows that when the flow drops below 2500 cubic feet per second the area affected increases much faster per unit of drop in flow than the area would decrease for the same unit of increase in flow. The areas shown on this plate are gross areas within the Delta boundaries and include all water surfaces, channels, levees, etc. and are not net irrigable areas. In Table 119 is shown the data from which Plate 3 has been constructed.

Salinity Observations of Stream and Return Flow Channels

During 1940 through the combined efforts of the maintenance foreman of the State Highway Department, pump operators and the field engineers from this office, water samples were taken from most of the stream and return flow channels in the Sacramento-San Joaquin areas. These samples were, in most instances taken at bi-monthly intervals and for each sampling an effort



SACRAMENTO-SAN JOAQUIN WATER SUPERVISION

RELATION OF MINIMUM 10 DAY STREAM FLOW OF SACRAMENTO AND SAN JOAQUIN RIVERS TO THEIR RESPECTIVE DELTAS, TO THE AREA OF EACH AFFECTED BY A SALINITY ENCROACHMENT GREATER THAN 100 PARTS OF CHLORINE PER 100.000 PARTS OF WATER

* AREA INCLUDES ALL LANDS, LEVEES, WATER SURFACES

has been made to indicate in the table the amount of water flowing at the time of sampling. This was not always possible so in lieu thereof the mean discharge for the day has been given. It will be noted that for some of the drain plants the flow is shown to be zero while the chlorine content of the water is indicated. This is because the sample was taken from the drain canal while the plant was shut down.

TABLE 116

MAXIMUM RECORDED SALINITY AT BAY AND DELTA STATIONS
1930-1940 INCLUSIVE*

Year	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Sacramento-San Joaquin Runoff in per cent of Normal**	63	29	78	46	40	86	91	75	160	41	108
Station (1)	Maximum Recorded Salinity in parts of Chlorine per 100,000										
San Francisco, San Pablo and Suisun Bays											
Point Orient	1780	1870	1720	1800	1840	1720	1740	1700	1700	1920	1840
Point Davis	1620	1810	1520	1680	1800	1500	1440	1460	1460(2)	1840	1760
Bullshead Point	1380	1690	1320	1380	1640	1260	1340	1270	1160	1640	1340
Bay Point	1060	1540	1010	1160	1460	720	960	920	580	1480	990
O and A Ferry	800	1390	620	900	1200	540	580	660	256	1180	720
Innisfail Ferry	810	1400	680	900	1260	720	580	700	330	1360	790
North San Pablo Bay											
Sonoma Creek Bridge	1670	1660	1420	1620							
Grandview	1610	1870	1460	1660							
Vallejo	1340	1700	1300	1420							
Cuttings Wharf	1320	1800	1200	1320							
Sacramento River Delta											
Collinsville	570	1260	500	620	1080	390	300	490	86	1040	450
Emmaton	250	1000	166	380	760	88	54	102	7	580	140
Three Mile Slough Bridge	150	860	90	320	660	77	57	120		590	
Rio Vista Bridge	52	740	28	130	520	12	8	33		405	
Junction Point	26	620	(3) 7	74	410						
Ryer Island Ferry										375	
Liberty Ferry	6	560			230					241	
Grand Island (Steamboat Slu)					350					271	
Isleton Bridge	10	635	(3) 6	46	310					250	
Reclamation District 2068		280			176					82	
Howard Ferry		500			232					158	
Sutter Slough		320			50						
Little Holland Ferry		300			14					43	
Ryde		280			11					38	
Walnut Grove		220			10					18	
Paintersville Bridge		144			8						
Lisbon										8	
Sacramento	5	10	6	7	7	4	4	13	6	7	6

* For maximum salinities recorded 1924-1929, see previous reports.
** Normal taken as 40-year mean (1889-1929) of natural runoff at foothill stations of major tributaries.
(1) For location and description see Table 108.
(2) Estimated. Samples not taken during period of maximum salinity.
(3) Maximum salinity obtained from first sample taken in season.

TABLE 116 (CONTINUED)

MAXIMUM RECORDED SALINITY AT BAY AND DELTA STATIONS
1930-1940 INCLUSIVE*

Year	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Sacramento-San Joaquin Runoff in per cent of Normal**	63	29	78	46	40	86	91	75	160	41	108
Station (1)	Maximum Recorded Salinity in parts of Chlorine per 100,000										
Mokelumne River Delta											
Southwest Point	9	390		17	107					86	
Camp 33, Staten Island	7	245		13							
Tyler Island Ferry	9	200			10					16	
Camp 11, Staten Island		134		5	25					13	
Camp 29, Staten Island		182			52					32	
Camp 25, Staten Island		164		7						31	
Camp 20, Staten Island		124			18					22	
San Joaquin River Delta											
Antioch	470	1240	400	580	960	290	270	350	51	620	440
Curtis Landing		1060	280	470	810	180					
Jersey	220	910	150	280	(2)620	86	78	102	9	500	
Opposite Jersey								136			
Webb Pump	61	680	35	122	(3)340	16	16	25	8	265	27
Central Landing	15	425	8	25	(4) 90	8	7				
Opposite Central Landing								11	10	138	15
Dutch Slough		510	37	80	280	21	21	28	11	225	42
Rock Slough West of Dam						8	11	13	9	94	15
Camp 2, Medford Island										121	
Ward Landing	16	350			190						
Holland Pump	23	325	11								
Bacon Pump				25	160	11					
Mandeville Pump	17	350	18	29	166					104	
King Island Pump		261			104					79	
Rock Slough East of Dam						8	11	12	11	71	18
Rindge Pump	16	198	16	22	94	18	20	20	15	62	29
Orwood Bridge	12	277			107					54	
East Contra Costa I.D.	17	200			73					32	
Middle River	13	270	12	18	108	11	12	16	13	60	55
Mansion House	11	240			90						
Victoria Island										35	
Stockton Country Club	18	122			44						
Clifton Court Ferry		130			40					19	
Stockton	120	132	72	66	76					32	
Garwood Bridge		92			38						
Brandts Bridge		43			21						
Williams Bridge		118			43						
Naglee Burke Pump										14	
Whitehall		31			12						
Mossdale Bridge	10	12	14	13	25	12	14	12	12	16	14

* For maximum salinities recorded 1924-1929 see previous reports

** Normal taken as 40-year mean (1889-1929) of natural runoff at foothill stations or major tributaries.

(1) For location and description, see Table 117.

(2) Estimated maximum of 670 in period not covered by sampling.

(3) Estimated maximum of 350 in period not covered by sampling.

(4) Estimated maximum of 125 in period not covered by sampling.

TABLE 117

DESCRIPTION OF SALINITY STATIONS AT WHICH OBSERVATIONS ARE TAKEN

STATION	Miles from Golden Gate (1)	Time Interval between high tide at Golden Gate and time for taking samples at Station		LOCATION
		Hours	Mins.	
				SAN FRANCISCO, SAN PABLO AND SUISUN BAYS
Point Orient*	12.3	2	20	North End San Francisco Bay, East Shore, one-half mile south of Point San Pablo. Wharf of Standard Oil Company.
Point Davis*	25.2	3	15	East End San Pablo Bay, South Shore, Oleum Wharf of Union Oil Company.
Bullshead Point*	34.0	3	50	West End Suisun Bay, South Shore, Wharf of Mountain Copper Company
Bay Point*	39.9	4	15	Suisun Bay, South Shore. Bay Point Wharf of Coos Bay Lumber Company
O and A Ferry*	46.5	4	40	Upper End Suisun Bay between Mallard Station and Chipps Island at Sacramento Northern Railroad Ferry Crossing.
Innisfail Ferry*	47.3	4	50	Montezuma Slough, about one mile east of Junction with Cutoff Slough, near North End of Grizzly Island.
				SACRAMENTO RIVER DELTA
Collinsville*	50.8	5	25	Sacramento River, North Bank, at Junction with San Joaquin River.
Emmaton*	57.7	5	45	Sacramento River, South Bank, Lower end of Horseshoe Bend.
Three Mile Slough Bridge	60.0	5	55	At Junction of Slough and Sacramento River.
Rio Vista Bridge	63.5	6	05	At Highway Bridge near Northerly limits of Rio Vista.
Junction Point	65.2	6	10	Sacramento River, Right Bank, just below the Junction with Steamboat Slough.
Ryer Island Ferry	66.5	6	20	Lower end of Cache Slough, just above Steamboat Slough junction.
Liberty Ferry	67.6	6	25	Cache Slough at Junction with Prospect Slough.
Grand Island (Steamboat Slough)	68.2	6	30	Steamboat Slough at Grand Island Drainage Pumping Plant, three miles from Junction Point.
Isleton Bridge	68.7	6	30	Sacramento River, one mile upstream from Isleton.
Reclamation District 2068	70.7	6	45	Haas Slough, at Reclamation District 2068 pumping plant.
Howard Ferry	71.4	6	55	Steamboat Slough, 1½ miles below junction with Sutter Slough.
Sutter Slough	72.8	7	00	At Junction with Miner Slough.
Little Holland Ferry	73.2	7	05	Back Borrow Pit of Reclamation District 999, two miles above junction with Miner Slough.
Ryde	74.4	7	15	Sacramento River, Right Bank, at town of Ryde.
Walnut Grove	77.4	7	25	Sacramento River, Highway Bridge, at Walnut Grove.
Paintersville Bridge	77.6	7	25	Sacramento River one mile below Courtland.
Lisbon	85.0	8	20	East Borrow Pit of Yolo By-Pass at Lisbon.
Sacramento*	103.5	9	30	Sacramento River at Southern Pacific Railroad Bridge.

* Permanent station maintained throughout the year.

(1) Mileage measured to station along main channel. For stations off the main channel, the mileage shown is the distance along the main channel to a point whereon the time of the occurrence of the tidal phase is the same as that of the observation station.

TABLE 117 (CONTINUED)

DESCRIPTION OF SALINITY STATIONS AT WHICH OBSERVATIONS ARE TAKEN

STATION	Miles from Golden Gate (1)	Time Interval between high tide at Golden Gate and time for taking samples at Station		LOCATION
		Hours	Mins.	
				MOKELUMNE RIVER DELTA
Southwest Point	78.8	7	25	Staten Island, North Fork Mokelumne River, South Bank, just above junction with South Fork.
Camp 33, Staten Island	80.2	7	30	South Fork, Mokelumne River, North Bank, two miles above North Fork Junction.
Tyler Island Ferry	81.9	7	40	On Georgiana Slough, about due east of Isleton.
Camp 11, Staten Island	83.1	7	45	North Fork, Mokelumne River, East Bank, four miles above South Fork Junction.
Camp 29, Staten Island	83.4	7	50	South Fork, Mokelumne River, North Bank, opposite Terminous.
Camp 25, Staten Island	86.4	8	05	South Fork, Mokelumne River, West Bank, one mile above Sycamore Slough Junction.
Camp 20, Staten Island	88.9	8	30	South Fork, Mokelumne River, West Bank, one-half mile below Beaver Slu Junction.
				SAN JOAQUIN RIVER DELTA
Antioch*	54.9	5	55	San Joaquin River, at City Water Works pumping plant.
Curtis Landing	58.9	6	10	San Joaquin River, Right Bank, about three-fourths mile above Antioch Toll Bridge.
Jersey	61.4	6	20	San Joaquin River, Left Bank, one mile below mouth of False River.
Opposite Jersey	61.4	6	20	San Joaquin River, Right Bank, opposite Jersey.
Webb Pump*	72.0	7	00	False River, two miles below Old River Junction.
Central Landing*	72.0	7	00	Mokelumne River at Central Landing, Bouldin Island. (Prior to 1937).
Opposite Central Landing*	72.0	7	00	Mokelumne River, on Andrus Island directly opposite Central Landing on Bouldin I.
Dutch Slough*	73.0	7	05	At Bethel Island Bridge.
Rock Slough West of Dam*	77.0	7	20	In Rock Slough, West of Dam at Junction of Sand Mound Slough and Rock Slough.
Camp 2, Medford Island	78.0	7	25	San Joaquin River (Stockton Channel) at north end of Medford Island.
Ward Landing	79.6	7	35	San Joaquin River near junction with Little Connection Slough on Southwest side of Empire Tract.
Holland Pump	80.6	7	40	Rock Slough, North Bank, 1½ miles west of Old River Junction.
Bacon Pump	82.9	7	50	Old River at Bacon Island Drainage Pumping Plant, near junction with Rock Slough
Mandeville Pump	83.0	7	50	Connection Slough, North Bank, one mile west of Middle River on South end of Mandeville Island.
King Island Pump	84.2	8	00	Honker Cut at Empire Tract - King Island Ferry.
Rock Slough East of Dam*	85.4	8	05	In Rock Slough, three-fourths of a mile East of Junction with Sand Mound Slough
Rindge Pump*	86.1	8	10	San Joaquin River, North Bank, one mile below Fourteen Mile Slough Junction.
Orwood Bridge	86.3	8	10	Old River, at Santa Fe Railroad Crossing, Orwood.
East Contra Costa I.D.	86.7	8	20	Indian Slough, at East Contra Costa Irrigation District Pumping Plant.
Middle River P. O.	87.7	8	20	Middle River, East Bank, at Santa Fe Railroad Crossing.
Mansion House	88.4	8	30	Victoria Island, Old River, East Bank, at Junction with North Victoria Canal.
Victoria Island	89.6	8	35	Old River at Borden Highway Crossing.
Stockton Country Club	90.8	8	45	On Lindley Cutoff (San Joaquin R.), North Bank, 3/4 mi. above Burns Cutoff Junction
Clifton Court Ferry	94.2	9	10	Old River just below Junction with Grant Line Canal.
Stockton	94.8	9	15	Near head of Stockton Channel at wharf of California Transportation Company
Port Stockton*	94.0	9	15	At lower end of Port Stockton wharves.
Garwood Bridge	95.3	9	15	San Joaquin River. At drawbridge one mile above Santa Fe Railroad Crossing.
Brandt Bridge	100.6	9	50	San Joaquin River. At drawbridge six miles above Santa Fe Railroad Crossing.
Williams Bridge	101.6	9	55	Middle River, about four miles below Salmon Slough Junction.
Naglee Burke Pump	102.5	10	00	Old River at Naglee Burke Pumping Plant.
Whitehall	104.8	10	20	Old River, West of Junction of Salmon Slu and Paradise Cut. Due north of Tracy
Mossdale Bridge*	108.5	10	50	San Joaquin River at Lincoln Highway Crossing about 3 miles southwest of Lathrop.

*Permanent station maintained throughout the year. (1) See Note 1 on preceding page.

TABLE 118

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide
Salinity expressed in parts of chlorine per 100,000 parts of water

Station	JANUARY															
	2		6		10		14		18		22		26		30	
San Francisco, San Pablo and Suisun Bays																
Point Orient	1660		1600		1240		780		1060		1480		1400		1420	
Point Davis			800		400		180		740		950		780			
Bullshead Point	700	a		a	54		100	a	65	ab	220		450	a	45	
Bay Point							43				120		6		7	
O and A Ferry	155	a	7	ab	4	a	4	a	6	ab	25		30	a	5	
Innisfail Ferry	430		215		112	a	134		112		48		54		65	
Sacramento River Delta																
Collinsville	93	b	6		2		4				4		11		8	
Emmaton	7		6			a	5				7	a	4			
Three Mile Slough	6		4		5	ad	3		4		3		7		6	
Rio Vista	4		3		1		3		3		2		3	a	7	
Sacramento	4		4	a	2		3		3		3	a	6		7	
San Joaquin River Delta																
Antioch	39		12		10		9		7		7		9	a	7	
Webb Pump				a	12					ab	8				17	
Opposite Central Landing	7		6	a	4		5		2		4	a	3		4	
Dutch Slough	17		16		19		16		16		13	a	12		10	
Rock Slough West of Dam	15		13		7		16		16		13		12		12	
Rock Slough East of Dam	13		11		10	d	16		13		10		13		11	
Rindge Pump	12		8		11		6		5		5		7		12	
Middle River	12		11		13		13		10		9		10		8	
Port Stockton	9			a	9				8			a	10			
Mossdale Bridge	10		9		8		8		6		5		7		8	

Station	FEBRUARY													
	2		6		10		14		18		22		26	
San Francisco, San Pablo and Suisun Bays														
Point Orient	1180		960		860		850		920		1210		114	
Point Davis	410		218		235		280		265	ab	460		485	
Bullshead Point	40	ab	24				223		32	ab	30		17	
Bay Point			7		8		7				8	a	7	
O and A Ferry	6	ab	6		6	a	5		4		6		3	
Innisfail Ferry	66		73		72		58		48		34		35	
Sacramento River Delta														
Collinsville	5		5		4		6		4		3			
Emmaton			3	a	3				4				3	
Three Mile Slough Bridge	3	ab	2		2		2	a	4		3		3	
Rio Vista Bridge	5		4		2		2		2		2		3	
Sacramento	2		2	a	3		1		4		3		3	
San Joaquin River Delta														
Antioch	7		7		6		6		6		6		3	
Webb Pump		ab	9				11			ab	7		5	
Opposite Central Landing	4		3		2		3		4		3		3	
Dutch Slough	10		9		14		7		7		7		7	
Rock Slough West of Dam	13		11	a	9		9		8		11		10	
Rock Slough East of Dam	8		9	a	7		8		13		8		8	
Rindge Pump				a	4		5		3		9		7	
Middle River			6		6		5		8		5		5	
Port Stockton							8							
Mossdale Bridge	6		6		8		10		8		7		8	

a, b, c, d, e, f, see footnotes last page of this table.

TABLE 118 (CONTINUED)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide
Salinity expressed in parts of chlorine per 100,000 parts of water
1940

Station	MARCH								
	2	6	10	14	18	22	26	30	
San Francisco, San Pablo and Suisun Bays									
Point Orient	570	640	580	890	1060	1130	1100	780	
Point Davis		14	59	177	410		600	140	
Bullshead Point	ab 12	ab 8	7	33	ab 220	60	265	25	
Bay Point	6	5	a 4		11	11			
O and A Ferry	3	4	a 4	a 4	b 6	5	a 3	a 3	
Innisfail Ferry	15	14	20	23	31	32	a 47	48	
Sacramento River Delta									
Collinsville	3	5	6	2		2	a 9	3	
Emmaton	1	a	3	5			2		
Three Mile Slough Bridge	2	2	4	3	3	6	a 2	2	
Rio Vista Bridge	2	3	2	3	2	4	2	2	
Sacramento	2	3	3	3	2	1	1	2	
San Joaquin River Delta									
Antioch	3	4	2		4	6	a 4	2	
Webb Pump		3			5	db 5	3		
Opposite Central Landing	3	4	3	2	3	b 4	a 2	2	
Dutch Slough	6	6	5	5	5	b 4	7	5	
Rock Slough West of Dam	11	15	11	9	7	8	7	5	
Rock Slough East of Dam	13	12	10	9	7	5	7	7	
Rindge Pump	4	6	4	4	6	6	5	3	
Middle River	4	6	5	4	5	5	6	3	
Port Stockton	8				3	5	8		
Mossdale Bridge	2	3	5	4	3	5	5	3	

Station	April								
	2	6	10	14	18	22	26	30	
San Francisco, San Pablo and Suisun Bays									
Point Orient	460	b 520	560	600	1160	b 1100	940	1000	
Point Davis	b 22	b 33		213	b 560	b 430	230	360	
Bullshead Point	b 16	b 18		11	b 154	a 24	23	208	
Bay Point		a 11	10	8	a 24	a 7			
O and A Ferry	b 3	b 11	a 10	a 10	a 6	a 5	a 2	b 4	
Innisfail Ferry	a 16	a 11	a 17	a 22	a 21	a 24	23	a 32	
Sacramento River Delta									
Collinsville	a 2	a 5	5	4	a 5	a 3	3	a 4	
Emmaton	a 2		2		a 3		2		
Three Mile Slough Bridge	b 2	b 3	4	3					
Rio Vista Bridge	b 2	b 5	3	3					
Sacramento	b 2	b 3	4	3	a 4	b 3	5	1	
San Joaquin River Delta									
Antioch	a 6	a 4	5	a 7	a 4	a 5	6	a 7	
Webb Pump			a 7			b 2	4		
Opposite Central Landing	a 2	b 3	a 6	5	a 7	b 3	2	a 5	
Dutch Slough	a 4	b 4	5	4	a 5	b 4	5	a 4	
Rock Slough West of Dam	a 10	6	5	7	a 6	b 7	5	a 6	
Rock Slough East of Dam	a 6	7	6	7	a 5	b 5	4	a 3	
Rindge Pump	a 2	a 7	4	6	5	a 5	4	a 4	
Middle River	a 4	a 8	4	a 5	a 5	2	4	a 3	
Mossdale Bridge	b 4	b 6	8	4	4	b 5	3	a 4	

a, b, c, d, e, f, see footnotes last page of this table.

TABLE 118 (CONTINUED)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide
Salinity expressed in parts of chloride per 100,000 parts of water
1940

Station	MAY 2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	1040	b 1100	1160	960	1160	b 1380	1240	1140
Point Davis	b 520	420	500	460		b 630	380	560
Bullshead Point	b 350	b 240	230	220	b 59	a 80	100	285
Bay Point	a 14	a 3	a 4		a 6	a 6		
O and A Ferry	b 2		a 3		ab 5	a 4	a 3	a 5
Innisfail Ferry	a 32	a 30	a 28	a 31	a 31	a 23	24	
Sacramento River Delta								
Collinsville	a 3	a 2	4	a 4		a 5	2	a 2
Emmaton		a 2	5			a 3	4	
Sacramento	b 3	b 2	2	a 3	b 3	b 2	d 2	a 2
San Joaquin River Delta								
Antioch	a 3	a 3	a 5	a 3	a 4	a 3	3	a 3
Webb Pump		b 4		a 3		b 2		
Opposite Central Landing	a 2	a 3	3	a 4	b 2	b 3	2	a 2
Dutch Slough	a 5			a 3	a 3	b 2	4	a 5
Rock Slough West of Dam	a 7	a 5	5	a 8	a 5	b 5	7	a 4
Rock Slough East of Dam	a 5	a 5	4	a 3	a 3	b 4	4	a 4
Rindge Pump	a 3	a 3	2	a 4	a 2	a 4	3	a 2
Middle River	a 3	a 3	3	a 2	a 2	a 3	2	a 2
Mossdale Bridge	b 7	3	2	b 2	b 2	b 2	4	3

Station	JUNE 2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	1160	b 1300	1220	1340	b 1600	1440	1460	1440
Point Davis	b 630	a 570			b 810	870	800	
Bullshead Point	a 135	b 325	190	a 435	b 585	a 43	45	a 350
Bay Point		a 7	a 27		a 62			
O and A Ferry	b 4	a 3	a 6	a 11	a 8	a 11	a 12	a 42
Innisfail Ferry	a 26	b 17	17	a 22	a 22	a 30	28	a 42
Sacramento River Delta								
Collinsville	a 3	a 4	3	a 8	a 4	a 6	a 5	a 5
Emmaton	a 3	b 3			a 2		a 3	
Sacramento	b 3	b 2	2	a 3	a 2	2	a 2	a 2
San Joaquin River Delta								
Antioch	a 3	a 3	4	a 4	a 1	2	a 4	a 2
Webb Pump					a 4		a 2	ad 3
Opposite Central Landing	a 3	b 2	3	a 4	a 2	a 2	a 3	a 3
Dutch Slough	a 2	b 3	5	a 5	b 3	3	a 1	a 2
Rock Slough West of Dam	a 6	b 6	8	a 9	a 3		a 7	a 4
Rock Slough East of Dam	a 3	b 3	4	a 2	a 2	3	a 2	a 2
Rindge Pump	a 3	a 4	4	a 2	a 2	4	a 5	a 5
Middle River		a 2	3	a 4	a 2	2	a 2	a 1
Port Stockton				a 7		6	4	
Mossdale Bridge	b 2	b 3	5	b 3	ab 2	4		

a, b, c, d, e, f, see footnotes last page of this table.

TABLE 118 (CONTINUED)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide
Salinity expressed in parts of chloride per 100,000 parts of water
1940

Station	JULY 2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	1540	b 1600	1400	1620	b 1640	1580		1680
Point Davis	1140	b 1140		1500	b 1260	1240	1280	1340
Bullshead Point		a 460	760	a 600	b 930	900		
Bay Point				a 66	110			
C and A Ferry	e 104	a 91	a 115	d 244	a 205	295	a 275	a 385
Innisfail Ferry	a 44		163	a 161	325	310	385	a 355
Sacramento River Delta								
Collinsville	a 10		a 51	a 72	b 144	165	a 180	a 200
Emmaton		b 6	a 7		a 11	14	a 20	
Sacramento		a 3	a 5	a 3	b 3	5	a 6	a 5
San Joaquin River Delta								
Antioch	ad 9	a 14	22	a 33	a 80	107	a 84	a 106
Webb Pump		b 4	a 5	a 12		6	a 10	
Opposite Central Landing		a 5	a 5	a 7	b 4	4	a 10	a 10
Dutch Slough	b 5	b 5	a 5	a 8	a 5	6	a 6	a 8
Rock Slough West of Dam	a 6	b 5	a 7	a 5	b 7	5	a 7	a 7
Rock Slough East of Dam	a 4	b 2	a 3	a 9	b 5	4	a 8	a 6
Rindge Pump		a 7	a 7	a 7		10	a 12	a 21
Middle River	a 3	a 4	a 5	a 5	a 8	5	a 8	a 8
Mossdale Bridge	b 6	b 7	b 7	b 9	b 8	6	b 8	10

Station	AUGUST 2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	b 1700	1720	1700	1700	b 1740	1760		1740
Point Davis	b 1360	1360	1480		b 1480	1540		
Bay Point	540	a 730	a 710	a 890	a 899	980	a 860	a 880
C and A Ferry	a 365	a 500	a 500	a 610	570	640	720	b 670
Innisfail	a 405	a 530	600	a 610	a 640	a 650	a 690	a 720
Sacramento River Delta								
Collinsville	a 250	380	435	a 345		a 440	a 420	a 400
Emmaton		72	a 110		b 94		a 130	
Sacramento	b 5	5		b 3	b 3	a 2	a 4	b 2
San Joaquin River Delta								
Antioch	a 125	a 245	a 185	a 260	265	a 270	a 280	a 300
Webb		19		a 23	b 27			
Opposite Central Landing	a 10	a 9	a 9	a 12	b 14	a 8	a 12	a 8
Dutch Slough	a 11	16	a 16	ad 23	b 36	a 28	a 28	a 32
Rock Slough West of Dam	a 6	6	a 10		b 8	a 11	a 6	a 10
Rock Slough East of Dam	a 6	9	a 10	a 7	b 8	a 8	a 10	a 9
Rindge Pump	a 13	9	a 14	a 18	11	a 12	a 9	a 16
Middle River	a 7	10	a 12	a 9	a 9	7	a 17	a 15
Mossdale	b 9	9	b 9	b 8	b 10	b 6	b 12	b 12
Port Stockton								db 20

a, b, c, d, e, f, see footnotes last page of this table.

TABLE 118 (CONTINUED)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide
Salinity expressed in parts of chloride per 100,000 parts of water
1940

Station	SEPTEMBER 2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	b 1820	1840	1780	b 1640		1720	1700	
Point Davis		1760	1500		1460	1420	1460	1460
Bullshead Point	b 1055	1300	1020	b 1060	1000	1340	1040	
Bay Point	a 990	900	800			a 740		
O and A Ferry	650	a 660	a 610		a 590	500	420	660
Innisfail Ferry	a 430	790	a 770	a 750	a 730			590
Sacramento River Delta								
Collinsville	b 450	a 350	a 420	a 370	a 380		a 235	215
Emmaton	a *140	a 95	a 100		50		a 18	
Sacramento	b 3	a 6	a 3	b 4	a 2	a 3	a 3	3
San Joaquin River Delta								
Antioch	a 380	440	a 280	a 290	290	a 170	a 190	175
Webb Pump		a 25	ad 23		a 24	23		
Opposite Central Landing	b 13	a 12	10	b 9	a 13	a 7	a 15	9
Dutch Slough	b 42	a 34	a 34	a 40	37	a 31	a 26	23
Rock Slough West of Dam	a 7	a 10	a 11	a 15	a 11	a 13	a 11	9
Rock Slough East of Dam	a 10	a 11	a 11	a 18	a 7	a 13	a 12	12
Rindge Pump	a 19	d 14	a 16	a 29	a 14	a 14	a 12	12
Middle River	a 10	a 11	a 10	a 42	a 55	a 12	a 12	11
Mossdale Bridge	b 12	b 10	12	b 11	13	12	9	8
Port Stockton		a 23				21		

Station	OCTOBER 2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	1700	1660	1660	1720	1780	1640	1720	1720
Point Davis	1580	1360		1480		1340		
Bullshead Point		980	860	ab780	a 1060	1000	a1040	
Bay Point	d 820		820	760			680	380
O and A Ferry	a 480	500	ab300	ab460	320	300	b 310	ab280
Innisfail Ferry	570	570		550	a 530	460	500	460
Sacramento River Delta								
Collinsville	ad 210	a 200	135	190	a 150	a 150	135	155
Emmaton		18		10	a 8		8	5
Sacramento	ad 4	a 2	1	6	a 3	a 3	1	2
San Joaquin River Delta								
Antioch	200	a 105	105	90	125	a 90	a 105	85
Webb Pump					12		12	
Opposite Central Landing	11	8	10	ab 4	a 3	a 5	4	7
Dutch Slough	20	a 18	18	d 16	14	a 15	16	14
Rock Slough West of Dam	9	a 9	9	11	a 10	a 11	11	10
Rock Slough East of Dam	12	a 11	11	12	a 13	a 8	10	9
Rindge Pump	13	a 13	12	12	11	13	13	12
Middle River	10	a 11	10	10	7	a 9	10	a 10
Mossdale Bridge	13	b 14		12	8	b 10	12	11
Port Stockton					a 20	a 20		

a, b, c, d, e, f, see footnotes last page of this table.

* Estimated.

TABLE 118 (CONTINUED)

SALINITY OBSERVATIONS, SACRAMENTO-SAN JOAQUIN DELTA AND UPPER BAYS

Samples taken by local observers approximately one and one-half hours after high high tide
Salinity expressed in parts of chloride per 100,000 parts of water.
1940

Station	NOVEMBER															
	2		6		10		14		18		22		26		30	
San Francisco, San Pablo and Suisun Bays																
Point Orient	1580		1500	a	1580		1500		1480		1560				1700	
Point Davis					1100										1300	
Bullshead Point	880	a	700	a	720	ab	700		610	a	680	ab	740	a	850	
Bay Point	525				230		425		340				350	a	610	
O and A Ferry	140	a	155	ab	70		75		156	a	86	ab	130	a	130	
Innisfail Ferry	370		425		385						320		290		335	
Sacramento River Delta																
Collinsville	74	a	40				17		63		28		30	a	46	
Emmaton	5	a	2				3				3					
Sacramento	1	a	1		1		1	a	2		1			a	4	
San Joaquin River Delta																
Antioch	96		27		18		16		22		16		22		50	
Webb Pump	7				7		5		7			a	7	a	6	
Opposite Central Landing	4	a	3		3		4	a	2	a	3		2	a	5	
Dutch Slough	10		9		10		8	a	9		7		8		10	
Rock Slough West of Dam	5	a	5		8	ab	8	a	7		8		9		18	
Rock Slough East of Dam	8	a	8		9	ab	7	a	9		8		8		11	
Rindge Pump	10	a			12		10	a	10		9		13	a	14	
Middle River	7	a	7		9		8		9		8		8		8	
Mossdale Bridge	7		7		9		6		6		7		5		8	
Port Stockton								a	25							

Station	DECEMBER															
	2		6		10		14		18		22		26		30	
San Francisco, San Pablo and Suisun Bays																
Point Orient	1560		1560		1660		1700		1620		1520		640		420	
Point Davis					1260				1300		1080					
Bullshead Point	780	a	640	ab	830	ab	790		590		680	ab	70	a	16	
Bay Point					550											
O and A Ferry	150	a	124		248	ab	176		152	a	16	ab	9		6	
Innisfail Ferry			320		340		360		435		300					
Sacramento River Delta																
Collinsville	80		51		89	a	104		148	b	10		4		9	
Emmaton			8		8			a	9				5			
Sacramento	2	a	4		5	ab	7	a	3		4		2		2	
San Joaquin River Delta																
Antioch	24	a	25		49		50		74		22		6		6	
Webb Pump	9	a				ab	12	a	10		7			a	9	
Opposite Central Landing	4		5		6		9	a	5		9				5	
Dutch Slough	8		9		9		10		9		9	ab	10		12	
Rock Slough West of Dam	9	a	9		9	ab	9	a	18		12		9		6	
Rock Slough East of Dam	10	a	9		13	ab	11	a	12		10		10		13	
Rindge Pump	14	a	6		13		12	a	13				11	a	8	
Middle River	9		8		14		10		13		11		13		16	
Mossdale Bridge	9		7				13		8		9		9		5	
Port Stockton	13	a										ab	11			

a Low high tide.
b Taken on following day.
c Taken two days later.
d Over one hour off scheduled time.
e Taken on preceding day.
f Taken two days earlier.

TABLE 119

MINIMUM TEN-DAY STREAM FLOW TO DELTAS OF SACRAMENTO AND SAN JOAQUIN RIVERS AND AREA OF EACH AFFECTED BY SALINITY ENCROACHMENT GREATER THAN 100 PARTS OF CHLORINE PER 100,000 PARTS OF WATER

Year	Flow for Minimum 10-day period (1)				Runoff in % of Normal*			Area Affected by Salinity					
	Sacramento River at Sacramento		San Joaquin River at Vernalis		Sacramento and San Joaquin to Delta	Sacramento and San Joaquin to Delta	At Sacramento	At Vernalis	All Deltas		Sacramento and Mokelumne		San Joaquin	
	Date	c.f.s.	Date	c.f.s.	c.f.s.				% of Total	Acres (2)	% of Total	Acres (3)	% of Total	Acres
1920		540(4)		450(4)		50	45	63	15.1	65800	7.7	33500	7.4	32300
1921						112	118	91	2.1	9150	2.0	8715	0.1	435
1922						100	92	118	2.9	12600	2.4	10420	0.5	2180
1923						74	68	85	2.1	9150	2.0	8715	0.1	435
1924	7/14	858	7/26	407	1280	28	30	24	50.0	217500	18.4	80100	31.6	137400
1925	8/7	2860	8/29	743	3730	83	81	86	3.6	15630	3.1	13450	0.5	2180
1926	7/28	1460	8/21	586	2080	57	59	55	18.5	80500	8.5	37000	10.0	43500
1927	8/23	3560	8/23	1300	4850	114	119	100	2.9	12600	2.4	10420	0.5	2180
1928	8/15	2660	8/22	866	3550	80	84	67	5.7	24800	3.7	16100	2.0	8700
1929	7/18	2460	8/12	590	3090	42	42	44	7.1	30900	4.2	18300	2.9	12600
1930	8/5	2500	8/9	735	3230	63	67	50	5.4	23500	3.8	16500	1.6	7000
1931	7/20	79	7/21	211	131	29	30	26	73.8	321000	30.2	131000	43.6	190000
1932	8/11	1980	9/10	1030	3030	78	64	101	5.7	24800	3.4	14800	2.3	10000
1933	8/21	1450	8/14	607	2070	46	43	51	9.8	42600	5.2	22600	4.6	20000
1934	7/20	1150	8/14	346	1530	40	42	35	37.5	163000	17.8	77500	19.7	85500
1935	8/12	2920	8/12	922	3940	86	82	98	2.9	12600	2.4	10420	0.5	2180
1936	8/20	2540	8/17	1040	3600	91	86	100	2.6	11600	2.2	9840	0.4	1760
1937	8/16	1720	8/24	1020	2820	75	65	100	3.5	15200	2.6	11280	0.9	3920
1938	8/12	5190	8/27	2130	7365	160	156	172	0	0	0	0	0	0
1939	8/5	630	7/25	610	1315	41	40	44	29.0	126000	17.0	74000	12.0	52000
1940	8/12	2550	8/9	1080	3620	108	110	101	4.2	18300	3.0	13000	1.2	5300

*Normal = 40-year mean (1889 - 1929). For comparison of 40 and 50 year means, see Tables 1 and 2.

(1) For minimum daily flow see Tables 1 and 2.

(2) Delta area taken at 435,000 acres which includes all lands, levees, water surfaces, etc., within delta boundary.

(3) Sacramento and Mokelumne deltas combined as the Sacramento River contributes a large flow to Mokelumne River delta through Georgiana and Three Mile Sloughs.

(4) No continuous record. Lowest discharge measured.

TABLE 120

SALINITY OBSERVATIONS - 1940
Sacramento-San Joaquin Area

Location	Jan.			Feb.			Mar.			Apr.			May			June		
	Day	Cl.	cfs.	Day	Cl.	cfs	Day	Cl.	cfs	Day	Cl.	cfs	Day	Cl.	cfs	Day	Cl.	cfs
- SACRAMENTO VALLEY -																		
Stream Channels																		
Sacramento River																		
at Kennett	2	2	62700	1	2	15300	1	2	97300	1	2	75600	1	2	10600	1	3	7120
at Red Bluff	16	3	13200	15	3	21900	15	2	16600	16	2	18200	15	2	8320	15	1	5090
at Red Bluff	2	2	35700	1	5	13500	15	3	19400	1	2	136000	1	2	13000	3	2	7120
at Butte City	15	2	19100	15	4	38100							15	3	9220	15	2	4420
at Butte City	2	2	22000	1	3	23400				15	2	24300	1	1	13300	1	2	7020
at Colusa	15	2	24700	15	2	32800							15	3	9290	15	2	4620
at Colusa	2	2		1	3					15	2		1	3		1	3	
at Meridian	15	3		15	3								15	7		15	1	
at Meridian	2	2	9650	1	4	20800	1	1	24700	1	2	22800	1	2	12900	1	2	6840
at Knights Landing	15	2	20600	15	2	20800	15	2	20800	15	2	20200	15	2	9800	15	2	4120
at Knights Landing																13	5	8730
at Verona																28	1	4840
at Verona																1	2	
at Elkhorn	2	11		1	4		1	2		3	2		1	2		15	1	
at Elkhorn	15	4		15	2		15	3		15	2		15	5		2	3	22900
at Sacramento	2	4	20400	2	2	54800	2	2	69800	2	2	69400	2	3	36000	14	3	11200
at Sacramento	14	3	62600	14	1	56000	14	3	55100	14	3	60600	14	3	35100			
Feather River																11	1	3220
at Oroville																5	2	5930
at Nicolaus																17	2	1820
at Nicolaus																		
Yuba River																17	1	585
at Marysville																		
American River																		
at Folsom													4	1	9600	17	1	2840
at Sacramento																		
Cosumnes River													28	3		18	4	
at U. S. 99 Crossing																		
Mokelumne River													28	1		18	2	
at U. S. 99 Crossing																		
Return Flow Channels																1	4	919
Colusa Trough at Colusa-Williams Highway	2	6		1	7					15	12		1	11		15	5	448
Colusa Trough at Colusa-Williams Highway	15	6		15	9								15	5	396			
Wadsworth Canal at Mouth																		
Butte Slough at Mouth	1	2	0	1	2	0	15	2	0									
Butte Slough at Mouth	15	3	0	15	4	0												
Butte Slough at Long Bridge																		
Reclamation Dist. 70 Drain at Plant	2	7	0	14	25	25												
Reclamation Dist. 70 Drain at Plant	31	26	16	29	14	7												

TABLE 120 (CONTINUED)

SALINITY OBSERVATIONS - 1940
Sacramento-San Joaquin Area
Salinity expressed in parts of chlorine per 100,000 parts of water

Location	Jan.			Feb.			Mar.			Apr.			May			June		
	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.
Return Flow Channels (Continued)																		
Reclamation Dist. 108 Drain at Plant	2	7	0	1	25	0	4	8	409	1	10	314	1	13	102	1	8	236
Reclamation Dist. 108 Drain at Plant	15	5	0	17	6	101	14	7	86	17	15	80	17	12	0	17	12	13
Recl. Dist.108 Drain on Back Borrow Pit																		
Knights Landing Ridge Cut at End																		
Colusa Basin Drain at Knights Landing																		
Sacramento Slough at Mouth																		
Reclamation Dist. 1500 Drain at Plant	3	33	208	1	27	0	6	36	384	15	23	162	31	13	410	17	26	216
Reclamation Dist. 1500 Drain at Plant	16	35	168	18	51	449												
Sutter By-Pass East Borrow Pit																		
at Chandler																		
West Borrow Pit																		
at Reclamation District 1500	3	2		1	3		6	5		1	2		2	4		17	10	
at Reclamation District 1500	16	5		18	4					15	3		31	5				
Yolo By-Pass East Borrow Pit																		
at Elkhorn	2	4	1	1	6	7400	1	3	300000	15	2	6350	1	6	955	1	2	64
at Elkhorn	15	3	18000	15	4	3700	15	4	50000				15	2	540	29	3	38
at Southern Pacific Railroad																		
Reclamation Dist. 1000 Drain at Plant	2	16	0	1	12	58	1	6	624	1	3	609	1	12	0	1	2	0
Reclamation Dist. 1000 Drain at Plant	15	10	57	15	8	152	15	6	0	15	7	62	15	9	106	15	10	0
- SAN JOAQUIN VALLEY -																		
Stream Channels																		
San Joaquin River																		
at U. S. 99				15	5		1	3		2	2					1	2	
at U. S. 99							19	4		15	4					15	3	
at Delta Bridge																		
at Fremont Ford Bridge	2	7	332	2	5	3350	7	3	3820	2	7	3400	1	2	2520	1	3	3980
at Fremont Ford Bridge	15	3	2960	15	3	2260	15	3	3100	19	2	2440	16	2	3060	19	3	3350
near Newman										18	2	5860	31	1	8700	19	1	5170
at Crows Landing										18	2		31	1		19	2	
near Grayson										16	3	6240	28	1	8660	18	2	5380
at Patterson Bridge										18	3					19	3	
at Mazé Road Bridge	2	7		1	5					20	5		28	1		18	4	
at Maze Road Bridge										30	5							
at Durham Ferry Bridge										20	3	12500	28	1	18100	12	4	11800
at Durham Ferry Bridge																18	1	10700
at Mossdale Bridge																		
Mud Slough at Gustine Highway																		
South Fork	2	16	25	2	3	1090*	7	6	4650*	2	6	1920*	1	10	681*	1	2	2860
South Fork	15	4	881*	16	4	508*	15	6	1200*	19	12	671*	16	3	1300*	19	4	1090*

*Combined flow of all three branches.

TABLE 120 (CONTINUED)

SALINITY OBSERVATIONS - 1940
Sacramento-San Joaquin Area
Salinity expressed in parts of chlorine per 100,000 parts of water

Location	Jan.			Feb.			Mar.			Apr.			May			June		
	Day	Cl.	cfs	Day	Cl.	cfs	Day	Cl.	cfs	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.
Mud Slough at Gustine Highway (Cont.)																		
Middle Fork	2	325	0	2	10		7	3		2	4		1	8		1	4	
Middle Fork	15	5		16	8	*	15	4	*	19	28	*	16	4	*	19	1	*
North Fork	2	440	0	2	3		7	5		2	3		1	3		1	3	
North Fork	15	5		16	10		15	3		19	4		16	5		19	2	
Merced River																		
at Yosemite Valley Railroad Crossing										17	2	2750	31	1	2160	20	3	375
at U. S. 99	2	2		2	3		7	2		19	2		1	2		1	3	
at U. S. 99	16	3		16	4		15	2					16	3		17	1	
near mouth										18	3	3190	31	1	2530	19	2	1110
Dry Creek																		
near Modesto										16	5	64	30	2	66	21	1	84
Tuolumne River																		
at La Grange										19	3	2340	30	2	5260	20	2	1480
at Roberts Ferry Bridge										16	2	3000	29	2	5930	20	3	1900
at Hickman Bridge										19	3	2440	29	1	6290	20	1	2520
at U. S. 99 (Modesto)	2	5		1	10		1	2		2	2	10800	30	2	6160	15	1	4010
at U. S. 99 (Modesto)	15	5		15	2		18	4		30	6	965				29	10	563
at Tuolumne City Bridge	2	6	810	1	9	410	1	2	14000	2	2	14600	29	4	6300	15	2	4460
at Tuolumne City Bridge	15	5	1010	15	3	3480	19	5	1930	16	4	3830				29	8	560
Stanislaus River																		
at Orange Blossom Bridge										16	2	4110	30	2	2740	21	1	368
at Riverbank																		
at U. S. 99 (Ripon)	2	3		1	3		1	2		15	2	3830	31	1	3210	15	1	1850
at U. S. 99 (Ripon)	15	2		15	8		18	1		30	3	2770				29	3	442
at Hatmark Ranch																18	3	1650
at Bret Harte																		

*See footnote on preceding page.

TABLE 120 (CONTINUED)

SALINITY OBSERVATIONS - 1940
Sacramento-San Joaquin Area

Salinity expressed in parts of chlorine per 100,000 parts of water

Location	Jul.			Aug.			Sep.			Oct.			Nov.			Dec.		
	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.
- SACRAMENTO VALLEY -																		
Stream Channels																		
Sacramento River																		
at Kennett																		
at Red Bluff	1	2	4360	1	3	3760	3	2	3280	1	3	3590	1	1	5330	2	5	4000
at Red Bluff	16	3	3610	15	4	3610	16	2	3390	15	3	3670	15	1	4960	16	5	3850
at Butte City	1	2	3380	1	2	2240	15	5	3010	1	4	3380	1	3	5250	2	2	4450
at Butte City				15	3	2020				15	4	3180				16	5	4050
at Colusa	1	3	3340	3	2	2260	1	2	2280	1	3	3280	1	7	5180	2	5	4960
at Colusa	15	2	2740	15	4	2090	16	2	3010	15	6	3180	15	1	5400	14	4	5180
at Meridian	1	1		3	2		16	3		1	4		1	3		2	5	
at Meridian	15	4		15	4					14	5		15	2		14	6	
at Meridian				31	3													
at Knights Landing	1	3	2660	1	3	1700	1	3	2220	1	2	3670	15	2	5210	2	2	4430
at Knights Landing				15	6	1540	15	6	3610	15	5	3640				16	6	4370
at Verona	15	2	3350	13	7	2600	20	8	6060	14	1	5910	13	2	11000			
at Verona	29	7	2790	28	3	2660	30	2	5910				28	2	7600			
at Elkhorn	1	4		1	5		7	7		15	6		2	1		14	3	
at Elkhorn	16	6		15	4		16	5		2	5		30	2		30	5	
at Sacramento	2	3	5060	2	5	2640	2	3	3590	2	4	6080	2	1	8760	2	2	8160
at Sacramento	14	3	3830	14	3	2520	14	4	5400	14	6	6200	14	1	10700	14	7	7610
Feather River																		
at Oroville							10	3	2190									
at Nicolaus	12	2	731	5	1	530	3	3	709									
at Nicolaus				8	1	452										11	1	2440
Yuba River																		
at Marysville	10	3	255	7	1	152	3	2	124				13	1	1030	11	2	368
at Marysville				25	4	126	23	2	142									
American River																		
at Folsom	31	2																
at Sacramento				31	2	355	6	4	399				14	1	860	11	1	650
Cosumnes River																		
at U. S. 99 Crossing	16	4											18	1				
Mokelumne River																		
at U. S. 99 Crossing				27	2								18	1				
Return Flow Channels																		
Colusa Trough at Colusa-Williams Highway	1	4	440	3	4	498	6	5	616	1	4	191	1	5	178	2	9	69
Colusa Trough at Colusa-Williams Highway	15	4	476	15	3	478	16	3	555	3	6	161	15	7	117	14	11	79
Wadsworth Canal at Mouth				7	3	81	5	2	87	3	7	81	15	2	59			
Wadsworth Canal at Mouth										30	1	65						
Butte Slough at Mouth	10	19	66	8	2	133	1	3	184	1	5	0	1	3	0	1	3	0
Butte Slough at Mouth	25	2	125	15	2	131	16	2	130	15	3	0	15	11	65	16	5	195

TABLE 120 (CONTINUED)

SALINITY OBSERVATIONS - 1940
Sacramento-San Joaquin Area

Location	Jul.			Aug.			Sep.			Oct.			Nov.			Dec.		
	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.
Return Flow Channels (Continued)																		
Butte Slough at Long Bridge				7	2	112	5	6	112				14	1	328			
Reclamation Dist. 70 Drain at Plant							22	11	20									
Reclamation Dist. 108 Drain at Plant	3	10	90	1	3	107	17	13	60	2	4	42	2	10	0			
Reclamation Dist. 108 Drain at Plant	15	10	100	17	11	113												
Recl.Dist.108 Drain on Back Borrow Pit	1	22	0				6	14	2	9	23	1						
Knights Landing Ridge Cut at End	18	5	50	9	4	54	3	4	40									
Knights Landing Ridge Cut at End							15	6	44									
Colusa Basin Drain at Knights Landing	5	11	365	12	3	433	3	5	589	4	9	161						
Sacramento Slough at Mouth	5	4	604	9	12	513	4	7	785	30	12	127						
Recl. Dist. 1500 Drain at Plant	1	17	362	3	17	289	4	15	554	4	33	113	16	18	0	6	19	0
Recl. Dist 1500 Drain at Plant	19	17	350	17	15	297	19	15	454	21	38	71	25	27	0	26	16	618
Sutter By-Pass East Borrow Pit																		
at Chandler	9	3	203	8	3	73	5	3	145	4	4	57						
at Chandler										30	1	89						
at West Borrow Pit																		
at Reclamation District 1500	1	3	310	3	8	179	4	6	231	4	12	117	16	3	212	6	5	179
at Reclamation District 1500	19	6	179	17	9	179	19	18	254	21	8	99	25	2	179	26	3	
Yolo By-Pass East Borrow Pit																		
at Elkhorn	16	14	0	1	5	45	7	6	25	2	10	31	2	4	7	30	3	124000
at Elkhorn				15	6	35	16	11	20	15	16	12	30	12	7			
at Southern Pacific Railroad	12	7	0	8	6	40	6	5	25	7	12	20	12	13	7			
Reclamation Dist.1000 Drain at Plant	1	11	0	1	9	0	1	11	0	1	8	0	1	8	0	2	12	0
Reclamation Dist.1000 Drain at Plant	15	12	0	15	10	0	16	11	0	15	9	0	15	10	0	16	12	0
- SAN JOAQUIN VALLEY -																		
Stream Channels																		
San Joaquin River																		
at U. S. 99	1	7		1	14		16	9		1	8		1	2		16	10	
at U. S. 99	16	3								17	10		16	11				
at Delta Bridge	19	2	83															
at Fremont Ford Bridge	1	2	1360	24	24	100	4	11	136	2	10	145	2	19	70	3	30	77
at Fremont Ford Bridge	16	13	308	26	20	101	17	11	138	17	13	118	19	30	63	18	8	603
near Newman	16	18	572	26	9	374	26	12	372	22	13	289	20	17	208	13	14	242
at Crows Landing	16	12		6	11					22	14		20	17				
near Grayson	16	12	920	21	13	510	25	16	560	22	13	435	20	21	355	13	19	355
at Patterson Bridge	16	10		26	11					22	13					13	18	
at Maze Road Bridge	17	10		14	15		3	9		23	11		20	8		12	10	
at Durham Ferry Bridge	17	12	1590				27	7	1670	17	4	1650	20	8	1450	18	5	2300
at Mossdale Bridge																		

TABLE 120 (CONTINUED)

SALINITY OBSERVATIONS - 1940
Sacramento-San Joaquin Area
Salinity expressed in parts of chlorine per 100,000 parts of water

Location	Jul.			Aug.			Sep.			Oct.			Nov.			Dec.		
	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.	Day	Cl.	cfs.
Stream Channels (Cont.)																		
Mud Slough at Gustine Highway																		
South Fork	1	66	236*	24	348	0	4	390	0	4	355	0	2	355	0	3	345	0
South Fork	17	4	36				17	380	0	17	400	0	19	335	0	18	15	100
South Fork	30	6	8															
Middle Fork	1	6		24	24	0	4	35	0	4	55	0	2	24	0	3	38	0
Middle Fork	17	277	0				17	35	0	17	45	0	19	33	0	18	42	0
North Fork	1	10		24	308	0	4	355	0	4	375	0	2	360	0	3	380	0
North Fork	17	232	0				17	340	0	17	380	0	19	370	0	18	327	0
Merced River																		
at Yosemite Valley Railroad	16	2	27	23	1	14				16	1	6	19	1	11	19	1	17
at U. S. 99	1	4		24	1		4	2		17	5		2	1		2	3	
at U. S. 99	30	2					30	3					18	1		30	4	
near mouth	16	3	357	24	1	269	26	3	222	22	3	181	20	3	168	13	2	150
Dry Creek																		
near Modesto	17	2	56	23	2	55				16	1	50	19	1	39			
Tuolumne River																		
at La Grange										18	1	5				19	1	1010
at Roberts Ferry Bridge	17	7	38	14	6	47				18	2	400	19	1	650	19	1	1000
at Hickman Bridge										18	3	445	19	1	698	19	1	1120
at U. S. 99 (Modesto)	16	11	351	1	10	291	4	7	740	1	9	671	1	8	781	16	9	1130
at U. S. 99 (Modesto)	17	12	347	14	13	292	16	5	841	18	4	648	19	3	841	20	5	1200
at Tuolumne City Bridge	16	10	420	1	9	395	3	7	805	1	6	750	1	7	800	13	5	1265
at Tuolumne City Bridge				14	13	375	25	5	905	26	8	775	20	4	925	16	7	1185
Stanislaus River																		
Orange Blossom Bridge	15	3	28													20	2	224
Orange Blossom Bridge	25	1	45															
at Riverbank	15	2	104							17	1	135	18	1	118			
at U. S. 99 (Ripon)	15	3	264	1	3	270	3	4	243	1	2	226	1	3	361	16	3	320
at U. S. 99 (Ripon)	16	3	256	14	3	248	16	3	254	12	2	232	18	1	224	20	1	334
at Hatmark Ranch	15	2	330	16	2	260				17	1	260						
at Hatmark Ranch				27	10	260												
at Bret Harte							24	2	240	19	2	260	18	1	235	18	1	325

*Combined flow of all three branches.

CHAPTER VII

TIDE GAGES

In order to determine the behavior of the tides in the Sacramento-San Joaquin Delta and Upper Bay 24 recording tide gages are being operated, 15 by the Division of Water Resources, 4 by the U. S. Army Engineers and 5 by the United States Bureau of Reclamation. These gages are scattered throughout the area and the location and a description of each station is given in Table 121. The table also shows when the gage was first installed. The gages have been operated continuously since their installation with the exception of minor breaks in the record due to stoppages, etc. Only one gage has been out of commission for any length of time, this one being at the San Joaquin end of Three Mile Slough. It was out of operation from September 1935 until July 1938.

The charts from the State-owned and operated gages are on file and the data for some of them have been tabulated.

During 1929, 1930 and 1931 gages were operated at many other points for short periods. Bulletin 27 of the Division of Water Resources gives the data obtained from these gage operations.

During the fall of 1939 the United States Coast and Geodetic Survey ran a line of first order levels between Galt - Fairfield and Stockton to which it is planned these gages will be tied thus bringing all staffs to one datum plane.

Plate 4 shows the location of all the recording gages now in operation.

TABLE 121

LOCATION AND DATE OF INSTALLATION OF RECORDING TIDE GAGES IN SACRAMENTO-SAN JOAQUIN DELTA AND SUISUN BAY

Name of Station	Operated by*	Location	Date Installed
		SACRAMENTO DELTA	
Sacramento	D.W.R.	Left bank of Sacramento River at Southern Pacific Railroad bridge.	1920
Snodgrass Slough	D.W.R.	Left bank, Sacramento River; about 0.1 mile above Hollister landing about $\frac{1}{4}$ mile above head of Snodgrass Slough (now leveed off).	Aug. 1939
Walnut Grove	D.W.R.	Left bank of Sacramento River at head of Georgiana Slough; lower end of town of Walnut Grove.	Feb. 1929
Rio Vista	U.S.E.D.	Right bank of Sacramento River at U. S. Engineers depot below Rio Vista; about $1\frac{1}{2}$ miles below Rio Vista Bridge	Apr. 1908
Three Mile Slough (Sac.)	D.W.R.	On Brannon Island side of Slu. Pile dolphin about 0.1 mile from Three Mile Slu Bridge	Apr. 1929
Mayberry Slough	U.S.E.D.	Right bank of Sacramento River about four miles above Collinsville	Prior to 1929
Collinsville	D.W.R.	Right bank of Sacramento River. On pile dolphin about 0.1 mile upstream from junction of main street and river.	June 1929
		MOKELUMNE DELTA	
New Hope Bridge	D.W.R.	Right bank of the south fork of Mokelumne River; just below New Hope Bridge	Aug. 1920
Terminous	U.S.B.R.	On highway bridge over Potato Slough between Terminous Tract and Bouldin Island	July 1940
Georgiana Slough	D.W.R.	On Andrus Island near junction of Georgiana Slough and Mokelumne River. At former location of Golden State Asparagus Company Plant.	June 1929
		SAN JOAQUIN DELTA	
Mossdale Bridge	D.W.R.	Right bank of San Joaquin River just below U. S. 40 crossing.	1920
Brandts Bridge	U.S.B.R.	Right bank of San Joaquin River at Brandts Bridge between Roberts Island and mainland.	July 1940
Stockton	U.S.E.D.	At head of McLeod Lake; El Dorado Street.	Dec. 1927

*D.W.R. - Division of Water Resources; U.S.E.D. - United States Army Engineers; U.S.B.R. - United States Bureau of Reclamation.

SACRAMENTO – SAN JOAQUIN WATER SUPERVISION

LOCATIONS OF RECORDING TIDE GAGE STATIONS

SACRAMENTO-SAN JOAQUIN DELTA AND SUISUN BAY

SCALE OF MILES

2 0 2 4 6 8 10

TABLE 121 (CONTINUED)

LOCATION AND DATE OF INSTALLATION OF RECORDING TIDE GAGES IN SACRAMENTO-SAN JOAQUIN DELTA AND SUISUN BAY

Name of Station	Operated by*	Location	Date Installed
		SAN JOAQUIN DELTA (Continued)	
Burns Cut-off	U.S.B.R.	On Stockton ship canal at East Bay Municipal Utility District Crossing; northwest corner of Rough and Ready Island.	May 1940
Rindge	D.W.R.	At southeast corner of Rindge Tract; on Fourteen Mile Slough at Junction with Ship Canal	July 1939
Middle River (Borden)	D.W.R.	Left bank of Middle River just below Borden Highway Bridge. On Victoria Island	July 1939
Old River (Mansion House)	D.W.R.	Right bank of Old River at Mansion House. On Victoria Island. On timber dolphin.	Aug. 1939
Mandeville	U.S.B.R.	South side of Mandeville Island; on Mandeville cut; at beet dump about one mile west of Bacon-Mandeville ferry.	July 1940
Rock Slough	U.S.B.R.	North bank of Rock Slough near head of slough. About 1½ miles east of Knightsen.	May 1936
Venice Island	U.S.E.D.	On Stockton ship canal near Venice Island headquarters at Blakes Landing.	Jan. 1928
Three Mile Slough (S.J.)	D.W.R.	On Sherman Island at R.D. 341 drainage plant; near junction of slough with San Joaquin River. Pile dolphin.	June 1929
Antioch	D.W.R.	On wharf of Antioch Water works.	June 1929
		SUISUN BAY	
Benicia	D.W.R.	North side of Suisun Bay; on Benicia Arsenal wharf.	April 1940
		YOLO BY-PASS	
Lisbon	D.W.R.	Left bank of Yolo By-Pass near north end of San Francisco and Sacramento Railroad trestle.	1920

*D.W.R. - Division of Water Resources; U.S.E.D. - United States Army Engineers; U.S.B.R. - United States Bureau of Reclamation.