STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RESOURCES

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REPORT OF

SACRAMENTO-SAN JOAQUIN

WATER SUPERVISION

FOR

1951

OCTOBER 1952

TABLE OF CONTENTS

ALPHABETICAL
INDEX TO TABLES

ALPHABETICAL
INDEX TO TABLES (CONTINUED)

ALPHABETICAL
INDEX TO TABLES (CONTINUED)

ALPHABETICAL
INDEX TO TABLES (CONTINUED)

ALPHABETICAL
INDEX TO TABLES (CONTINUED)

ALPHABETICAL
INDEX TO TABLES (CONTINUED)

ALPHABETICAL
INDEX TO TABLES (CONTINUED)

LIST OF PLATES

ACKNOWLEDGMENT

Valuable assistance has been rendered by many individuals and by many public and private agencies in the conduct of the field work and the preparation of data for this report of the Sacramento-San Joaquin Water Supervision activities.

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

The Pacific Gas and Electric Company and the Merced, Modesto, and Turlock irrigation districts have furnished a large number of electric power consumption records for use in the compilation of pumped diversions.

The United States Geological Survey, Department of Interior, has extended valuable cooperation in gathering and assembling stream flow data.

The United States Bureau of Reclamation, Department of Interior, has furnished data relating to inflows and operation releases of the Shasta Reservoir and Millerton Lake (Friant Reservoir).

The City of San Francisco Public Utilities Commission, Hetch Hetchy Water Supply, Kings River Water Association, San Joaquin Canal Company, Corcoran Irrigation District and the United States Bureau of Reclamation have made available stream flow data for certain San Joaquin Valley streams.

The Modesto, Oakdale, and Turlock irrigation districts have assisted in observing and maintaining recording gages in the San Joaquin Valley area.

The United States Bureau of Reclamation provided the funds necessary to maintain the regular program of salinity observations in the Sacramento-San Joaquin Delta during 1951.

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FOREWORD

A contract was entered into between the United States and the Department of Public Works which provides for the performance by the Division of Water Resources of certain hydrographic work which has been formerly performed by the U. S. Bureau of Reclamation and the continuation of the Sacramento-San Joaquin Water Supervision activities of the Division of Water Resources. This contract, designated as U. S. Bureau of Reclamation Contract No. 175r-1596 and Division of Water Resources Contract No. 3-170, was executed on December 30, 1948 and became effective October 1, 1948.

The work performed during 1951 by the Division of Water Resources under this contract includes the collection of data on stream flows and diversions for the Sacramento and San Joaquin rivers and their tributaries formerly obtained by both agencies and in addition data formerly obtained by the Bureau of Reclamation on flows and diversions for the Tule River, measurements of inflows to Tulare Lake and temperatures of water. In accordance with the terms of this contract, the Division transmitted to the Bureau of Reclamation periodic hydrographic reports for the latter's use in the operation of the Central Valley Project.

REPORT OF SACRAMENTO-SAN JOAQUIN WATER SUPERVISION FOR 1951

SACRAMENTO-SAN JOAQUIN WATER SUPERVISION

Water supervision activities, resulting from the efforts of the first Sacramento-San Joaquin River Problems Conference and its Permanent Committee working with the former Division of Water Rights, were inaugurated in 1924. A complete description of the origin, history and conduct of the work is found in the 1924 and 1926 Biennial Reports of the former Division of Water Rights, in Bulletin Number 4 of that Division, and in Bulletin Number 23 of the succeeding Division of Water Resources. The latter bulletin brings together all data and measurements obtained in the first five-year period, 1924 to 1928, inclusive. Annual Water Supervision reports for subsequent years are in separately bound books similar to this report.

Objectives

At the outset, the objective of the work of Water Supervision in the valley floor areas along the Sacramento and San Joaquin river system was to afford relief to water users from the difficulties of obtaining irrigation supplies occasioned by uncoordinated diversions during years of substantially subnormal runoff. The situation called for voluntary regulation of diversions in order to alleviate as far as possible the damage from the serious shortages in the water supplies needed for irrigation, municipal consumption, salinity control in the Sacramento-San Joaquin Delta, and navigation purposes. Equitable coordination of diversions was accomplished primarily through the Water Supervision program.

There is no agreement between the water users under which a watermaster might distribute the natural water supply equitably to those entitled to receive it, but it appears inevitable that such an agreement, embracing a definite schedule of relative water rights, will be developed. Its realization will require, however, reliable data, covering a long period of years, on the actual diversions and uses of water, stream flows, stream accretions and salinity encroachment into the Sacramento-San Joaquin Delta. Looking toward that end, it has been the objective of the Division of Water Resources through its Water Supervision work, to collect and record all of the basic hydrographic data necessary to formulate an intelligent and practicable agreement defining the respective water rights of the parties affected in the area covered.

Scope of Work

The area embraced by the Sacramento-San Joaquin Water Supervision work lies on the Sacramento and San Joaquin Valley floors. It specifically covers all of the lands irrigated from the Sacramento River between Redding and Sacramento, including those irrigated from the Colusa Trough, Back Borrow Pit, Knights Landing Ridge Cut, and Yolo By-Pass above West Sacramento, from Lower Butte Creek and Butte Slough, from the Feather River

below Oroville, from the Yuba River below Smartville, from the Bear River below Wheatland, from the Sutter By-Pass and Sacramento Slough, from the American River below Fair Oaks, from the Cosumnes River below Michigan Bar, from the Mokelumne River below Clements, from the Calaveras River below Jenny Lind, from the San Joaquin River between Friant Dam and Mossdale Bridge, from the Merced River below Snelling, from the Tuolumne River below La Grange, from Dry Creek (tributary to Tuolumne River) below Oakdale-Waterford road, from the Stanislaus River below Knights Ferry, and from the Tule River below South Fork, and the irrigated areas lying on the "uplands" side of and receiving water from the San Joaquin River between Mossdale Bridge and Stockton, Old San Joaquin River and Tom Paine Slough. The area covered and its geographical relation to the Central Valley Drainage Basin are shown on Plate 1.

Water Supervision Activities

The work of the Sacramento-San Joaquin Water Supervision unit of the Division of Water Resources is divided into two portions, field work, mainly during the spring, summer and fall months, and office work during the winter and early spring months.

The field activities include:

(1) Measurement of stream flow passing the many recording stations along the river and drainage channels;

(2) Measurements of the amounts of water diverted and collection of records of use by each water user;

(3) Measurements of the amounts of water returned to natural channels, through drainage plants or gravity drains, for possible re-use;

(4) Obtaining an annual census of irrigated acreages and crops supplied by either a primary, or drainage water supply, or both;

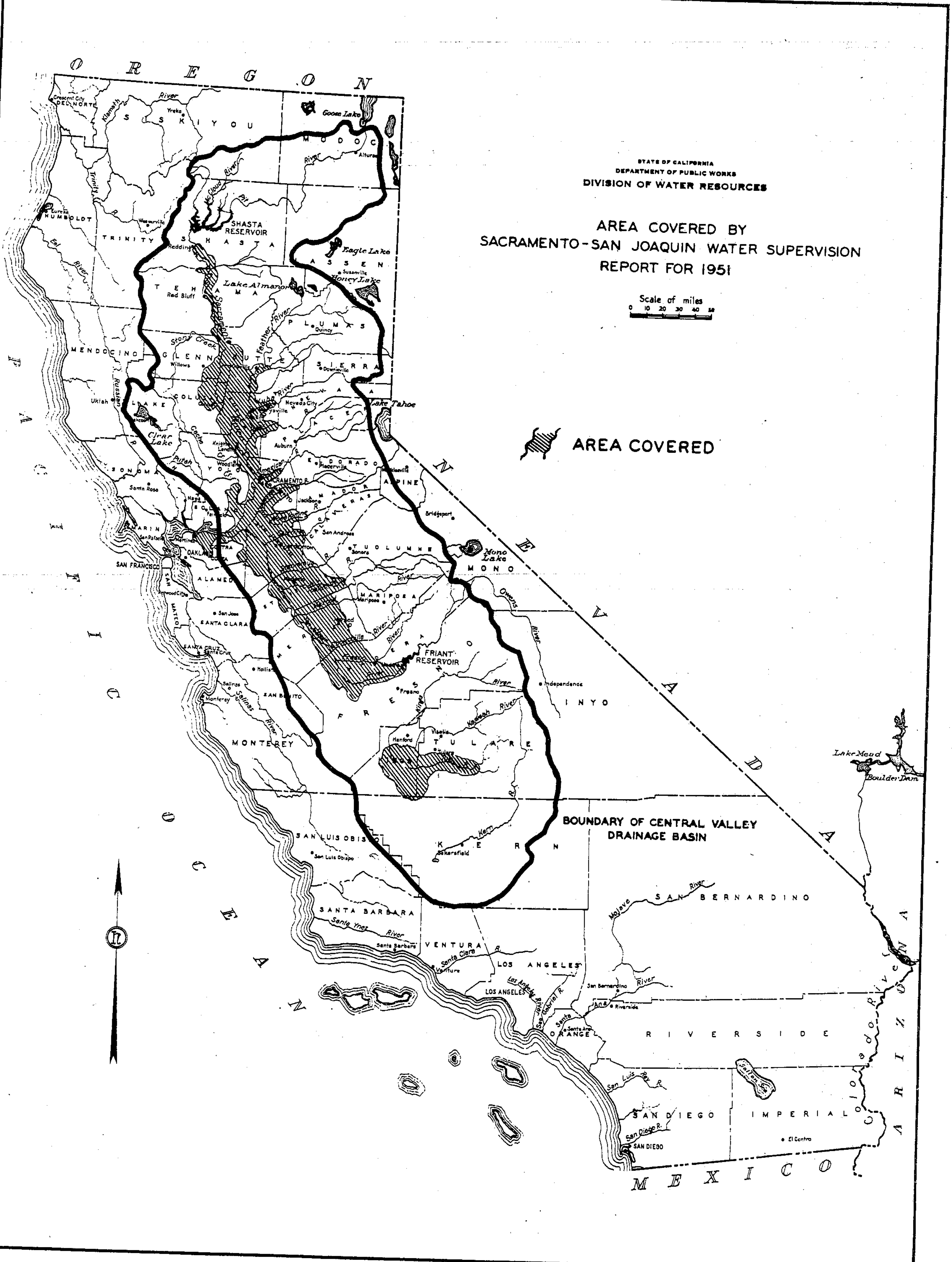
(5) Maintaining the Delta salinity observation program;

(6) Cooperation with and assistance to water users in connection with individual problems of diversion; and

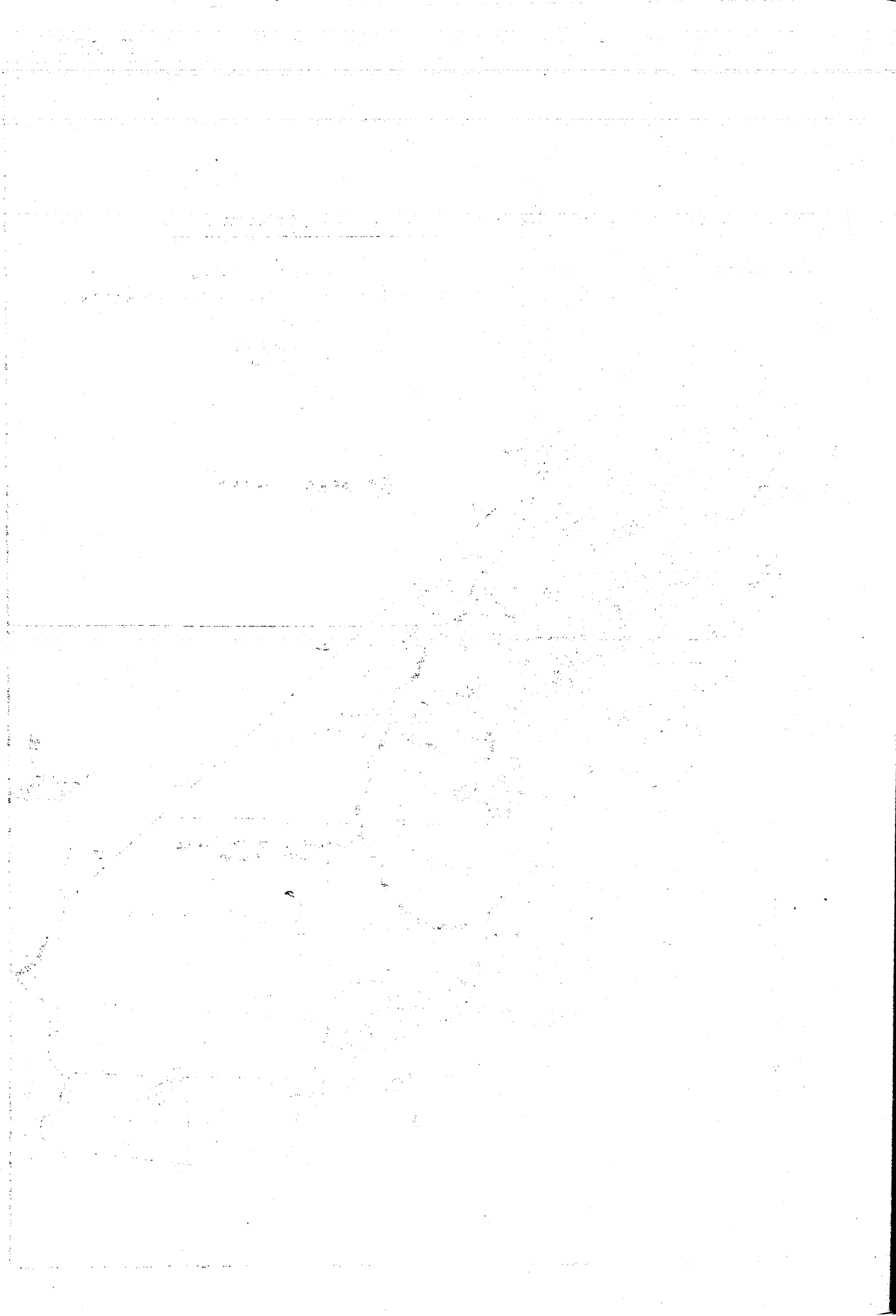
(7) Assistance with hydrographic activities of cooperating public and private agencies, and of other units of the Division.

The office work comprises mainly the assembly, computation and analysis of hydrographic and other data collected during the field season for presentation in the annual report of Water Supervision. This report contains the basic records of water supply available to, and the water utilization by, each user of water from the streams covered in the area. The computation of stream flow, drainage and accretions involves the conversion of the recorded daily gage records to figures showing the daily flows in second-feet and monthly runoffs in acre-feet. The computation of the amounts of water diverted by each water user involves the reduction of data showing the operation of his diversion plant, its electric power consumption, and its efficiency. The results of these computations are then compiled in the tabulations in this report for the purpose of giving basic records

PLATE I



STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES
AREA COVERED BY
SACRAMENTO-SAN JOAQUIN WATER SUPERVISION
REPORT FOR 1951
Scale of miles
0 10 20 30 40 50
AREA COVERED
BOUNDARY OF CENTRAL VALLEY
DRAINAGE BASIN
OREGON
NEVADA
ARIZONA
MEXICO
PACIFIC OCEAN
SISKIYOU
MODOC
SHASTA
LASSEN
TEHAMA
PLUMAS
MENDOCINO
GLENN
BUTTE
SIERRA
LAKE
NEVADA
PLACER
SONOMA
YOLO
EL DORADO
ALPINE
MADERA
CALAVERAS
TUOLUMNE
MONO
MARIN
ALAMEDA
MARIPOSA
SANTA CLARA
SANTA CRUZ
SAN BENITO
FRESNO
INYO
MONTEREY
TULARE
KERN
SAN LUIS OBISPO
SANTA BARBARA
VENTURA
LOS ANGELES
SAN BERNARDINO
ORANGE
RIVERSIDE
SAN DIEGO
IMPERIAL
SHASTA RESERVOIR
FRIANT RESERVOIR
Goose Lake
Eagle Lake
Honey Lake
Lake Almanor
Clear Lake
Lake Tahoe
Mono Lake
Lake Mead
Boulder Dam
Sacramento R.
Feather River
American
Klamath
Trinity
Eel
Russian
Pit
McCloud River
Owens River
Kings
Kaweah River
Kern R.
Salinas River
Santa Ynez River
Santa Clara R.
Mojave River
Colorado River
Crescent City
Del Norte
Yreka
Alturas
Eureka
Humboldt
Redding
Susanville
Red Bluff
Quincy
Willows
Downieville
Ukiah
Nevada City
Auburn
Placerville
Santa Rosa
Sacramento
Jackson
Bridgeport
San Andreas
Sonora
San Rafael
Martinez
Oakland
San Francisco
Redwood City
San Jose
Mariposa
Hollister
Fresno
Independence
Salinas
Monterey
Hanford
Visalia
Bakersfield
San Luis Obispo
Santa Barbara
Ventura
Los Angeles
San Bernardino
Riverside
Santa Ana
San Diego
El Centro



that are readily usable by all interested parties. The office work also includes the preparation of certain hydrographic data in form to be used as a guide in the ensuing season's field work.

In accordance with the provisions of Contract No. 3-170 between the Division of Water Resources and the U. S. Bureau of Reclamation, the Division has computed, on a preliminary basis, the daily mean flows at 36 stream-flow stations, and the diversions, by reaches, from the main streams and tributaries in the Sacramento and San Joaquin valleys and has transmitted the results of these computations monthly to the Regional headquarters of the Bureau of Reclamation.

The office work in connection with the program of observing Delta salinity conditions consists of collating the results of the chlorine tests from samples taken at four-day intervals at each observation station. These salinity records are presented each month in a bulletin which is distributed to governmental agencies and to many individuals and organizations that are interested in the results.

Hydrographic Activities of Cooperating Agencies

The United States Geological Survey, Water Resources Branch, through continued cooperative agreements with the Division of Water Resources, has maintained a series of stream gaging stations in the Sacramento and San Joaquin valleys. A large amount of the stream-flow data contained in this report has been collected and computed by the Geological Survey, and much of this material has been specially completed for inclusion in this report prior to its official publication in Federal reports.

The Modesto Irrigation District, the Oakdale Irrigation District, the South San Joaquin Irrigation District, and the Turlock Irrigation District in the San Joaquin Valley have cooperated with the Water Supervision engineers by assisting in the installation of certain recorder equipped stream gaging stations.

The City of San Francisco Public Utilities Commission, Hetch Hetchy Water Supply, has continued to cooperate with the Water Supervision engineers by maintaining, operating and compiling records from a series of stream gaging stations on the San Joaquin and Tuolumne rivers in the San Joaquin valley.

The United States Bureau of Reclamation, through its offices at Sacramento and Fresno, cooperated by operating certain recorder equipped stations and by furnishing records of flow at certain stations.

The final computations of the diversion quantities, as shown in this report, are the result of giving full consideration to all measurements and records of operation during the entire season for each individual diversion.

The specific degree of cooperation by these agencies with the Water Supervision engineers is detailed in footnotes on the many stream-flow tabulations contained in this report.

SHASTA AND FRIANT RESERVOIR OPERATIONS

Shasta Reservoir on the Sacramento River above Redding was first used to store water for irrigation use during the winter of 1943-44 and releases for supplemental irrigation water along the Sacramento River commenced in the late spring of 1944. The release of water from the reservoir since 1944 has substantially changed the natural regimen of flow of the Sacramento River and in many respects greatly benefited conditions along that stream. However, it also has created added diversion problems.

Friant Reservoir (Millerton Lake) on the San Joaquin River near Friant was first used to store water for irrigation use during the winter and spring of 1943-44 and the first releases for supplemental irrigation water occurred during 1944. Releases were made during 1951 for regulating and supplementing the irrigation supplies along the San Joaquin River.

The operations of the Shasta and Friant reservoirs are directed by the United States Bureau of Reclamation.

Reservoir Data

Shasta Reservoir is created by a gravity concrete dam, 528 feet high above streambed, located 13 miles upstream from Redding. The gross capacity of the reservoir with spillway gates closed is 4,500,000 acre-feet, of which a space of 4,000,000 acre-feet will be available for the active storage of water and 500,000 acre-feet of space will be reserved for silt deposits and to create head for the generation of power. The spillway steel drum gates were installed in 1948, thus providing a storage of 786,000 acre-feet above the 3,714,000 acre-feet at the fixed crest of the spillway. The ultimate storage capacity will be filled every year when the natural stream runoff from above the dam is equal to or exceeds the normal amount. Water from the reservoir is conveyed through the Sacramento Valley in the channel of the Sacramento River.

Friant Reservoir, on the San Joaquin River, is created by a gravity concrete dam about 275 feet high above streambed, and is located at the base of the foothills about 20 miles northeast of Fresno. The gross capacity of the reservoir with spillway gates closed, is 520,000 acre-feet, of which a space of 404,000 acre-feet between the top of the spillway gates at elevation 578 and the bottom of the Friant-Kern Canal outlet at elevation 459.4 feet will be available for the storage of water for flood control and to supply irrigation demands in the San Joaquin Valley. It is planned to ultimately convey the major portion of the water from Friant Reservoir through the Madera and Friant-Kern canals to lands north and south of the San Joaquin River in Madera, Fresno, Kings, Tulare and Kern counties. The spillway gates on Friant Dam were completely installed in 1948, thus providing a storage of 84,000 acre-feet above the 350,000 acre-feet of space between the fixed crest of the spillway at elevation 560 feet and the bottom of the Madera Canal outlets at elevation 442.2 feet.

Shasta Reservoir Operation - 1951

The Shasta Reservoir has been constructed for multiple uses. It is designed to furnish water for (1) irrigation in the Sacramento and San Joaquin valleys, including the Sacramento-San Joaquin Delta area; (2) salinity control in the Delta by maintaining a flow in the lower Sacramento River sufficient to repel the intrusion of salt water from Suisun Bay; (3) navigation on the Sacramento River above Sacramento to Chico Landing; and (4) the generation of hydroelectric power. The reservoir will also be used to control floods in the Sacramento River originating above Shasta Dam.

Although the storage of water in the reservoir commenced in the early part of the winter of 1943-44, the ensuing season's subnormal runoff into it was not sufficient to fill the reservoir to the spillway lip. However, the United States Bureau of Reclamation was able to release sufficient stored water throughout the irrigation season of 1944 to augment the natural stream flows and thereby facilitate diversions of those natural flows by the diverters along the Sacramento River.

Since 1944, including 1951, the quantity of water in storage in Shasta Reservoir was sufficient to afford releases (1) to facilitate irrigation diversions by maintaining higher river levels along the Sacramento River, (2) to sustain minimum flow for navigation of approximately 5,000 second-feet upstream from Knights Landing, (3) to supplement irrigation supplies in the Delta area below Sacramento, and (4) to control salinity. In addition during August of 1951 the newly constructed Delta Cross Channel near Walnut Grove was operated for the first time allowing approximately 3,000 second-feet of Sacramento River water to be transferred into the San Joaquin portion of the Delta. This flow afforded approximately 1,200 second-feet of water for exporation by the Delta-Mendota Canal and aided in maintaining the stream flow out of the Delta into Suisun Bay sufficient to hold back the line of excess saline concentration to an arc embracing 1,800 acres of the lower Delta area.

The daily total mean-second-foot-flows into Shasta Reservoir during 1951 are given in Table 7. These inflows to the reservoir, as shown by the daily figures, represent the amounts of water that would have been flowing in the Sacramento River at the dam site if the dam had not been built. The inflow figures are computed by combining the effects of daily change in storage, reservoir evaporation, releases and spill.

A tabulation of the daily amounts of water in storage in Shasta Reservoir during 1951 is given in Table 8. The daily mean-second-foot-flows as measured below Shasta Dam at the United States Geological Survey station near Keswick are given in Table 9. The flows at the Keswick station are the same as the releases from Shasta Reservoir except for the amounts of inflow between the station and Shasta Dam. The amounts of this inflow are small during the irrigation season, and can be ignored, so that the flows at the gaging station can be assumed the same as the releases from the reservoir during that period.

A chart depicting the operation of Shasta Reservoir for 1951, as prepared by the U. S. Bureau of Reclamation, giving the inflows to the reservoir, the amounts released, the water surface elevations and the amounts of water in storage, is shown on Plate 2.

Friant Reservoir Operation - 1951

The Friant Reservoir will be used only for the storage of water for flood control and irrigation purposes. The daily total mean-second-foot inflows to Friant Reservoir during 1951 are given in Table 109. A tabulation of the daily amounts of water in storage in the reservoir during 1951 is given in Table 110. The daily mean-second-foot-flows, as measured at the United States Geological Survey gaging station below Friant, are given in Table 111. These flows are the same as the releases from Friant Reservoir except for the amounts of inflow between the station and Friant Dam. The amounts of this intermediate inflow are small during the irrigation season so that the measured flows at the gaging station are practically the same as the releases from the reservoir during that period. A chart depicting the operation of Friant Reservoir for 1951, as prepared by the U. S. Bureau of Reclamation, giving the same data as are shown by the chart for Shasta Reservoir, is also shown on Plate 2.

During the 1951 irrigation season, water stored in Friant Reservoir (Millerton Lake) was released into the Madera Canal, the Friant-Kern Canal, and into the channel of the San Joaquin River. Diversions by the Madera Canal served largely to aid in the replenishment of ground water supplies in the Madera area. Construction on the Friant-Kern Canal was completed during 1951 except for turnouts, distribution systems, etc. Water reached the end of the canal in the vicinity of Bakersfield; however, the most southernly point of delivery was to the Southern San Joaquin Municipal Utility District in the vicinity of the City of Delano. The quantities of diversions into the Madera and Friant-Kern Canals are shown in Table 185. The regulated releases flowing down the San Joaquin River served not only the irrigation requirements of the lands along that stream above the head of the Gravelly Ford Canal, but also the requirements of the numerous diversions below that point to Temple Slough.

RUNOFF AND WATER SUPPLY

The variable flows of the streams entering the Sacramento and San Joaquin valleys on the north and east sides result from the rainfall runoff occuring each winter and spring season principally from December to April, the snow melt runoff occurring during the spring and summer seasons from March through June, and a combination of runoff from perennial springs and released stored water during the summer and fall seasons. Flood flows in the valley floor channels are caused by runoffs from rainfall and melting snow in the mountain areas in excess of mountain reservoir capacities, and by rain storm runoff from the vast area of minor foothill watersheds and valley floor lands. Some incidental flood control is accomplished by reservoirs in many of the tributary watersheds including those of the Sacramento, Feather, Yuba, Stanislaus, Tuolumne, Merced and San Joaquin rivers. The extent of the flood flows in 1951 is given by the tabulations of daily stream flows, Tables 9 through 162.

During the summer irrigation season, variations in flow of the streams on the valley floor are affected, (1) by the combination of diversions from the streams for irrigation and of accretions to the streams from both direct surface drainage and seepage from ground water, and (2) by releases of stored water for irrigation, navigation, salinity control and the generation of electric power.

1951 Inventory of Runoff

A comprehensive summary and inventory of the monthly stream flows, diversions and accretions, in acre-feet, is contained in Tables 2, 3 and 4. This inventory is arranged to give these data for each reach of each stream covered by Water Supervision work in a summarized ready-reference form. The inventory is designed to give a picture of the complete disposition of the season's water supply, with stress upon the amounts of losses or gains in flow along each reach of each stream. Revisions in the monthly quantities as reported in the 1950 Water Supervision Report of certain stations in the Sacramento Valley are shown at the end of Table 2.

1951 Runoff Comparisons

A comparison of the unimpaired flows for the period 1920-1951, in the major streams tributary to the Sacramento and San Joaquin valleys in percent of a 60-year normal is given in Table 1. This table was re-computed in 1950 from original data furnished by the Snow-Survey section of this Division which were based on a 60-year (1889-1949) normal runoff. The annual runoff figures given in Table 1 have been modified by as much as 5 percent from the corresponding figures given in Table 1 of the Water Supervision reports prior to 1950. These changes were the result of the change from a 50-year normal to a 60-year normal and of the ommission of the runoff from the Calaveras, Cosumnes and Bear rivers in the computations of the new 60-year normal runoff of Sacramento-San Joaquin rivers to Delta. As shown in Table 1, the 1951 unimpaired runoff may be summarized as follows:

Stream and Station	Percentage of 60-year normal
Sacramento River at Red Bluff	105 percent
Sacramento River at Sacramento	126 percent
San Joaquin River at Friant	98 percent
San Joaquin River at Vernalis	118 percent
Sacramento and San Joaquin rivers flow to the Delta	125 percent

A comparison of the season's actual minimum flows is given in Table 209. The minimum 10-day-flows during 1951 are shown to have been:

Stream and Station	Average minimum 10-day flow
Sacramento River at Sacramento	7,100 second-feet
San Joaquin River at Vernalis	572 second-feet
Combined Sacramento and San Joaquin rivers flow to the Delta	8,130 second-feet

These comparisons indicate that the water supply available during the 1951 season was above normal. Observations of water utilization and the amounts of residual flows in the streams reaching the Delta in the 1951 growing season indicated that the demands for irrigation and salinity control in the Delta exceeded the natural flow supplies, and the releases of stored water from Shasta Reservoir were of primary importance in maintaining satisfactory river flows and fresh water conditions in the Delta.

Primary Irrigation Supplies

The flows onto the valley floor during the summer season through the major streams are considered to be the primary water supplies for irrigation. This primary water is differentiated from the flows available for irrigation in the lower reaches of the streams resulting from large accretions including the return of a substantial amount, through drainage, from the flows diverted for irrigation upstream. The amounts of primary water available for irrigation in the Sacramento Valley are given in the flow tabulations for those gaging stations located at the edge of the valley floor, to wit, tables numbered 9, 58, 65, 67, 79, 92 and 98.

In the San Joaquin River service area, primary water supplies are almost entirely diverted from the upper reaches of the Stanislaus, Tuolumne and Merced rivers by the large irrigation districts, and from the San Joaquin River in the vicinity of Mendota by the large canal companies. These upper diversions from the Stanislaus, Tuolumne and Merced rivers are included in Tables 190, 188 and 187, respectively. Primary water supplies in the San Joaquin River for irrigation below Friant are measured at the San Joaquin River gaging station below Friant, Table 111.

Accretions to Stream Flow

As evidenced by the data for stream flow and diversions, summarized in Tables 2, 3 and 4, there are large quantities of accretions to the flows of the streams and channels in their courses across the valley floors. These accretions are of major importance as available irrigation supplies. They are made up of measured flows from surface drains and of many other flows, not susceptible to direct measurement, from minor ephemeral streams, from scores of small surface drains, from seepage and return of percolated irrigation water and from escaping underground water normally present as the result of percolated rainfall on the valley floor. The amount of total accretion along any stream reach is the summation of amounts of measured drains plus unmeasured accretions, as shown in these tabulations.

During the summer season a large portion of the accrete water is derived from upstream irrigation returning to the streams either as surface drainage or waste into open drains or as deep percolation to the ground water from which it finds its way to nearby streams or drains.

Throughout the year, along certain reaches of the stream, the flows are augmented by outflows from seepage of the natural ground water. This portion of the ground water, which is independent of irrigation as a source, is replenished from two other sources,

(1) rainfall on the valley floor, a portion of which percolates to the water table during periods of abundant precipitation, and (2) infiltration and escape from stream channels through the banks during high flood flow conditions, later to partially return to that stream when its water levels recede to low flow conditions of the summer and fall.

The figures shown in all reports prior to 1947, giving the relation of "return water in percent of diversion" as discussed under heading "Drainage and Return Water", may be misleading inasmuch as all accretions, heretofore referred to as "return water", actually may include substantial amounts of ground water seepage not derived from upstream irrigation and unmeasured contributions from small tributaries.

Sacramento Valley Accretions. In the Sacramento Valley all of the accretions to natural and regulated flows which are not diverted on lands north and west of the Sacramento Delta flow into the Delta and are available for use in that area. Practically all of the summer accrete flows in Colusa Trough, Back Borrow Pit, Knights Landing Ridge Cut, and Yolo By-Pass are mainly return waters derived from diversions from the Sacramento River. Since the Sacramento River is the main stream through the Sacramento Valley the accretions to that stream include substantial amounts of return water from irrigated areas served by water from other sources, particularly the Feather River. A large part of the summer return water flows reaching the Sacramento River through the Butte Slough Outfall Gates (Mile 84.0L) and from Sutter By-Pass through Sacramento Slough (Mile 21.2L) are of Feather River origin. However, the measured flows in Sacramento Slough, Table 57, include not only return water from Feather River diversions but also return water from Sacramento River diversions into Reclamation District No. 1500, Table 56. In Water Supervision reports prior to 1947 estimates are given showing that bank seepage into the West Borrow Pit of the Sutter By-Pass from R.D. 1500 amounts to 10 percent of that district's diversions from the Sacramento River.

Along the Sacramento River between Colusa and Red Bluff there are no large well defined artificial drainage channels. Records or estimates of natural inflow to the Sacramento River from streams in this stretch were, however, obtained where available. Above Red Bluff to Redding there is considerable drainage water from the Anderson-Cottonwood Irrigation District, but it is not recorded.

Along the Feather River, during years of subnormal water supply, practically all of the primary regulated water is diverted upstream from, or at, the Sutter-Butte diversion dam, yet accretions accumulated below that point in amounts sufficient to afford a limited supply for all diversions.

Table 2 is designed to give a summary not only of monthly flows measured on the Sacramento Valley floor but also the computed monthly amounts of accretions (or losses, as shown by a minus sign preceding the figure) occurring along each reach of each stream between gaging stations. At the end of each series of data for one stream as shown in Table 2, there are summations of diversion and accretion quantities.

In order to compare 1951 season conditions along the Sacramento River with those of previous years, the following tabulation gives the seasonal accretions, July through September, in percent of simultaneous diversions. This tabulation, in part, is excerpted from Table 147 in the 1946 Water Supervision Report. Since 1947 these figures were derived from the summation data in Table 2 in each report, but under the same provisions detailed in the "note" under the 1946 Table 150, except that additional tributary streams have been excluded from the unmeasured accretions and the method of computing the flow of the Sacramento River at Sacramento has been changed as detailed on page 29. These changes in computation procedure will not affect the comparative figures in the following tabulation more than five percent because the contribution from the tributary creeks is a small percentage of the total accretions during the summer months.

Since 1947 the accretions used in computing the comparative accretions in percent of diversion figures were obtained by taking the total unmeasured accretions, Red Bluff to Sacramento, from Table 2 in each report and adding to this total the measured flow in the definite return flow channels of Reclamation District drains of R.D. 70, 108, 787, 1500, 1000 and the return flow of Colusa Basin Drain including Knights Landing Ridge Cut and Sycamore Slough.

Comparative Seasonal Accretion Percentages - 1938 - 1951

Sacramento River - Red Bluff to Sacramento

Year	Seasonal Runoff at Red Bluff in percent of 60 year Normal	Accretions in percent of Diversions* July through September
1938	169	64
1939	50	36
1940	121	40
1941	165	56
1942	130	56
1943	98	53
1944	54	49
1945	77	43
1946	93	51
1947	59	52
1948	88	62
1949	70	58
1950	66	63
1951	105	57

*Excludes City of Sacramento municipal.

It is apparent from the above tabulations that there are variations in the accretion percentages with relation to the seasonal runoffs. However, a definite trend in this relation indicates that summer accretions to stream flow on the Sacramento Valley floor are influenced not only by return water from irrigation but also by natural ground water seepage. Ground water seepage, as indicated by the above accretion ratio, is observed to be accelerated during those summer seasons which follow late and abundant spring rains on the valley floor.

San Joaquin Valley Accretions. The summer and fall season stream flows in the lower San Joaquin River and its tributaries on the valley floor consist mainly of accrete flows derived to a large extent, from irrigation water returning to the stream channels by way of percolation into the ground water and the latter's seepage into the channels. The exceptions to this condition are on the Tuolumne and Stanislaus rivers when irregular releases for power generation below upstream diversion points further augment the flows.

The channels of the Stanislaus, Tuolumne and Merced rivers in their westward flow across the valley floor from the foothills are in deep degraded canyons between more or less sheer bluffs rising from 10 to 50 feet to the predominant level of the upper plains of the valley floor. The plains areas are intensively irrigated with regulated gravity water supplies derived from the upper reaches of the same streams. Thus, an abundant water supply in normal years, a deep and permeable soil and the deep river channels are all conductive to relatively steep slopes of the ground water table toward the rivers and the consequent high rate per mile of accretions to the stream flow.

The channel of the San Joaquin River between Friant and the valley trough near Mendota passes through the plains area in a deeply degraded canyon 10 feet to 100 feet deep between relatively sheer bluffs. The plains area along the south side of this reach is intensively irrigated with Kings River water through the Fresno Irrigation District distribution system. On the plains along the north side of this reach in Madera County, irrigation water is derived mainly from ground water, except where occasional parcels are served with pumped river water. In general the elevation of the ground water plane on the south side is above the riverbed and along the north side it is below the bed. Consequently, there are accretions from the south and losses to the north along this reach of the San Joaquin River. The losses during the 1951 season exceed the accretions as shown in Table 3.

The Tule River debouches onto the valley floor in the vicinity of Porterville through a shallow meandering channel. The bed of the channel as it crosses the valley floor is made up of unconsolidated sediments with high permeability. This latter fact accounts for the heavy channel losses along Tule River as shown in Table 4.

The magnitude and importance of these accrete waters in the San Joaquin Valley as a water supply is brought out in Table 3. There does not appear to be as definite a relation of accretions with respect to diversions along these San Joaquin Valley streams as exists in the Sacramento Valley. This lack of a relation may be due, (1) to the considerable lag between the time diversions are made from the streams for storage in terminal reservoirs (Woodward, Dallas-Warner, and Owens) and the time a portion of those waters return to the stream channels after having been applied for irrigation, and (2) to the prevailing climatic effects upon rainfall, humidity, transpiration and evaporation.

The ratio of accretion (including return water from irrigation) to diversions along the lower San Joaquin River and its tributaries, Stanislaus, Tuolumne and Merced rivers, is considerably smaller than that for the Sacramento River. Analysis of pertinent data in

Table 3 and comparison with the data contained in Table 147 of the 1946 Water Supervision report indicate this San Joaquin Valley ratio to vary between 19 and 35 percent while the foregoing table on page 26 shows the Sacramento Valley ratio to vary between 36 and 64 percent. This difference may be attributed to the fact that, whereas, due to basin topography and geology, practically all drainage from the Sacramento River diversions is quickly returned to the river, considerable of the return water in the San Joaquin Valley may never reach the surface streams because of its percolation to ground water and its immediate recovery by drainage and deep well pumps in the areas of many of the irrigation districts for re-use through the irrigation canals.

Stream Flow Measurements

Many of the stream gaging stations, the records from which are reported herein, are maintained, operated and rated, and the flows at them are computed, by agencies cooperating with the work of the Sacramento-San Joaquin Water Supervision. The methods used by all cooperating parties are standarized and the results obtained are equally good. In order to obtain uniformity, however, the Water Supervision engineers cooperate with the other agencies in obtaining and correlating the records for each of the cooperative stations.

During the 1951 season, 68 of the total of 151 gaging stations on streams and drainage channels for which records are reported herein were maintained, operated and rated, and the flows at them were computed, solely by the Division of Water Resources through the Water Supervision and Flood Control organizations.

An automatic water stage recorder is in operation at each of the gaging stations used in this work. The continuous records of water surface elevations at the stations serve two major purposes in the preparation of the data presented in this report. First, the actual water surface elevations at two adjacent stations on a stream afford the means of obtaining the water surface elevations at the pumping plants along the stream between those stations. These elevations give the pumping heads, which heads, in turn, become factors in determining the rates of diversion by the pumping plants. Second, the water surface elevation (gage height) is a factor in determining the flow of the stream, in second-feet, passing the station.

A stream-flow rating is made for each gaging station. This rating gives the flows in second-feet for each gage height at the station. Normally this gage height-flow relation, or rating, is more or less permanent where there is a fixed channel and a fixed flow regimen at the station. The rating varies however where the bed of the channel is of loose shifting sand, or heavy weed growth accumulates as the season progresses, or where there may be backwater effects from downstream conditions. In this latter case more frequent measurements of flow are made to obtain accurate records of the flows passing the stations.

Water surface elevations at any time at certain gaging stations may be derived by the reader by using Table 6 coupled with the appropriate stream-flow data in Tables 9 through 162. From the stream flow table the flow on any desired day is interpolated into the specific station's rating table in Table 6 to give a gage height (or elevation) of the stream's water surface for that day.

Preliminary Data from Cooperating Agencies

Some of the stream-flow records submitted by cooperating agencies and included in this report must be considered "Preliminary Data" since this report is published prior to final preparation of the data for publication by those agencies. This condition is particularly true with respect to some data furnished by the U. S. Geological Survey.

Stream Flow Bulletins

During 1951, stream-flow bulletins were compiled from time to time and mailed to interested agencies and persons. The bulletins listed the results of stream-flow current meter measurements made along the Sacramento and San Joaquin river system on the valley floor by Division of Water Resources (Sacramento-San Joaquin Water Supervision) and U. S. Geological Survey engineers.

Notes on Certain Gaging Stations

Records are obtained and published in this report for 151 gaging stations in the Sacramento and San Joaquin valleys, including 15 stations not heretofore published in this series of reports. A brief description of each station is given at the bottom of the stream-flow data table. The location of each station is shown on Plate 3 in the pocket on the back cover of this report. Notes on the newly included stations, together with a repetition of notes on the Sacramento River at Sacramento, are believed desirable, however, for a better understanding of the records. These notes are as follows:

Sacramento River at Sacramento. The method of computing daily mean flows at this station, beginning with 1947, has been radically changed. Heretofore, as shown in reports prior to 1947, the low flows which are affected by tidal action, were derived from (1) the records of flows at Verona on the Sacramento River and at H Street Bridge on the American River and (2) records of diversions from and drainage to the rivers between those two upper stations and the I Street Bridge at Sacramento. The method previously used did not take into account unmeasured accretions or losses in the reach between Verona and I Street Bridge and in the American River below H Street.

The procedure employed in 1947 through 1951 involves the computation of daily mean Sacramento River flows passing Sacramento by the usual and standard practice of rating the stream, at the I Street Bridge station by means of the slope velocity method. This method requires a consideration of the gage heights recorded at the river gaging station at Snodgrass Slough (20 miles downstream from Sacramento) as well as the recorded gage heights at Sacramento. The adaptation of this method in 1947 as a means of direct rating, was accepted after Water Supervision engineers had measured and studied the problem with this method

in mind for the previous three years.

The final relation for tidal influenced flow conditions at Sacramento involves the construction of a rating curve having as the ordinate the difference between the gage heights at Sacramento and at Snodgrass Slough and as the abscissa a function of velocity (fV) equalling the discharge (Q) divided by the gage height at Sacramento. Flows, in second-feet, passing Sacramento are obtained from this relation by multiplying the scale value of fV for any differential gage height, by the corresponding gage height at the I Street recorder. This relation is used for gage heights at Sacramento below 10.5 feet (a flow of 33,000 second-feet) below which tidal fluctuations are effective.

The flows for gage heights below 10.5 feet follow the exponential relation

$$Q = 1494\ (\text{I Street recorder G.H.} + 3.10)(\text{Differential} - 0.50)^{0.288}$$

where "Differential" =(I Street recorder G.H. + 3.10) minus (Snodgrass Slough G.H.).

The flows for gage heights above 10.5 feet follow the exponential relation

$$Q = 288\ (\text{I Street recorder G.H.} + 8.50)^{1.61}.$$

Tidal fluctuations cease above the 10.5-foot stage and this latter flow-stage relation exists.

Frequent current meter flow measurements, including tidal cycle measurements were made during the year to delimit the above relationships, and to evaluate any shifts that may have occurred in the flow-stage relationship due to dredging activities in the channel.

Minor Tributaries to Sacramento River. Two stream-flow stations located on Pleasant Grove Creek were discontinued during 1951 because a special investigation for which the records of these streams were included in this report has been completed.

Additional Stations Reported in 1951. The following stream-flow stations for which data have not been heretofore published in the reports of the Sacramento-San Joaquin Water Supervision, are included in the 1951 report. These stations, numbering 15 in total, were included to provide runoff data for the minor stream systems. Five of these stations are maintained and operated by the Division of Water Resources.

Cow Creek near Millville

Paynes Creek near Red Bluff

Elder Creek near Gerber

Dry Creek at Virginia Ranch

Pleasants Creek near Winters

Sweeney Creek near Winters

Salt Creek near Winters

Putah Creek at Liberty Island Road

Ulatis Creek near Vacaville

Orestimba Creek near Newman

Salt Slough near Los Banos

San Luis Creek near Los Banos

(Tabulation continued on next page)

Panoche Creek near Panoche

Friant-Kern Canal delivery to Tule River

Friant-Kern Canal delivery to Porter Slough

A brief description of the location, the cooperative agency involved, the drainage area where applicable, and the period of record may be found in the footnotes under the respective table of flows for each of the stations listed.

Precipitation

In the Central Valley of California direct precipitation is a negligible source of water supply for growing crops during the late spring, summer and fall seasons. During the early irrigating season, however, the attendant cooler temperatures and higher humidities of rain storms substantially reduce the demand for irrigation diversions, and are two of the main factors affecting the variations in demand in the same month from year to year.

The following tabulation gives the 1951 monthly total precipitation at representative valley floor rainfall stations and the monthly normals. Records are from U. S. Weather Bureau.

Station	Inches of Precipitation - 1951												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Red Bluff - 1951	5.10	2.46	.12	.82	1.51	.10	.00	.04	.33	1.98	4.21	4.54	21.21
- normal	4.76	3.92	3.25	1.70	1.13	.47	.03	.05	.80	1.33	2.97	4.40	24.81
Colusa - 1951	2.54	1.76	.35	.82	1.46	.00	.00	T	T	2.54	2.83	4.37	16.67
- normal	3.24	2.96	2.14	1.08	.53	.27	.01	.01	.30	.66	1.65	3.25	16.10
Marysville- 1951	3.79	2.72	.82	1.02	.86	.00	.00	.00	.00	4.43	3.18	4.81	21.63
- normal	3.86	3.50	2.76	1.47	.81	.24	.00	.01	.31	1.04	2.20	3.77	19.97
Sacramento- 1951	2.45	1.57	.84	.85	.64	T	.00	T	.25	1.33	3.18	5.11	16.22
- normal	3.72	3.02	2.57	1.51	.77	.15	T	.00	.38	.92	1.88	3.03	17.95
Modesto - 1951	1.90	2.04	.45	.86	.27	.00	.00	T	.00	.70	1.39	4.62	12.23
- normal	2.18	1.80	1.74	.91	.46	.12	.01	.01	.16	.52	1.19	1.97	11.07
Merced - 1951	1.72	2.16	.55	1.03	.43	.00	.00	.00	.00	.93	1.25	4.63	12.70
- normal	2.30	1.91	1.87	1.01	.48	.11	.01	.02	.18	.49	1.17	1.80	11.35
Fresno - 1951	1.94	1.60	.31	1.58	.02	.06	.00	.00	.00	.33	1.03	2.82	9.69
- normal	1.73	1.43	1.58	.95	.44	.08	.01	.01	.21	.57	.93	1.45	9.39

Analysis of the above data show that the Central Valley floor precipitation averaged 100 percent of normal for the 1951 calendar year.

USE OF WATER FOR IRRIGATION

The prevailing warm temperatures and a prolonged frost-free period during the summer season in the Sacramento and San Joaquin valleys favors the profitable production of wide variety of marketable crops in large quantities. The availability of irrigation water during the dry summer season affords continuous growing conditions necessary for the many crops.

The major irrigated crops in the Sacramento Valley include rice, alfalfa and clover, citrus and orchard fruits, nuts, grapes, hops, truck crops, and field crops; in the Delta area they include alfalfa, orchard fruits, corn and truck crops; and in the San Joaquin River and tributaries service area they include grapes, nuts, orchard fruits, cotton, alfalfa and clover, truck crops, corn, grain, flax and pasture.

Irrigation Diversions

Measurements and records of diversions in 1951 have included all of the points of diversion on the valley floor along the Sacramento River and its tributaries; along the Cosumnes, Mokelumne, and Calaveras rivers; along the upland banks of the delta channels of Old San Joaquin River, Tom Paine Slough and San Joaquin River; along the Stanislaus, Tuolumne and Merced rivers and Dry Creek tributary to Tuolumne River; along the San Joaquin River between Friant Dam and Durham Ferry Bridge (Vernalis); along Fresno Slough and Fresno Slough By-Pass; and along Tule River.

This report contains records of a total of 1139 points of diversion segregated to various sources as follows: Sacramento River 312, Colusa Trough (above Colusa-Williams Highway Crossing) 26, Back Borrow Pit (extension of Colusa Trough along back levees of Reclamation Districts 108 and 787) 38, Knights Landing Ridge Cut 8, Yolo By-Pass 9, Cache Slough 1, Lower Butte Creek and Butte Slough 33, Sutter By-Pass and Sacramento Slough 56, Feather River 43, Yuba River 13, Bear River 5, American River 22, Cosumnes River 21, Mokelumne River 67, Calaveras River (including Mormon Slough) 60, Tom Paine Slough 8, Old San Joaquin River 18, San Joaquin River (below Vernalis gaging station) 65, San Joaquin River (between Vernalis gaging station and Fremont Ford Bridge) 39, San Joaquin River (between Fremont Ford Bridge and Friant Dam) 101, Fresno Slough and Fresno Slough By-Pass 15, Merced River 78, Tuolumne River 39, Dry Creek (tributary to Tuolumne River) 11, Stanislaus River 38, and Tule River 13. The locations of these points of diversion are shown on Plate 3 in the pocket at the back of this report.

All of the diversions, except 56 by gravity, are accomplished by pumping. The records of diversion by gravity are obtained by means of canal ratings established by flow measurements. 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 a relation established between electric power consumption, static head and plant efficiency. This is made possible by the fact that nearly all of the pumping plants are electrically operated. The relation between water pumped and power input is determined from current meter measurements of the discharge and the 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 ratings and thereafter measurements are made at intervals to discover any changes which may occur in the ratings. Due to intermittent operation of the smaller plants and the large area to be covered by the field engineers, it is not possible to make many discharge measurements at any one of them. However, it is believed that the rating, as initially determined, remains more or less constant and that

over a period of time enough measurements are secured to determine any change in the rating. All rating measurements made by owners or cooperating agencies have been given full consideration in the final computations of the amounts of water diverted by each individual plant.

Prior to 1933 a daily diversion record for each plant was compiled. However, since that year, except for some of the larger plants, the monthly diversion records only are available. The diversions for 1951 have been computed on a monthly basis only, and the breakdown into daily records was not made. The monthly amounts of water diverted at the individual points of diversion along all of the streams covered by the Water Supervision work are given in Tables 165 through 191.

Prior to 1947 the monthly amounts of diversions in acre-feet by the large east-side irrigation districts from the Stanislaus, Tuolumne and Merced rivers were published annually in this series of Water Supervision reports and are found in the 1946 Table 154. The amounts of these diversions during 1951 are shown in Tables 187, 188 and 190.

Fresno Slough and Fresno Slough By-Pass normally convey excess Kings River water flood flows into the San Joaquin River at a point above Mendota Dam, but during the irrigation season San Joaquin River water is backed up through those channels by the Mendota Dam to afford irrigation supplies to the James and Tranquillity irrigation districts and to certain other diverters. The diversion and irrigated acreage data for these streams shown in Tables 185 and 186 were furnished by the U. S. Bureau of Reclamation.

Table 170, diversions and irrigated acreage by Reclamation District No. 2068 from Cache Slough, is included in this report to continue a similar record commenced in 1948. The irrigated area in the District lies outside of the established boundary of the Delta shown on Plates 3 and 4 and can be classed as a "Delta Uplands" area. The purpose of including Table 170 in this 1951 report is to present as full a record as is available of the use of water in and from the Delta, in conjunction with the Delta crop survey data in Table 198 of the 1950 report.

A seasonal summary of water utilization during the past ten years, 1941 through 1950 from the Sacramento River and its tributaries and the San Joaquin River and its tributaries as compared with the 1951 summary is shown in Table 164. This table presents an overall picture of the water utilization in these areas.

In Table 192 there are shown the average monthly diversions in percent of the seasonal for the streams in the Sacramento and San Joaquin valleys. A summary of the monthly diversions from the Sacramento and San Joaquin valley streams for the eleven-year period, 1941 through 1951, is given in Tables 193 through 203. Table 203 shows, for the Sacramento River only, the seasonal diversions and acreages irrigated for the period 1941 through 1951, segregated to the different river sections.

Irrigated Acreage

Toward the end of the irrigating season in 1951, as was done in previous years, a complete canvass was made of acreages irrigated from each of the points of diversion covered by the Water Supervision work. The irrigated acreages for all of the points of diversion on

the streams on the Sacramento and San Joaquin valley floors were plotted on suitable maps and are retained on file in the office of the Division of Water Resources for record.

The area irrigated through each individual point of diversion along the streams covered in this work is given in Tables 165 to 191 inclusive. These tabulations and the associated summarizing tables do not include data on diversions and use of water in the Delta.

The following is a summary of the total acreage irrigated during 1951 in the area covered by the Water Supervision work as shown in Table 5. This tabulation, as noted in the footnotes of Table 5, does not include the acreage of the large east-side irrigation districts in the lower San Joaquin Valley. Detailed acreage tabulations of the totals shown below, as well as those of the large irrigation districts mentioned, may be found in Tables 164 through 191 and in Table 198 (Delta Crop Survey) of the 1950 report.

Area	1951 Irrigated Acreage	
Sacramento Valley Floor above Sacramento	462,813	
San Joaquin Valley Floor above Delta	449,611	
Total area served by measured diversions		912,424
Sacramento-San Joaquin Delta - 1950 Survey		
Cropped	365,800	
Water Consuming--not cropped	82,500	
Total Delta		448,300
Grand Total		1,360,724

Table 205 shows a comparison of the acreage of rice irrigated during the period 1924 through 1951 from the stream channels within the Sacramento and San Joaquin valleys which are covered by Water Supervision work, and the total acreage of rice in California irrigated from all sources as reported by the Federal-State Crop Reporting Service.

In view of the methods of farming, which usually employ rotation of crops with summer-fallow, it is probable that the acreage of land under irrigation facilities in the area covered by the Water Supervision activities exceeds 1,400,000 acres.

1950 Sacramento-San Joaquin Delta Crop Survey

A complete survey of the acreages of crops, including both irrigated and non-irrigated, in the Sacramento-San Joaquin Delta was made during November and December of 1950 and January and February of 1951, as called for in the State-Federal contract described in the "Foreword" of this report. The crop segregations were plotted on a series of suitable maps of the Delta islands which are on file with the Division of Water Resources. Similar surveys of the Delta area had been made previously, the last one in 1948. All of the 1950 Delta acreage data are tabulated in Table 198 to be found in the pocket on the back cover of the 1950 report. That table gives the acreage of each cultivated or

uncultivated crop segregated as to tracts and islands.

The total water consuming area of the Delta is segregated for 1950 as follows:

Total irrigated cultivated crops, not including double- or inter-crops	365,800 acres
Total idle lands below 5.0 feet in elevation, including interior water surfaces	42,900 acres
Total exterior channel water surfaces	37,600 acres
Small islands (est.)	300 acres
Total brush and trees in exterior channels (est.)	1,700 acres
Total water consuming area, 1950	448,300 acres

These data are similar and are comparable to data in Table 148 of the 1948 Water Supervision report.

Use of Water in Delta

Previous Water Supervision annual reports have included considerable analyses of the utilization of water in the Sacramento-San Joaquin Delta. The work of Water Supervision does not cover the delta area to the extent of measuring flows in the numerous interconnected channels or quantities of water diverted for irrigation, other than occasional special studies, but periodically, surveys have been made of crops and irrigated acreages. Special investigations of the Delta irrigation problems have been conducted and the results therefrom have been reported in previous reports.

In some previous reports, for years in which crop surveys were made, the total consumptive use of water has been segregated to show the use in each river delta. There was also shown a classification of the irrigated crops with respect to the peat and sedimentary soils on which they were produced.

Gross Duty of Water

The term "gross duty of water", as used in this report, is defined as being the total amount of water diverted to serve one acre of irrigated land. The gross duty for any particular period may be expressed as the amount of water diverted in acre-feet per acre irrigated, or, conversely stated, may be expressed as the number of acres irrigated per one second-foot average diversion rate. The gross duty of water does not include solely the net amount of water consumed by plants in their processes of transpiration and growth, but also includes all irrecoverable losses through evaporation and deep percolation, plus canal and conveyance losses, and those amounts of water which act as a necessary vehicle to carry irrigation heads across porous soils or to maintain fresh water ponds in the growing of rice and which return to some river or drainage channel, with little loss, to become available for re-use.

Gross duty of water figures for the individual stream channels covered by Water Supervision work are given for the Sacramento and San Joaquin valleys in Table 164.

SALINITY INVESTIGATIONS

The intrusion of salty water from San Francisco Bay into the channels of the Delta from which irrigation supplies are derived, is a matter of extreme importance and the Water Supervision work has included observations during 1951 of the saline content of the water at several stations throughout the Delta and upper San Francisco and Suisun Bay areas, with cooperation from the U. S. Bureau of Reclamation.

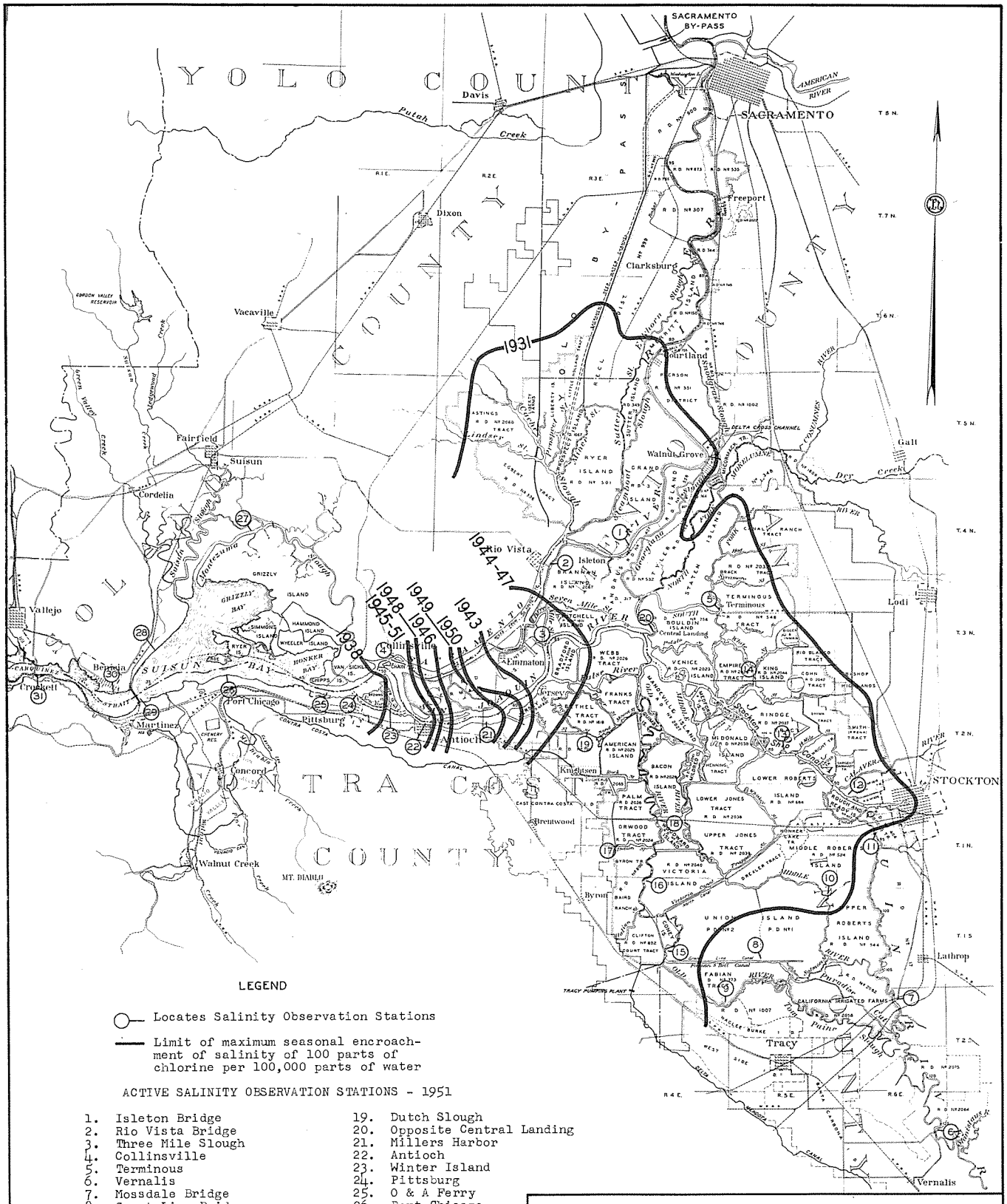
Purpose

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 at 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 the corroboration of the relation presently 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 the Delta irrigators advised of conditions through periodic bulletins so that damage from the use of water of too high salt content might be averted. (Saline concentrations exceeding 100 parts of chlorine per 100,000 parts of water are toxic to the average plant and are objectionable for human consumption.)

During 1951 the continuous observations of salinity served as an important factor in determining the amounts of release from Shasta Reservoir as controlled by the U. S. Bureau of Reclamation.

Scope

The general scope of this investigation each season has been such as to insure that samples of water to be tested for salinity could 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 4 shows the limit of encroachment into the Delta of water having 100 parts of chlorine per 100,000 parts of water for the years 1931, 1938, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950 and 1951. These certain years are chosen, first, to represent a range of runoff conditions prior to the commencement of releases from Shasta Reservoir, to wit, 30 percent of normal runoff during 1931, 170 percent of normal runoff during 1938, 114 percent of normal runoff during 1943, and second, to represent the consecutive years concurrent with those releases. The salinity encroachment lines for each of the years 1920 to 1944, inclusive, may be found on the Delta map in the 1944 annual Water Supervision report.



LEGEND

○— Locates Salinity Observation Stations

—— Limit of maximum seasonal encroachment of salinity of 100 parts of chlorine per 100,000 parts of water

ACTIVE SALINITY OBSERVATION STATIONS - 1951

1. Isleton Bridge
2. Rio Vista Bridge
3. Three Mile Slough
4. Collinsville
5. Terminous
6. Vernalis
7. Mossdale Bridge
8. Grant Line Bridge
9. South Fabian
10. Williams Bridge
11. Garwood Bridge
12. Stockton Country Club
13. Turner Cut
14. Empire Bridge
15. Clifton Court Ferry
16. Victoria
17. East Contra Costa I.D.
18. Orwood Bridge.
19. Dutch Slough
20. Opposite Central Landing
21. Millers Harbor
22. Antioch
23. Winter Island
24. Pittsburg
25. O & A Ferry
26. Port Chicago
27. Innisfail Ferry
28. West Suisun
29. Martinez
30. Benicia
31. Crockett

Off Map. Grandview
Off Map. Point Davis
Off Map. Point Pinole
Off Map. Point Orient

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

LINES OF SALINITY ENCROACHMENT

SACRAMENTO - SAN JOAQUIN DELTA AND UPPER BAYS
1951

Scale of miles

Due to curtailment of appropriations to the Division of Water Resources by the Legislature in the 1941-1942 budget, sampling for salinity at all stations in the Bay and Delta areas was stopped by the Division of Water Resources on July 15, 1941. Through cooperation of the Fontana Farms Company, the City of Antioch Water Department, the U. S. Bureau of Reclamation, the Dow Chemical Company at Pittsburg and the City of San Francisco, miscellaneous samples were taken during the 1943 season and the results of the analyses are presented in the 1943 report of Water Supervision. In that same report there are tabulated a large number of complete analyses of water from the channels of the Sacramento and San Joaquin valleys and the Delta as prepared by the U. S. Bureau of Reclamation.

A regular program of salinity sampling and testing was re-established early in 1944 as part of the activities of the Sacramento-San Joaquin Water Supervision, with the necessary funds therefor being provided by the U. S. Bureau of Reclamation. This regular program was continued throughout 1951. The records of water samples taken during 1951 from 33 active sampling stations are given in Table 208. A description of the location of each of these stations is contained in Table 207.

Complete or Partial Analyses of Surface Flows

As a matter of record there is included in this report a tabulation of the results of complete or partial chemical analyses of samples of water taken at many points along the Sacramento and San Joaquin rivers and in the Delta during 1951. These results are contained in Table 207 and are furnished entirely by the U. S. Bureau of Reclamation. The methods of collecting the samples and of analysis are definitely different from the methods employed in determining the chlorine component as part of the regular salinity observation activities in the Sacramento-San Joaquin Delta.

Station Maintenance and Records

The salinity sampling at all stations is done by local observers. Each observer is provided with a schedule showing the exact time for taking the samples, so that, throughout the Delta and upper bays all samples are taken at approximately one and one-half hours after the same high tide at four-day intervals. Table 207 gives the location and description of each active station from which samples were received during 1951. Location description of inactive stations are deleted in this report but can be found in previous reports.

The observers are furnished with stamped containers for the sample bottles so that the latter can be mailed, as filled, to the laboratory at Sacramento. All analyses of the water were made at the Materials and Research Laboratory of the Division of Highways in Sacramento during the 1951 season.

The maximum salinity as recorded at the stations in 1951 is shown in Table 206. For comparative purposes, this table shows also the maximum salinity recorded at these stations in representative years before and after Shasta Reservoir operation. Only presently indicative and active stations are included in this comparison.

Salinity Bulletins

During 1951 a salinity bulletin was mailed each month to many cooperating agencies and individuals giving the results of samples taken and analyzed at four-day intervals at all stations. The figures given were the laboratory determination of the number of parts of chlorine per 100,000 parts of water.

Area of Salinity Encroachment

There is an apparent relation between the average stream flow to the Delta during the ten-day period of minimum flow and the area affected by salinity encroachment. Data amassed in this regard indicate that when the flow to the Delta drops below a certain amount the rate of advance of salinity encroachment greatly accelerates. A comparison of the average stream flows during the ten-day period of minimum flow and the affected acreage in the Delta is presented in Table 209. The area affected by salinity encroachment of 100 parts of chlorine per 100,000 parts of water amounted to approximately 1,800 acres in 1951.

TIDE GAGES

The 28 recording tide gages located on the Delta channels and on the upper bays were continued during 1951. Previous Water Supervision reports contained detailed descriptions and locations of the gages. The Flood Control branch of the Division of Water Resources operates and maintains 18 of these tide gages. The remaining 10 are operated by Federal agencies.

TABLES

TABLE 1

ANNUAL RUNOFF IN PERCENT OF 60 YEAR NORMAL[a]

SACRAMENTO-SAN JOAQUIN RIVER SYSTEM

Water Year Ending September 30	Sacramento and San Joaquin Rivers to Delta	Sacramento River at Red Bluff	Sacramento River at Sacramento	Feather River near Oroville	Yuba River at Smartville	American River at Fair Oaks	Mokelumne River at Mokelumne Hill	Stanislaus River below Melones	Tuolumne River near La Grange	Merced River at Exchequer	San Joaquin River Friant	San Joaquin River Vernalis
Mean Annual Runoff (a) Thous. Ac. Ft.	(b) 25701	8667	(b) 18753	4778	2464	2844	789	1248	1972	1053	1885	(b) 6159
1920	53	49	49	46	53	52	59	59	68	65	70	66
1921	119	132	127	126	129	113	111	101	102	96	85	96
1922	104	77	96	106	121	115	117	115	125	135	125	125
1923	76	62	71	64	84	97	90	91	91	89	88	90
1924	29	38	31	27	24	19	24	21	28	24	24	24
1925	87	93	86	66	86	96	106	98	98	86	77	89
1926	61	65	63	66	65	49	48	49	57	58	62	57
1927	122	127	128	122	144	128	114	109	104	103	107	106
1928	85	88	90	89	99	89	81	76	77	70	62	71
1929	45	51	45	38	41	40	43	41	50	46	46	46
1930	67	70	72	82	74	58	58	59	59	49	47	53
1931	31	38	33	31	26	25	27	25	31	25	26	27
1932	80	59	70	69	86	91	94	108	107	106	109	108
1933	49	53	47	40	44	45	54	49	57	49	59	55
1934	44	52	46	42	40	40	38	34	41	34	37	37
1935	92	86	88	89	91	91	89	97	107	111	103	104
1936	96	82	92	90	105	119	114	106	110	109	99	106
1937	80	69	71	66	75	82	88	89	101	115	117	106
1938	172	169	169	178	164	159	157	164	174	197	196	183
1939	44	50	44	39	37	37	43	42	46	45	49	46
1940	116	121	119	118	116	120	109	112	113	104	100	107
1941	140	165	145	136	130	111	107	107	127	138	141	129
1942	131	130	134	139	138	138	125	119	120	122	119	120
1943	114	98	113	117	127	136	127	125	120	122	109	118
1944	57	54	55	58	57	51	57	54	67	65	64	63
1945	87	77	80	78	86	88	98	102	106	104	113	107
1946	93	93	93	87	97	101	95	94	96	89	92	93
1947	55	59	55	53	55	50	50	52	56	54	59	56
1948	80	88	84	81	82	79	80	72	72	65	64	68
1949	63	70	64	54	60	65	66	60	63	60	62	62
1950	77	66	77	80	85	94	95	86	79	68	70	76
1951	125	105	126	119	164	169	147	136	127	116	98	118

(a) 60-year normal taken as 60-year (1889-1949) mean annual unimpaired flow (Oct.-Sept.,incl.).

(b) Summation of unimpaired flow at foothill stations on major tributaries only, and does not include runoff from minor tributaries and from valley floor.

TABLE 2

SUMMARY AND INVENTORY OF MONTHLY STREAM FLOW - SACRAMENTO RIVER AND TRIBUTARIES - 1951

Item	Mileage	Record in Table No.	Quantities in Acre-Feet											Annual Total
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
								SACRAMENTO RIVER						
INFLOW TO SHASTA RESERVOIR (Computed)		7	731050	983050	663070	503210	501900	263700	206780	198740	186670	237220	387950	1060720	5924060
Change in Storage		8	+244900	-100400	+238700	+203100	+168900	-222300	-521100	-513800	-208600	-77300	+160800	+842100	+215000
Unmeasured Accretions			+35850	+4550	+8330	-5710	-10400	-16400	-1680	-1740	-2970	+7480	+14650	+40180	+72140
AT KESWICK	250.5	9	522000	1088000	432700	294400	322600	469600	726200	710800	392300	322000	241800	258800	5781200
Diversions			154	139	169	22649	16518	24319	25400	24720	21953	14850	167	171	151209
			+6554	-44861	+6369	-3051	-11382	-5181	-31700	-16280	-5347	-16950	-10233	+2571	-129491
AT REDDING	240.7L	10	528400	1043000	438900	268700	294700	440100	669100	669800	365000	290200	231400	261200	5500500
CLEAR CREEK nr. IGO	237.1	22	49550	71400	30640	15760	26380	6590	2770	1460	1180	2960	15190	72660	296640
COW CREEK nr. MILLVILLE	228.8	23	111400	101500	58390	27550	26850	6030	2420	1500	1780	6280	36270	167700	547670
Diversions			0	0	0	2545	2017	3918	4286	3896	3387	783	0	0	20832
Unmeasured Accretions			+79750	+132100	+72170	+21435	+31587	+8798	+14496	+7236	+9227	+28743	+43940	+130940	+580422
AT BALLS FERRY	224.5	11	769100	1348000	600100	330900	377500	457700	684500	676100	373800	327400	326800	632500	6904400
COTTONWOOD CR. nr. COTTONWOOD	222.2R	24	149900	140000	46700	24300	30840	10570	4530	3330	3400	6310	12700	204600	637180
BATTLE CREEK nr. COTTONWOOD	221.5L	25	45590	44440	27160	26860	27270	18100	13460	11550	10820	14490	18850	51210	309800
PAYNES CREEK nr. RED BLUFF	201.5	26	17980	11060	2720	873	634	91	7	2	0	382	3850	19310	56909
Diversions			0	0	37	145	80	311	259	227	248	67	0	0	1374
Unmeasured Accretions			+27430	+64500	-6943	+2612	+16636	+11250	+12662	+16845	+7928	-7715	-9700	-2120	+133385
NEAR RED BLUFF	198.6	12	1010000	1608000	669700	385400	452800	497400	714900	707600	395700	340800	352500	905500	8040300
REDBANK CREEK nr. FOOTHILLS	191.2R	27	NR	NR	NR	NR	592	0	0	0	0	0	0	NR	
ANTELOPE CREEK nr. RED BLUFF (a)	180.7L	28	19820	16720	6670	6620	7190	3040	2090	1940	1970	2620	6010	30910	105600
ANTELOPE CREEK nr. MOUTH	180.7L	29	9822	19250	978	885	668	0	NR	0	0	85	1005	18890	
NORTH FORK MILL CREEK nr. MOUTH	179.3L	32	934	979	257	534	662	220	89	58	109	88	236	7352	11518
ELDER CREEK nr. GERBER	178.5	30	15650	14750	4620	2750	4130	391	0	0	0	0	290	20660	63241
MILL CREEK nr. LOS MOLINOS (a)	178.0L	31	29180	32260	18720	26090	27420	16740	8890	6990	6060	7340	12250	35020	226960
MILL CREEK nr. MOUTH	178.0L	33	31390	33610	15730	19340	22300	7912	NR	NR	182	3667	10390	NR	
THOMES CREEK at PASKENTA	173.2R	34	42650	55220	18320	16600	15700	3590	756	131	73	928	7180	41320	202468
DEER CREEK nr. VINA (a)	168.5L	35	39110	45460	29630	30260	27280	10490	7560	6540	5860	7390	11940	47990	269510
DEER CREEK nr. MOUTH (b)	168.5L	36	32300	39370	23000	22200	20040	4629	983	511	173	4213	10230	62580	220229
Diversions			0	0	12	65	16	195	293	140	38	8	0	0	765
Unmeasured Accretions			+67254	+27821	+17007	+13556	+13324	+11153	+7365	+32840	+31801	+32725	+42269	+112698	+409813
AT VINA BRIDGE	166.5	13	1210000	1799000	749600	461200	530200	525100	723800	741000	428000	382500	424100	1169000	9143500
Diversions			0	0	3387	107153	103669	135512	140332	128467	72631	42754	0	0	733905
Unmeasured Accretions			+6000	-35000	+41787	+16953	+14469	+3412	-8668	-7633	+131	-23246	-35000	-65000	-91795
AT HAMILTON CITY	149.5	14	1216000	1764000	788000	371000	441000	393000	574800	604900	355500	316500	389100	1104000	8317800
CHICO CREEK nr. CHICO (a)	141.5L	37	23740	23880	15190	5410	6510	2580	1830	1590	1450	1870	4920	34820	123790
CHICO CREEK nr. MOUTH	141.5L	38	NR	NR	NR	4409	4219	NR	NR	0	0	86	NR	NR	
STONEY CREEK nr. HAMILTON CITY	136.3R	39	83920	81480	35560	1970	1530	32	29	248	258	319	5300	55130	265776
Diversions (c)			0	0	840	3293	1939	3406	6271	7291	1648	1263	0	0	25951
Unmeasured Accretions			+94080	+138520	+31080	+8714	+2590	+6474	+2642	-2057	-5110	-1442	+5600	+111870	+392961
AT ORD FERRY	130.8	15	1394000	1984000	853800	382800	447400	396100	571200	595800	349000	314200	400000	1271000	8959300
Diversions			0	0	188	7458	15775	15107	15908	14691	4821	998	1901	0	76847
Unmeasured Accretions			+24000	-103000	+13888	-5042	+16075	+2207	-2092	-9909	+4921	+5798	-9399	-42000	-104553
AT BUTTE CITY	115.8L	16	1418000	1881000	867500	370300	447700	383200	553200	571200	349100	319000	388700	1229000	8777900
MOULTON WEIR	104.0L	41	6454	278	0	0	0	0	0	0	0	0	0	23090	29862
COLUSA WEIR	92.4L	42	137900	312300	0	0	0	0	0	0	0	0	0	216800	667000
Diversions			159	0	0	11950	21253	23126	26934	24256	8093	956	173	0	116900
Unmeasured Accretions			+31553	+578	+10400	+18350	+3053	+3526	-7066	+2556	+13493	+10756	-3827	-74810	+8562
AT COLUSA	89.4	17	1305000	1569000	877900	376700	429500	363600	519200	549500	354500	328800	384700	914300	7972700
BUTTE CREEK nr. CHICO (a)	84.0L	40	49050	57720	41170	29640	26310	12790	8980	7400	7100	8260	13650	51660	316730
BUTTE SLOUGH TO SACRAMENTO RIVER	84.0L		0	0	7535	14400	42580	15000	6900	11800	25740	6294	8823	28730	167802
R.D. 70 DRAIN	68.8L	44	2083	2077	880	589	2475	1622	1952	2103	2063	748	87	974	17653
TISDALE WEIR	64.2L	45	203900	561600	1091	0	0	0	0	0	0	0	0	180400	946991
Diversions			0	0	32	51650	70912	83711	87091	77747	25754	3690	99	0	400686
Unmeasured Accretions			-43183	+141523	+14908	+18361	+12157	-6811	-17061	-9356	+6851	+4648	-3311	+24496	+143222
BELOW WILKINS SLOUGH	62.9	18	1060000	1151000	900100	358400	415800	289700	423900	476300	363400	336800	390200	788100	6953700
R.D. 108 DRAIN	44.0R	46	5217	5090	3078	6409	24100	23040	28070	30110	21200	3038	2525	6859	158736
R.D. 787 DRAIN	37.0R	47	1051	1340	335	670	1219	1188	944	1051	381	0	107	381	8667
COLUSA BASIN DRAIN	34.15R	51	3989	0	462	19480	45590	18600	23980	46600	77540	36320	20730	16990	310281
SYCAMORE SLOUGH	34.15R	52	357	357	147	889	1105	1260	1073	948	379	35	116	184	6850
Diversions			0	0	0	23756	37544	43515	47288	41755	13495	271	0	0	207624
Unmeasured Accretions			+37386	+44213	+41578	+24908	+16030	+37927	+23521	+10846	-13005	-5222	+1722	+17286	+237190
AT KNIGHTS LANDING	34.0	19	1108000	1202000	945700	387000	466300	328200	454200	524100	436400	370700	415400	829800	7467800
SACRAMENTO SLOUGH	21.2L	57	NR	NR	88400	18120	61080	41190	40320	40730	NR	20370	19000	NR	
FEATHER RIVER AT NICOLAUS	20.9L	63	1272000	1227000	870700	729600	671100	126300	29000	19710	88530	156600	254800	1013000	6458340
COON CREEK at HIGHWAY 99E	19.6L	71	18580	7654	5728	2037	3564	922	671	630	1336	4157	5359	13570	64228
AUBURN RAVINE at HIGHWAY 99E	19.6L	72	11500	6228	5584	694	4255	3604	3955	4020	1595	1695	2586	7020	52736
R.D. 1001 DRAIN	19.6L	74	3302	2293	1361	719	1136	0	0	0	0	0	78	1118	10007
FREMONT WEIR	23.0R	53	723000	1153000	0	0	0	0	0	0	0	0	0	351700	2227700
Diversions (d)			0	0	0	7926	12681	15628	18251	16807	8424	378	0	0	80095
Unmeasured Accretions			+795618	+1587825	+46527	-11244	+1226	-11488	-18695	+517	+58663	-5444	-10423	+290192	+2723274
AT VERONA	19.6L	20	2486000	2880000	1964000	1119000	1196000	473100	491200	578900	578100	547700	686800	1803000	14803800
R.D. 1000 (#3) DRAIN	6.85L	75	1753	2787	2668	971	3823	932	1099	2366	2190	1248	258	1284	21379
R.D. 1000 (2nd BANNON SL.) DRAIN	2.1L	77	4302	2569	0	0	666	0	0	111	4917	658	549	3324	17096
LINDA CREEK nr. ROSEVILLE	1.3L	78	14000	7498	5290	1509	2781	456	388	510	751	2398	3308	10150	49039
AMERICAN RIVER AT SACRAMENTO	1.1L	80	567700	426800	422500	411600	455600	148900	36040	18310	16580	44630	114700	324100	2987160
SACRAMENTO WEIR	4.2R	76	0	0	0	0	0	0	0	0	0	0	0	0	0
Diversions (e)			2152	1957	2531	17563	22373	32552	37842	34579	17206	4478	2201	2142	177576
Unmeasured Accretions			+102397	+138303	+48073	+84483	+72503	+54364	+25615	+26582	+12668	-23456	-8414	+55284	+588402
AT SACRAMENTO	0.4	21	3174000	3456000	2440000	1600000	1709000	645200	516500	592200	598000	568700	795000	2195000	18289600
SHASTA RESERVOIR TO SACRAMENTO															
Total Unmeasured Accretions			+1264689	+2097072	+345174	+181325	+177868	+99231	-661	+50447	+119251	+6675	+17874	+601587	+4963532
Total Diversions			2465	2096	7196	256153	304777	381300	410155	374576	177698	70494	4541	2313	1993764
REVISED FIGURES FOR 1950 SACRAMENTO-SAN JOAQUIN WATER SUPERVISION REPORT - TABLE 2															
MOULTON WEIR			0	912	0	0	0	0	0	0	0	0	0	5887	6799
COLUSA WEIR			0	106600	0	0	0	0	0	0	0	0	0	329700	436300
TISDALE WEIR			2360	86500	0	0	0	0	0	0	0	0	10650	521400	620910
FREMONT WEIR			0	370000	0	0	0	0	0	0	0	0	837200	2789000	3996200
R.D. 1000 (#3) DRAIN			1740	548	1068	481	2248	2477	1005	2989	2553	1244	1254	1362	18969
Unmeasured Accretions (COLUSA to WILKINS SLOUGH) - Revise accretion figures for 1950 report by adding to them the flows of BUTTE CREEK near CHICO.															

TABLE 2 (CONT'D)

SUMMARY AND INVENTORY OF MONTHLY STREAM FLOW - SACRAMENTO RIVER AND TRIBUTARIES - 1951

Item	Mileage	Record in Table No.	Quantities in Acre-Feet												Annual Total
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
FEATHER RIVER															
NEAR OROVILLE	71.0	58	669600	770800	511200	487800	452900	179600	137500	119500	112100	146600	195900	619700	4403200
Diversions			0	0	18	91003	125705	133704	131085	114486	54761	31413	153	0	682358
Unmeasured Accretions			+22300	-11300	+20518	+7803	+2405	-1956	-3138	-2088	-929	+2243	+2353	+2400	+40611
NEAR GRIDLEY	49.7	59	691900	759500	531700	404600	329600	43940	3277	2926	56410	117400	198100	622100	3761453
SOUTH HONCUT CREEK at BANGOR ROAD	43.7L	64	11600	5770	3860	652	668	56	6	0	0	84	809	8030	31535
Diversions			0	0	0	851	173	1939	4443	4095	964	206	0	0	12871
Unmeasured Accretions			+2300	+11230	+30340	+12499	+10605	+21643	+16890	+14829	+23174	+17122	+5691	-3130	+163193
AT YUBA CITY	28.0	60	705800	776500	565900	416900	340700	63700	15530	13660	78620	134400	204600	627000	3943310
YUBA RIVER at MARYSVILLE	27.3L	66	472400	395400	271300	279500	308800	72400	21630	13070	17610	24980	40890	313000	2230980
BELOW YUBA RIVER (a)	27.0	61	NR	NR	NR	NR	NR	NR	35980	24120	97560	160800	239100	953600	
Diversions			0	0	0	0	0	50	86	18	6	0	0	0	160
Unmeasured Accretions			-200	+100	0	0	0	+150	-2194	-2812	-2024	+3820	+1810	+18200	+16850
BELOW SHANGHAI BEND	23.0	62	1178000	1172000	837200	696400	649500	136200	34880	23900	94200	163200	247300	958200	6190980
BEAR RIVER nr. WHEATLAND	12.0L	70	138500	77570	63850	43150	24080	2580	414	434	1050	2870	19800	68810	463908
DRY CREEK nr. WHEATLAND (a)	12.0L	69	23710	8440	4220	778	1830	666	0	0	0	0	786	14900	54732
Diversions (f)			0	0	0	2455	5330	5764	5888	5125	4546	1044	7	0	30159
Unmeasured Accretions			-68210	-31010	-54570	-8273	+220	-6782	-406	+501	-2174	-8426	-13081	-28910	-221121
AT NICOLAUS	9.3	63	1272000	1227000	870700	729600	671100	126300	29000	19710	88530	156600	254800	1013000	6458340
OROVILLE TO NICOLAUS															
Total Unmeasured Accretions			-43810	-30980	-3712	+12029	+13230	+13055	+11152	+10430	+18047	+14759	-3227	-11440	-467
Total Diversions			0	0	18	94309	131208	141457	141702	123724	60277	32693	160	0	725548
AMERICAN RIVER															
AT FAIR OAKS	19.2	79	594400	434200	432800	424900	456900	149300	38330	18080	16170	42210	113100	334400	3054790
Diversions			0	0	4	52	449	1167	1281	1393	820	217	0	0	5383
Unmeasured Accretions			-26700	-7400	-10296	-13248	-851	+767	-1009	+1623	+1230	+2637	+1600	-10300	-61947
AT SACRAMENTO	6.1	80	567700	426800	422500	411600	455600	148900	36040	18310	16580	44630	114700	324100	2987460
SUTTER BY-PASS															
BUTTE SLOUGH TO SUTTER BY-PASS	29.4	54	213400	444600	63820	10980	10950	8779	11660	12100	3963	1555	6852	197700	986359
WADSWORTH CANAL	25.7L	55	7793	6712	3168	5136	9985	6579	5203	5143	7392	5847	3168	10970	77096
TISDALE WEIR	18.9R	45	203900	561600	1091	0	0	0	0	0	0	0	0	180400	946991
R.D. 1500 DRAIN	0.0R	56	12280	13130	6788	8487	25910	24150	25780	30100	25410	6400	3231	12300	193966
Diversions			0	0	0	9895	15035	18943	25468	23354	10883	1058	322	0	104958
Unmeasured Accretions					+13533	+3412	+29270	+20625	+23145	+22711		+7626	+6071		
SACRAMENTO SLOUGH	-1.0	57	NR	NR	86400	18120	61080	41190	40320	46730	NR	20370	19000	NR	
BACK BORROW PIT															
COLUSA TROUGH at COLUSA-WILLIAMS HWY.	37.0	48	40400	24650	8444	26380	53350	31120	37520	55820	60880	24140	18950	61720	443374
Diversions			33	0	0	1536	6941	6531	7255	6818	3507	1785	400	229	35035
Unmeasured Accretions			-377	+1450	+5316	+4896	+8361	+5871	+5485	+5218	+11047	+4745	+1020	-1361	+51671
COLUSA TROUGH at COLLEGE CITY	22.7	49	39990	26100	13700	29740	54770	30460	35750	54220	68420	27100	19570	60130	460010
KNIGHTS LANDING RIDGE CUT	0.4R	50	35130	23780	9531	361	4290	2549	2592	3249	1253	20	14	30610	113379
Diversions			0	0	0	6717	8973	7242	7585	6853	1632	137	845	0	39984
Unmeasured Accretions			-871	-2320	-3767	-3182	+4083	-2069	-1593	+2482	+12005	+9377	+2019	-12530	+3634
COLUSA BASIN DRAIN	0.0	51	3989	0	462	19480	45590	18600	23980	46600	77540	36320	20730	16990	310281
HIGHWAY 20 TO OUTFALL GATES															
Total Unmeasured Accretions			-1248	-870	+1549	+1714	+12444	+3802	+3892	+7700	+23052	+14122	+3039	-13891	+55305
Total Diversions			33	0	0	8253	15914	13773	14840	13671	5139	1922	1245	229	75019
YUBA RIVER															
AT NARROWS DAM	20.5	65	345800	316900	240400	272200	305400	85700	36600	32490	31260	34460	39130	294000	2031340
DEER CREEK nr. SMARTSVILLE	20.0	67	39420	22890	16650	7300	5130	586	521	313	226	1190	2910	16450	113586
DRY CREEK at VIRGINIA RANCH	12.7	68	35080	16610	13980	2810	3380	582	146	145	145	273	2390	24400	99941
Diversions			0	0	0	13225	20513	19885	19266	17756	12477	7202	6700	3000	120024
Unmeasured Accretions			+52100	+39000	+270	+10415	+15403	+5417	+3629	-2122	-1544	-3741	+3160	-18850	+103137
AT MARYSVILLE	0.9	66	472400	395400	271300	279500	308800	72400	21630	13070	17610	24980	40890	313000	2230980
DELTA TRIBUTARIES															
CACHE CREEK nr. CAPAY (a)		81	96150	96430	50120	18070	31490	36350	32030	28410	12510	947	3670	78020	484197
CACHE CREEK nr. YOLO (a)		82	101300	111800	51420	3400	0	0	0	0	0	0	0	64240	332160
YOLO BY-PASS nr. WOODLAND		83	516800	675100	70360	6670	5140	3620	3590	4470	5060	1360	889	226900	1519959
SACRAMENTO WEIR		76	0	0	0	0	0	0	0	0	0	0	0	0	0
SACRAMENTO RIVER at SACRAMENTO		21	3174000	3456000	2440000	1600000	1709000	645200	516500	592200	598000	568700	795000	2195000	18289600
SALT CREEK nr. WINTERS		84	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	12	527	
PLEASANT CREEK nr. WINTERS (a)		85	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	618	
PUTAH CREEK nr. WINTERS (a)		86	87760	45480	41630	9610	9100	1020	379	184	149	92	6790	119400	321594
PUTAH CREEK nr. DAVIS (a)		87	81230	42880	40750	8300	7930	36	22	0	0	0	4910	109200	295258
PUTAH CREEK at LIBERTY ISLAND ROAD		88	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	158300	
SWEENEY CREEK nr. WINTERS (a)		89	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1922	
ULATIS CREEK nr. VACAVILLE		90	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	392	
COSUMNES RIVER at MCCONNELL		92	151100	96700	111100	48710	51500	10570	2930	436	284	3020	9070	75730	561150
DRY CREEK nr. GALT		93	61910	25620	30450	5420	4190	130	0	0	0	0	1220	26460	155400
MOKELUMNE RIVER at WOODBRIDGE		96	102800	109100	96970	47030	82600	23070	1380	1460	11310	19600	29530	56320	581370
BEAR CREEK nr. LOCKEFORD		97	5040	1250	984	20	11	1	1	0	0	0	0	2790	10097
CALAVERAS RIVER nr. STOCKTON		100	1110	1965	4725	109	946	372	388	NR	NR	NR	393	2128	
STOCKTON DIVERTING CANAL		102	67770	28500	39190	126	3	232	182	0	0	0	979	38690	175672
DUCK CREEK nr. FARMINGTON (a)	46.1R	103	1316	376	529	0	0	0	0	0	0	0	0	NR	
DUCK CREEK nr. STOCKTON	46.1R	104	757	73	260	NR	NR	NR	NR	NR	NR	NR	0	2166	
LONE TREE CREEK nr. VALLEY HOME (a)	46.1R	105	1151	102	94	791	1281	3251	3731	4344	4046	3246	1866	2823	26726
LONE TREE CREEK nr. MANTECA (a)	46.1R	106	1522	611	916	2507	1433	915	448	322	457	524	143	2692	12490
TEXPO CREEK nr. MANTECA (a)	46.1R	107	1105	414	611	1370	484	0	0	NR	NR	NR	28	1879	
FRENCH CAMP SLOUGH nr. FRENCH CAMP	46.1R	108	18010	8551	10390	2791	1330	808	474	NR	403	512	161	17040	
SAN JOAQUIN RIVER nr. VERNALIS		119	632100	600500	477700	157800	401200	198600	53500	46700	61560	109700	104900	192800	3037060
Total Measured Flow to Delta			4731397	5003359	3282129	1868676	2256120	882603	578945	645266	676617	702892	942154	2995243	24565401

NR No record.
(a) Not included in inventory or totals.
(b) Deer Creek at Highway 99 crossing after October 29, 1951.
(c) Includes diversions from Stony Creek by Glenn-Colusa Irrigation District.
(d) Includes diversions from the Feather River below Nicolaus.
(e) Includes diversions from the American River below the "H" Street Bridge.
(f) Includes diversions from the Bear River below Wheatland.

TABLE 3

SUMMARY AND INVENTORY OF MONTHLY STREAM FLOW - SAN JOAQUIN RIVER AND TRIBUTARIES - 1951

Item	Mileage	Record in Table No.	Quantities in Acre-Feet												Annual Total
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
SAN JOAQUIN RIVER															
INFLOW TO FRIANT RESERVOIR (Computed)(b)		109	138560	127940	129730	170338	215486	209779	132669	90395	58103	48470	44470	105587	1471527
Change in Storage		110	-14800	-35500	+16900	+3900	+85500	-11900	-148500	-131200	-12300	-4500	+8200	+94400	-1149800
COTTONWOOD CREEK nr. FRIANT (a)	269.53R	120	1380	1320	481	64	5	0	0	0	0	NR	NR	NR	
MADERA CANAL			0	0	2200	10701	8977	23076	45807	40975	10624	0	69	0	142429
FRIANT-KERN CANAL			0	0	23502	37393	11830	65904	107666	86086	35850	14406	8777	0	391414
Diversions			0	0	0	38	46	59	49	25	3	0	0	7	227
Unmeasured Accretions			-1060	+460	+12	+694	-3833	-3540	-3047	-5269	-2976	-2254	-2604	-430	-23847
BELOW FRIANT	268.13	111	152300	163900	87140	119000	105300	129100	124600	89240	20950	36310	24820	10750	1063410
LITTLE DRY CREEK nr. FRIANT	264.0L	121	1510	1200	592	156	48	0	7	24	22	31	34	267	3891
Diversions			495	30	297	1747	1170	2116	2753	2730	1159	387	124	26	13034
Unmeasured Accretions			-1480	+411	-3671	-4887	+589	-6349	-7566	-7276	-2785	-7436	-1781	+2524	-39707
AT WHITEHOUSE	219.83	112	151835	165481	83764	112522	104767	120635	114288	79258	17028	28518	22949	13515	1014560
FRESNO SLOUGH BY-PASS	208.9L	122	306	0	0	0	887	35	0	0	0	0	0	0	1228
DELTA MENDOTA CANAL (c)			0	0	0	0	0	5108	31803	62831	53822	22641	0	1971	178176
Diversions (d)			12370	15082	60805	91636	86571	96855	113955	106682	59535	40948	16860	6268	707567
Unmeasured Accretions			-15071	+501	-1199	-5716	-6813	-11833	-8006	-12237	-795	-1654	-563	-3531	-66917
NEAR MENDOTA	206.2	113	124700	150900	21760	15170	12270	17090	24130	23170	10520	8557	5526	5687	419480
PANOCHE CREEK nr. PANOCHE		123	56	50	39	8	3	0	0	0	0	0	15	617	788
Diversions			0	0	10005	17906	13720	18194	24253	23058	11382	9346	5669	30660	136593
Unmeasured Accretions			-4456	-950	+3716	+2955	+1625	+1264	+340	+37	+897	+828	+149	-54	+6351
NEAR DOS PALOS	186.0	114	120300	150000	15510	227	178	160	217	149	35	39	21	3190	290026
FRESNO RIVER nr. DAULTON	184.0H	124	12780	11120	10390	7590	7730	2620	857	58	0	130	818	7410	61503
CHOWCHILLA RIVER at BUCHANAN DAM SITE	151.0R	126	15680	11680	10270	4220	2670	497	41	0	0	0	541	12530	58129
SAN LUIS CREEK nr. LOS BANOS		127	81	75	155	80	24	16	2	0	0	15	34	973	1455
SALT SLOUGH nr. LOS BANOS		125	19300	25170	6360	6980	5740	3700	4800	4870	4260	1760	2120	3280	86340
Diversions			27	0	0	48	113	76	117	231	22	0	0	0	634
Unmeasured Accretions			-40814	-45945	+5595	-2909	+1841	+2203	+1760	+3074	+5537	+2886	+596	-14163	-80339
AT FREMONT FORD	129.5	115	127300	152100	48280	16140	18070	9120	7560	7920	9810	4830	4130	13220	418480
MERCED RIVER nr. STEVINSON	123.75R	132	101600	94990	83090	28650	95780	32700	12620	10740	12800	10940	10860	14310	509080
Diversions (e)			0	0	2	117	563	697	503	434	421	135	0	0	3072
Unmeasured Accretions			+24500	+48210	+10932	+2697	-3287	+1717	+903	+324	+841	+1485	-230	+3050	+91142
NEAR NEWMAN	123.7	116	253400	295300	142300	47370	110000	42840	20580	18550	23030	16920	14760	30580	1015630
MERCED RIVER SLOUGH	122.2	133	11350	9330	2900	5	4570	225	0	0	0	0	0	0	28380
ORESTIMBA CREEK nr. NEWMAN		134	680	434	846	26	2	0	0	0	0	0	0	1630	3618
Diversions			0	0	1292	11187	8371	10533	13374	10403	6344	1036	64	0	62604
Unmeasured Accretions			+19178	+26830	+18406	+19194	+23181	+25901	+17359	+15520	+17507	+13491	+7925	+11853	+216345
NEAR GRAYSON	96.05	117	284608	331894	163160	55408	129382	58433	24565	23667	34193	29375	22621	44063	1201369
TUOLUMNE RIVER at TUOLUMNE CITY	91.0R	140	205726	160126	181230	39719	164231	108407	25053	23177	21723	54307	48833	98003	1130535
Diversions (f)			0	0	2535	15156	12094	13567	17131	15483	7973	1935	807	5	86186
Unmeasured Accretions			-34433	-17415	+9438	+13252	-9605	+3256	+9285	+4038	+2893	+448	+3610	-1453	-13684
AT HETCH HETCHY CROSSING	82.65	118	455901	474605	351293	93223	271914	159531	41772	35399	50836	82195	74757	140608	2230234
STANISLAUS RIVER nr. MOUTH (g)	79.7R		152900	122086	126442	78356	126435	33193	8481	6101	6712	23810	22740	53870	761126
Diversions (h)			22	6	280	4139	3949	3315	4682	4712	2637	1384	442	22	25590
Unmeasured Accretions			+23321	+3815	+245	-9640	+6800	+9191	+7929	+9912	+6649	+5079	+7845	-1656	+69490
NEAR VERNALIS	76.7	119	632100	600500	477700	157800	401200	198600	53500	46700	61560	109700	104900	192800	3037060
FRIANT RESERVOIR TO VERNALIS															
Total Unmeasured Accretions			-30315	+15917	+43474	+15640	+10498	+24812	+16957	+8123	+27768	+12873	+14947	-3860	+158834
Total Diversions			12914	15118	75216	141974	126597	145412	176817	163758	89476	55371	23466	9388	1035507
MERCED RIVER															
AT EXCHEQUER		129	84690	76920	79520	93780	167800	115300	109700	97530	72840	3270	3510	2780	907640
MERCED IRRIGATION DISTRICT CANAL	46.0		0	0	12207	79004	78271	99417	105075	90249	67473	401	208	315	532620
Unmeasured Accretions			-630	-10630	-1653	-336	-3339	-2153	-2964	-6547	-4593	-2542	-2737	-996	-39120
BELOW SNELLING	42.1	130	84060	66290	65660	14440	86190	13730	1661	734	774	327	565	1469	335900
Diversions			0	0	6	216	930	1351	1272	1271	910	63	43	0	6092
Unmeasured Accretions			+13170	+24290	+14346	+5876	+8710	+9211	+5496	+5321	+6798	+4639	+5776	+9131	+112764
AT CRESSEY	27.6	131	97230	90580	80000	20070	93970	21590	5885	4784	6662	4903	6298	10600	442572
Diversions			0	0	153	1227	1854	2524	3050	2593	1347	341	195	0	13284
Unmeasured Accretions			+4370	+4410	+3243	+9807	+3664	+13634	+9785	+8549	+7485	+6378	+4757	+3710	+79792
NEAR STEVINSON	4.6	132	101600	94990	83090	28650	95780	32700	12620	10740	12800	10940	10860	14310	509080
EXCHEQUER TO STEVINSON															
Total Unmeasured Accretions			+16910	+18070	+15936	+15347	+9035	+20692	+12317	+7323	+9690	+8475	+7796	+11845	+153436
Total Diversions			0	0	12366	80477	81055	+103292	109397	94113	69730	805	446	315	551996
TUOLUMNE RIVER															
ABOVE LA GRANGE DAM		135	158000	139300	160600	164900	302000	236600	123600	118700	104800	61850	45240	103100	1719490
MODESTO IRRIGATION DISTRICT CANAL	53.5R		106	3568	11252	56836	62187	62295	46742	43089	33778	15721	9584	1756	346914
TURLOCK IRRIGATION DISTRICT	53.5L		2723	16140	3380	98868	83845	99590	76938	75744	71024	12470	3463	23841	568026
Diversions			-1671	-2892	+1032	-1340	+5032	+6385	+1318	+704	+575	-229	-1783	-4003	+3128
AT LA GRANGE	50.5	136	153500	116700	147000	7856	161800	81100	1238	571	573	33430	30410	73500	807678
Diversions			0	0	3	28	30	48	45	50	34	14	0	0	252
Unmeasured Accretions			+6400	+500	+1403	+4012	-9370	-1832	+2778	+1986	+1891	+3944	-1650	+11220	+21272
AT ROBERTS FERRY BRIDGE	39.9	137	159900	117200	148400	11840	152400	79220	3971	2507	2430	37360	28750	84720	828698
Diversions			0	0	0	49	78	62	69	105	89	28	0	0	480
Unmeasured Accretions			+21100	+13600	+10600	+4869	+11478	+6982	+4234	+4534	+4383	+3628	+10990	-2520	+93878
AT HICKMAN BRIDGE	31.7	138	181000	130800	159000	16660	163800	86140	8136	6936	6724	40960	39740	82200	922096
DRY CREEK nr. MODESTO	16.5R	141	9854	7420	7400	4731	4570	4689	3439	3314	2836	2705	1535	13150	65643
Diversions (i)			0	0	85	147	251	399	380	264	195	33	0	0	1717
Unmeasured Accretions			-10154	+8080	+5485	+9916	-3616	+9870	+9025	+8194	+6555	+5168	+4935	+3520	+56978
AT MODESTO	15.92	139	180700	146300	171800	31160	164500	100300	20220	18180	15960	48800	46210	98870	1043000
Diversions			0	0	10	98	147	334	306	362	187	63	53	1	1561
Unmeasured Accretions			+25026	+13826	+9440	+8657	-122	+8441	+5139	+5359	+5950	+5570	+2676	-866	+89096
AT TUOLUMNE CITY	3.35	140	205726	160126	181230	39719	164231	108407	25053	23177	21723	54307	48833	98003	1130535
ABOVE LA GRANGE TO TUOLUMNE CITY															
Total Unmeasured Accretions			+40701	+33114	+27960	+26114	+3402	+29846	+22494	+20777	+19354	+18081	+15158	+7351	+264352
Total Diversions			2829	19708	14730	156026	146541	162728	124480	119614	105267	28329	13100	25598	918950

NR No record.
(a) Not included in inventory or totals.
(b) Diversions between the dam and Friant gaging station have been added to the computed inflow to Friant Reservoir as received from the U. S. Bureau of Reclamation. See footnote on Table 109.
(c) Delta Mendota Canal delivery to Mendota Pool was estimated by subtracting the diversions by Panoche Water Association and West Stanislaus Irrigation District from the flow of the Delta Mendota Canal as measured at the Tracy Pumping Plant.
(d) Includes diversions from Fresno Slough.
(e) Includes diversions from Merced River below Stevinson.
(f) Includes diversions from Tuolumne River below Tuolumne City.
(g) Flow at Stanislaus River at Mouth was estimated for the period January 1 to October 1, 1951 by subtracting the diversions between Ripon and Mouth from the flow at Ripon.
(h) Includes diversions from Stanislaus River below Milo 2.9.
(i) Includes diversions from Dry Creek below Modesto.

TABLE 3 (CONT'D)

SUMMARY AND INVENTORY OF MONTHLY STREAM FLOW - SAN JOAQUIN RIVER AND TRIBUTARIES - 1951

Item	Mileage	Record in Table No.	Quantities in Acre-Feet												Normal Total
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
STANISLAUS RIVER															
BELOW MELONES POWER HOUSE		142	120300	99450	122900	156600	184900	114700	78640	66080	21710	18980	15860	43050	1043170
OAKDALE CANAL	50.2		0	0	4201	42293	38630	45796	37957	32402	9121	0	0	0	210400
SOUTH SAN JOAQUIN CANAL	50.2		3832	9192	12497	42930	33711	45483	37894	32466	8904	0	0	0	226909
Diversions			0	0	2	21	33	49	49	37	33	18	0	0	242
Unmeasured Accretions			+19132	+7552	+6100	+464	+4074	-7942	-467	+549	-1081	-4332	-40	+18430	+42439
AT ORANGE BLOSSOM BRIDGE	44.7	143	135600	97810	112300	71820	116600	15430	2273	1721	2571	14630	15820	61480	648058
Diversions			0	0	0	63	137	269	335	468	147	48	0	0	1467
Unmeasured Accretions			-2800	-4720	-8400	+3733	-5663	+16779	+4280	+3822	+3546	+5478	+1500	-13440	+4115
AT RIVERBANK	32.0	144	132800	93090	103900	75490	110800	31940	6218	5078	5970	20060	17320	48040	650706
Diversions			0	0	3	399	396	668	598	860	583	174	2	0	3683
Unmeasured Accretions			+20100	+29010	+23703	+6499	+20496	+7008	+7930	+6792	+4793	+3234	+3092	+6800	+139457
AT RIPON BRIDGE	16.0	145	152900	122100	127600	81590	130900	38280	13550	11010	10180	23120	20410	54840	786480
Diversions			0	14	1158	3234	4465	5087	5069	4909	3468	1730	22	0	29156
Unmeasured Accretions												+2420	+2352	-970	
NEAR MOUTH	2.9	146	NR	NR	NR	NR	NR	NR	NR	NR	NR	23810	22740	53870	
MELONES POWER HOUSE TO MOUTH															
Total Unmeasured Accretions												+6800	+6904	+10820	
Total Diversions			3832	9206	17861	88940	77372	97352	81902	71142	22256	1970	24	0	471857
MORMON SLOUGH															
AT BELLOTA	0.2	101	69830	33310	39640	705	894	2432	1886	295	0	0	674	38450	188116
Diversions			0	0	0	59	285	531	460	114	0	0	0	0	1449
Unmeasured Accretions			-2060	-4810	-450	-520	-606	-1669	-1244	-181	0	0	+305	+240	-10995
STOCKTON DIVERTING CANAL AT STOCKTON	17.6	102	67770	28500	39190	126	3	232	182	0	0	0	979	38690	175672
CALAVERAS RIVER															
AT JENNY LIND	36.9	98	60310	31660	43750	2870	4370	8590	6010	542	0	357	2880	37040	198379
MORMON SLOUGH at BELLOTA		101	69830	33310	39640	705	894	2432	1886	295	0	0	674	38450	188116
Diversions			0	0	0	161	412	1147	897	656	56	21	0	0	3350
Unmeasured Accretions				+4038	+1379	-1433	-71	-27	+1098				-1482	+3677	
AT BELLOTA	25.15	99	NR	2388	5489	571	2993	4984	4325	NR	NR	NR	724	2267	
Diversions			0	0	10	224	597	1205	916	44	3	0	0	0	3000
Unmeasured Accretions				-423	-754	-238	-1450	-3406	-3021				-331	-139	
NEAR STOCKTON	8.9	100	1110	1965	4725	109	946	372	388	NR	NR	NR	393	2128	
JENNY LIND TO STOCKTON															
Total Unmeasured Accretions				+3615	+625	-1671	-1521	-3433	-1923				-1813	+3538	
Total Diversions			0	0	10	385	1009	2353	1813	700	59	21	0	0	6350
MOKELUMNE RIVER															
AT LANCHA PLANA		94	105600	104100	92430	66800	110100	45250	21520	21890	29320	32840	33700	58740	722290
NEAR CLEMENTS	39.35	95	110900	108700	95030	67410	107500	46940	21810	21980	29070	36240	37760	59790	743130
Diversions			0	0	243	16270	19485	24270	17661	17690	15650	11618	3904	0	126791
Unmeasured Accretions			-8100	+400	+2183	-4110	-5215	+400	-2769	-2830	-2110	-5022	-4326	-3470	-34969
AT WOODBRIDGE	19.2	96	102800	109100	96970	47030	82800	23070	1380	1460	11310	19600	29530	56320	581370
COSUMNES RIVER															
AT MICHIGAN BAR	34.3	91	134400	84410	95230	47110	47190	11710	4300	1767	1210	4220	9750	58900	502197
Diversions			0	0	0	61	374	1105	1295	802	389	134	0	0	4160
Unmeasured Accretions			+16700	+10290	+15870	+1561	+4084	-35	-75	-529	-537	-1066	-680	+16830	63113
AT MCCONNELL	11.8	92	151100	96700	111100	48710	51500	10570	2930	436	284	3020	9070	75730	561150

TABLE 4

SUMMARY AND INVENTORY OF MONTHLY STREAM FLOW - TULE RIVER AND TULARE LAKE AREA - 1951

Item	Mileage	Record in Table No.	Quantities in Acre-Feet												Normal Total
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
TULE RIVER															
NEAR PORTERVILLE	-1.0	149	10180	8100	12250	9010	10100	3030	791	38	45	342	1070	14540	69496
SOUTH FORK TULE RIVER	0.0	150	3350	2730	4280	2980	2850	762	114	0	0	105	406	4120	21697
Diversions			0	14	303	1315	1217	1578	343	29	58	55	514	758	6184
Unmeasured Accretions			+260	+604	+413	-555	-223	-169	-373	-9	+13	+1566	+11698	+108	+13333
AT WORTH BRIDGE	2.2	151	13790	11420	16640	10120	11510	2045	189	0	0	1958	12660	18010	98342
FRIANT-KERN CANAL to TULE RIVER			6485	8573	7256	4580	8515	1820	126	0	0	28	417	5400	43200
Diversions	11.3	156	0	0	1529	7793	0	10197	23395	20597	6920	0	0	0	70431
Unmeasured Accretions			-6434	-2352	-3193	-1743	-2007	-352	+252	-1667	-712	-1930	-12243	-7140	-39521
ABOVE LITTLE PIONEER DITCH	14.4	152	871	495	7720	11590	988	10070	23710	18930	6208	0	0	5470	86052
FRIANT-KERN CANAL to PORTER SLOUGH		157	0	0	889	2354	0	0	0	0	0	27	569	0	3839
ELK BAYOU above ELK BAYOU AVENUE			17	0	0	0	212	0	0	0	0	0	0	819	1048
AT TURNBULL STATION	39.0	153	0	0	0	0	0	0	0	0	0	0	0	54	54
PORTERVILLE TO LITTLE PIONEER DITCH															
Total Unmeasured Accretions			-6174	-1748	-2780	-2298	-2230	-521	-131	-1676	-699	-364	-545	-7032	-26188
Total Diversions			6485	8587	7559	5895	9732	3398	469	29	58	83	931	6158	49384
INFLOW TO TULARE LAKE BASIN															
KINGS RIVER AT PIEDRA (a)		147	82630	72560	99110	191300	318300	255200	88920	22510	10340	10740	14860	77720	1244190
KINGS RIVER below EMPIRE WEIR #2			0	0	0	0	2535	0	0	0	0	0	0	60	2595
CROSS CREEK below LAKELAND CANAL #2		160	0	0	0	0	0	0	0	0	0	0	0	417	417
KAWEAH RIVER at THREE RIVERS (a)		148	27840	23570	33500	46490	72020	41040	12000	3440	2240	2770	4360	31780	301050
TULE RIVER at TURNBULL STATION		153	0	0	0	0	0	0	0	0	0	0	0	54	54
WHITE RIVER near DUCOR (a)		154	421	343	717	370	356	30	0	0	0	0	0	456	2693
KERN RIVER nr. BAKERSFIELD (a)		155	32980	30020	35100	48910	85040	88990	36940	12960	7793	9364	11960	40160	442217
WEST-SIDE CANAL nr. LOST HILLS		161	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL INFLOW TO TULARE LAKE BED			0	0	0	0	2535	0	0	0	0	0	0	531	3066

(a) Not included in inventory or totals.

TABLE 5

ANNUAL IRRIGATED ACREAGE 1942 - 1951

SACRAMENTO-SAN JOAQUIN RIVER SYSTEM SERVICE AREA
AS COVERED BY SACRAMENTO-SAN JOAQUIN WATER SUPERVISION

Stream	Year	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Sacramento River Redding to Sacramento	General Rice	111226 107663	107366 115599	111871 122243	106545 115115	117556 124135	121590 123981	149734 124117	143495 137269	152817 108479	162233 140835
Colusa Trough (a) Above Highway 20	General Rice	270 1520	600 2766	1540 4487	200 3882	3030 3694	1035 6574	3249 4745	3140 5561	4933 5150	4053 6640
Back Borrow Pit Knights Landing to Highway 20	General Rice	2755 5647	2811 11684	965 9017	1585 5175	2062 7880	2295 9044	2455 7079	1272 9003	3227 5925	2855 6973
Knights Landing Ridge Cut Knights Landing to Yolo By-Pass	General Rice	430 875	400 1005	305 3230	230 3320	1170 2795	1975 1087	685 1265	880 1220	996 757	3174 1970
Yolo By-Pass Above Highway 40	General Rice	1300 0	1460 404	1235 1000	1594 500	620 200	1241 1895	1023 1000	860 930	650 1168	475 1390
Lower Butte Creek (a) and Butte Slough	General Rice	8717 1045	8729 2024	7754 1760	7824 2110	8247 1846	4524 1115	4647 660	7136 1875	7195 1537	6984 1702
Sutter By-Pass and (a) Sacramento Slough	General Rice	5551 1792	5384 3037	5889 4303	4712 6996	9380 4925	8841 3211	7918 2635	8303 6184	11651 4479	11118 6114
Feather River Oroville to Mouth	General Rice	38477 25177	24089 46566	25235 49843	25106 47865	27189 51082	28264 49749	29534 43258	31022 51131	34013 41331	31185 56503
Yuba River Smartville to Mouth	General Rice	6661 1125	6280 2310	7009 2401	8815 1085	8872 1956	8282 3630	8716 3115	8838 3300	10005 2641	9635 3415
Bear River Wheatland to Mouth	General Rice	NOT COVERED PRIOR TO 1949							974 0	705 0	725 0
American River Fairoaks to Mouth	General Rice	3132 0	3112 0	3205 0	2935 0	2893 0	3670 0	3628 0	3865 0	4000 0	4834 0
San Joaquin River (b) Friant to Fremont Ford	General Rice	NOT COVERED PRIOR TO 1946				265888 9727	296245 10563	285919 8670	288751 14638	295874 11705	(c)240107 (c)9493
San Joaquin River Fremont Ford to Vernalis	General Rice	41934 580	41143 342	42196 1464	41601 849	43094 1396	43076 1355	46385 535	45781 625	48114 390	48745 730
Fresno Slough and Fresno Slough By-Pass	General Rice	NOT COVERED PRIOR TO 1946				19145 1868	17421 2698	19706 1579	22671 4081	19184 2815	23537 1700
Merced River (d) Snelling to Mouth	General Rice	3302 0	3680 0	4509 0	4403 0	4484 0	5912 0	6494 0	7941 0	7912 0	8088 0
Tuolumne River (d) La Grange to Mouth	General Rice	1619 0	1826 0	3161 0	3259 0	3564 0	3761 0	3745 0	4406 0	4690 0	4497 0
Dry Creek Waterford to Mouth	General Rice	NOT COVERED PRIOR TO 1949							421 0	435 0	429 0
Stanislaus River (d) Melones to Mouth	General Rice	7095 130	7360 0	7915 0	6872 0	6343 0	6598 0	7916 0	8548 0	8445 0	8336 0
San Joaquin River - Delta Uplands Vernalis to Stockton	General Rice	17932 0	19500 0	20729 0	19935 0	24505 0	25122 0	25551 0	26946 0	26604 0	26609 0
Old San Joaquin River Delta Uplands	General Rice	28749 0	40607 0	32331 0	32139 0	34263 0	37859 0	40301 0	46101 0	45013 0	44811 0
Tom Paine Slough Delta Uplands	General Rice	4357 0	5058 150	14676 235	5165 221	5733 317	5278 546	5077 468	5207 383	5221 364	4745 411
Cosumnes River Michigan Bar to Mouth	General Rice	NOT COVERED PRIOR TO 1949							1791 0	1608 0	1711 0
Mokelumne River Clements to Delta	General Rice	NOT COVERED PRIOR TO 1949							344 0	331 0	18718 1645
Calaveras River Jenny Lind to Delta	General Rice	NOT COVERED PRIOR TO 1949							3571 0	4420 0	5300 0
Total above Delta											
Sacramento River System	General Rice	178519 1448844	160231 185395	165008 198284	159546 186048	181019 198513	181717 200286	211589 187874	209785 216473	230192 171467	237271 225542
San Joaquin River System	General Rice	53950 710	54009 342	57781 1464	56135 849	342518 12991	373013 14616	370165 10784	378519 19344	384654 14910	333739 11923
Delta River System	General Rice	51038 0	65165 150	67736 235	57239 221	64501 317	68259 546	70929 468	83960 383	83197 364	101894 2055
Grand Totals	General Rice	283507 1145554	279405 185887	290525 199983	272920 187118	588038 211821	622989 215448	652683 199126	672264 236200	698043 186741	672904 239520

(a) Figures for General Crops include acreage flooded for gun clubs.
(b) Figures exclude acreages irrigated from Madera and Friant Kern Canals.
(c) This is the total acreage available. See note "o" page 161.
(d) Figures exclude acreage in Merced, Turlock, Modesto, Waterford, Oakdale and South San Joaquin Irrigation Districts.

TABLE 6

RELATION OF GAGE HEIGHT TO STREAM FLOW - 1951 SEASON

SACRAMENTO-SAN JOAQUIN VALLEY STREAM GAGING STATIONS

STATION	Gage height, U.S.E.D. elevation, for rated flows of:								
	2000 cfs	3000 cfs	4000 cfs	5000 cfs	6000 cfs	7000 cfs	8000 cfs	9000 cfs	10000 cfs
Sacramento River	Flows under 30000 cfs are affected by tidal action and are rated by slope-velocity methods not applicable to this table.								
at Sacramento				11.0	11.7	12.4	13.0	13.6	14.1
at Verona			24.9	26.4	27.9	29.2	30.5	31.8	33.1
at Wilkins Slough				40.0	41.1	41.9	42.9	43.9	44.8
at Colusa				70.1	70.6	71.0	71.5	71.9	72.3
at Butte City									
near Red Bluff (a)									
	200 cfs	500 cfs	1000 cfs	2000 cfs	3000 cfs	4000 cfs	5000 cfs	6000 cfs	7000 cfs
Feather River									
near Oroville (a)			187.3	189.5	191.3	192.9	194.4	195.9	197.2
at Nicolaus	20.0	20.7	21.4	22.8	23.9	24.7	25.5	26.2	26.8
American River									
at Fair Oaks (a)	65.3	66.4	67.1	67.8	68.4	68.9	69.3	69.7	70.1
San Joaquin River									
near Vernalis		14.3	15.3	16.8	18.2	19.3	20.2	21.1	21.8
at Hetch Hetchy Crossing		18.9	19.9	21.8	23.2	24.4	25.4	26.4	27.3
near Grayson	26.0	27.3	29.0	32.1	33.7	35.0	36.0	37.2	39.3
near Newman	51.9	53.7	55.2	56.8	58.3	59.5	60.6	61.7	62.8
at Fremont Ford	59.5	61.0	63.1	65.7	67.3	69.0			
Merced River									
at Cressy Bridge (b)	2.1	3.4	5.0	7.3	9.1	10.6	11.5	12.3	13.0
Tuolumne River									
at Modesto (a)	36.5	37.8	39.3	41.6	43.6	45.5	47.4	49.1	50.7
Stanislaus River									
near Mouth (b)	15.3	16.6	18.1	20.2					

(a) U.S.G.S. Datum. (b) Assumed Datum.

TABLE 7

INFLOW TO SHASTA RESERVOIR - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6890	9800	9040	8210	7160	5490	2700	4040	2540	6730	3930	61810
2	7580	9980	8890	8670	8730	5630	4060	3110	1660	5470	4270	28430
3	7420	9560	8280	8770	10340	5500	4430	3660	2870	5000	3310	23940
4	8050	28670	9900	8980	13140	4160	3540	1870	3460	4100	1950	28100
5	7630	33220	9150	9310	11590	4530	4060	1950	4140	4310	3640	20070
6	6850	23000	14800	9290	11350	5520	4060	4920	4000	3900	4010	15600
7	5720	20600	13550	9440	11010	4930	2980	4350	4130	2200	4010	11470
8	7090	21290	13820	7440	8590	4340	2600	3120	1870	4390	3730	9130
9	7450	19900	17420	8090	9160	4430	3620	3480	2130	4080	3880	6140
10	11120	22540	13750	9900	10810	3700	3910	2730	3150	3580	5000	7530
11	16390	42960	11260	9820	9640	5200	3660	2120	3630	3410	5120	6900
12	12430	34250	11510	9080	8860	4470	3710	1660	4080	3630	6100	7060
13	9240	26180	10970	9740	8650	4560	4020	3740	4230	3000	4530	7010
14	7720	21340	11060	9380	8040	4840	2440	3680	3180	2370	4330	6440
15	9720	18330	10920	7510	8080	4670	2000	3500	1960	4320	3980	6180
16	12360	16420	10940	8290	8420	3720	3730	3840	2260	3490	4120	4020
17	23980	15160	10450	9050	7770	3130	4080	3720	3360	3400	3010	6510
18	24950	12950	9720	8400	7960	4380	3540	1970	3750	3720	2000	7640
19	17560	13100	11390	8490	8380	4220	3280	2110	3650	3430	8190	7060
20	14160	12960	10680	8530	7220	4770	3000	3650	3360	3180	11450	6480
21	15540	12370	10800	7880	7540	4580	2240	3760	4120	2700	7540	6190
22	13110	11050	10720	6440	7430	4520	2280	3340	1820	3790	6520	5930
23	12880	10910	10050	7210	7300	3490	3480	4080	2060	4890	4870	4780
24	13660	9930	9900	7610	7510	2310	3440	2930	3810	4920	3560	5420
25	14240	9670	9300	7510	7170	4610	3720	2240	3670	4040	4380	5940
26	14840	10410	9870	7230	6710	4610	3870	2060	3610	4360	8120	27880
27	14170	9240	9330	9050	4570	4100	4170	3570	3440	3100	7640	77360
28	13370	9830	9370	10830	4650	4130	2490	3760	3510	2690	14530	43500
29	11460	—	9330	7150	5040	4360	2190	4030	2080	3520	13960	31740
30	10880	—	9330	6400	4600	3750	3500	3500	2580	3820	33910	27300
31	10110	—	8800	—	5620	—	3450	3710	—	4060	—	21220
Mean	11889	17701	10784	8457	8163	4432	3363	3232	3137	3858	6520	17251
Runoff in Ac.Ft.	731050	983050	663070	503210	501900	263700	206780	198740	186670	237220	387950	1060720
	Water Year Total 6315480								Calendar Year Total 5924060			

This is the total mean second-feet flow inflowing to Shasta Reservoir as computed by taking a summation of the change in storage, release, spill and evaporation; and represents the natural flow passing the dam site if the dam had not been constructed. Drainage area is 6665 square miles. Records for 1951 computed by U. S. Bureau of Reclamation.

TABLE 8

DAILY CONTENT OF SHASTA RESERVOIR IN ACRE-FEET - 1951

Date	Figure given is amount in storage at end of day in thousands of acre-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3261.7	3516.3	3404.2	3658.9	3856.4	4019.8	3787.8	3262.9	2753.1	2561.2	2479.2	2758.4
2	3256.4	3518.4	3395.9	3667.9	3862.5	4017.0	3778.3	3243.7	2738.1	2563.0	2478.2	2808.8
3	3254.7	3519.6	3390.0	3677.0	3872.1	4013.7	3768.0	3225.8	2725.4	2561.4	2474.6	2850.6
4	3254.7	3561.6	3390.0	3686.4	3888.8	4007.2	3756.1	3204.4	2714.0	2559.3	2468.9	2900.0
5	3254.0	3611.2	3391.4	3696.6	3903.6	4001.1	3744.8	3183.1	2705.9	2557.7	2469.1	2934.2
6	3251.6	3633.8	3405.0	3706.5	3917.3	3997.0	3734.5	3167.8	2697.9	2554.7	2468.9	2959.9
7	3247.1	3637.4	3416.3	3716.9	3930.6	3990.7	3720.1	3151.4	2690.6	2549.2	2468.5	2975.9
8	3245.4	3642.3	3429.7	3723.2	3938.7	3982.8	3707.8	3132.7	2680.0	2547.8	2467.9	2986.7
9	3244.7	3644.6	3455.0	3731.1	3947.9	3975.1	3692.6	3115.5	2669.6	2545.0	2466.5	2998.9
10	3251.1	3652.1	3470.7	3742.4	3959.9	3966.2	3678.1	3096.4	2661.2	2541.7	2468.3	3006.4
11	3268.1	3700.2	3481.4	3752.9	3970.0	3959.9	3662.7	3076.6	2655.0	2538.9	2471.1	3014.3
12	3278.3	3719.8	3490.2	3762.1	3978.7	3952.3	3645.2	3055.5	2649.8	2535.9	2474.8	3021.6
13	3281.2	3709.1	3500.5	3772.5	3987.2	3944.9	3628.9	3038.7	2645.6	2531.4	2475.0	3029.6
14	3280.9	3688.7	3510.8	3782.0	3993.7	3937.9	3609.9	3021.8	2639.4	2526.1	2476.6	3033.9
15	3284.5	3657.3	3520.9	3787.3	4001.1	3930.6	3589.9	3006.2	2632.1	2524.4	2478.2	3041.7
16	3293.4	3618.9	3531.0	3793.9	4008.5	3921.6	3572.1	2989.9	2624.9	2522.2	2476.2	3046.7
17	3326.8	3578.2	3540.1	3801.9	4014.3	3911.4	3555.3	2974.3	2619.7	2518.1	2475.2	3054.3
18	3361.8	3533.5	3547.7	3809.8	4019.8	3903.6	3537.3	2955.9	2615.6	2515.7	2475.4	3061.9
19	3381.7	3496.2	3558.3	3817.7	4025.0	3895.5	3518.4	2937.8	2611.3	2512.1	2485.0	3069.2
20	3396.4	3470.7	3567.5	3821.7	4027.8	3888.5	3498.2	2922.6	2606.3	2507.9	2500.9	3075.0
21	3413.6	3458.2	3576.6	3827.6	4030.5	3881.0	3476.4	2907.6	2603.1	2502.9	2508.1	3080.5
22	3426.2	3449.0	3585.9	3828.4	4032.7	3873.7	3455.2	2892.1	2595.4	2499.9	2515.3	3085.8
23	3436.1	3443.1	3593.2	3830.5	4034.6	3864.4	3436.4	2878.9	2588.7	2499.5	2519.0	3091.1
24	3447.3	3437.1	3602.2	3833.4	4037.1	3852.1	3416.3	2863.5	2583.8	2500.1	2519.2	3093.7
25	3462.2	3430.7	3608.6	3836.6	4039.1	3844.6	3397.6	2846.6	2580.1	2497.3	2520.6	3099.9
26	3477.4	3425.7	3616.3	3838.7	4040.2	3837.1	3379.2	2829.6	2576.0	2496.7	2530.2	3150.0
27	3489.4	3418.5	3622.7	3843.8	4036.9	3828.1	3361.3	2816.6	2572.1	2491.7	2537.8	3206.1
28	3499.2	3412.4	3629.2	3853.7	4032.7	3819.3	3340.1	2804.2	2568.7	2486.8	2558.3	3273.1
29	3504.8	—	3635.6	3854.2	4029.4	3810.3	3318.3	2791.1	2562.2	2484.2	2579.7	3418.8
30	3509.5	—	3642.1	3854.2	4025.6	3800.8	3299.0	2778.4	2557.3	2481.4	2640.8	3457.0
31	3512.8	—	3651.1	—	4023.1	—	3279.7	2765.9	—	2480.0	—	3482.9
Monthly Change	+244.9	-100.4	+238.7	+203.1	+168.9	-222.3	-521.1	-513.8	-208.6	- 77.3	+160.8	+842.1

Annual Gain or Loss in Storage: Calendar Year +215000; Water Year -271200 Acre-Feet.
Differences in Storage 1950 to 1951: Maximum +58200; Minimum +179900 Acre-Feet.

Reservoir water level recorder maintained by U. S. Bureau of Reclamation.

TABLE 9

FLOW OF SACRAMENTO RIVER AT KESWICK - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10200	8620	13000	4000	5990	6980	5440	12300	9040	5230	4770	7010
2	10900	9370	13000	4010	5680	6970	5650	12800	9030	5320	4770	4280
3	8220	8370	11200	4000	5530	6980	9190	12800	9000	5220	4750	5150
4	8260	9260	10200	4030	4850	7150	9490	12800	9010	5260	4800	3500
5	8200	9070	9310	4000	4560	7530	9540	12800	8020	5240	4100	3260
6	8200	9970	8440	4000	4390	7490	9510	12800	7960	5210	4240	3200
7	8220	19300	8360	4000	4380	7610	9520	12800	7500	5200	4200	3160
8	8220	19300	7360	4010	4360	7900	9490	12700	7120	5210	5280	3150
9	8290	19100	6260	4000	4390	7930	9720	12300	7150	5270	5280	3130
10	8330	19300	6160	4000	4400	7920	10400	12200	7050	5280	4160	3120
11	8400	20100	6150	4490	4370	7920	11600	12300	6630	5230	4190	3100
12	8310	24300	6890	4530	4380	7920	12300	12200	6580	5240	4160	3120
13	8230	31700	6170	4410	4360	7930	12300	12200	6160	5270	4140	3100
14	8260	31400	6210	4410	4410	7930	12300	12100	6160	5290	3680	3120
15	8270	33700	6210	4540	4380	7990	12400	11800	5860	5240	3670	3100
16	8330	35200	6180	4530	4460	7920	12300	11800	5860	5290	3670	3140
17	8680	35000	6210	4690	4760	7990	12300	11600	5880	5280	3660	3140
18	8370	34900	6180	4360	5130	7960	12600	11200	5840	5310	3640	3140
19	8290	31600	6180	4530	5730	8000	13300	11200	5840	5290	3700	3140
20	8270	24900	6170	5250	5820	8140	13300	11100	5810	5260	3720	3130
21	8430	19000	6120	5900	5840	8140	13300	11200	5860	5230	3730	3120
22	8450	15800	6150	5960	5840	8130	13300	11100	5840	5220	3670	3600
23	8330	14300	4410	5980	5860	8170	13300	10700	5830	5260	3680	3600
24	8330	13000	5220	6000	5840	8140	13600	10700	5860	5270	3800	3610
25	8260	12900	6120	6080	5840	8180	13500	10700	5830	5280	3790	3600
26	7650	13100	6080	6230	5820	8210	13500	10600	5800	5270	3790	4070
27	8030	13100	6030	6700	5810	8310	13400	10500	5480	5180	3710	7080
28	9080	13100	6080	6700	6190	8460	13400	10100	5280	5190	3750	6900
29	8640	—	6040	6700	6380	8460	13300	10000	5230	5240	3750	8220
30	8820	—	6080	6400	6360	8440	13400	9650	5260	5280	3680	8300
31	8720	—	3980	—	6490	—	13500	9320	—	4730	—	8210
Mean	8490	19600	7037	4948	5247	7892	11810	11560	6592	5237	4064	4210
Runoff in Ac.Ft.	522000	1088000	432700	294400	322600	469600	726200	710800	392300	322000	241800	258800
	Water Year Total 6631500								Calendar Year Total 5781200			

U. S. Geological Survey and Division of Water Resources cooperative station located at Mile 250.5 above Sacramento. These flows include releases from Shasta Reservoir. Drainage area is 6,710 square miles. Period of record 1938 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 10

FLOW OF SACRAMENTO RIVER NEAR REDDING - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10000	8660	12800	3920	4730	6450	8000	11600	9910	4790	4240	7300
2	10900	9290	12900	3860	4990	6500	8140	12000	9570	4840	4220	4600
3	8140	8490	11200	3800	4990	6420	8570	12100	8490	4710	4240	5650
4	8140	10100	10400	3720	4220	6600	8910	12000	8570	4710	4260	3820
5	8140	9790	9470	3720	4180	6980	8910	12000	7650	4730	3880	3360
6	8110	9000	9320	3680	4060	6950	8940	12000	7600	4670	3760	3190
7	8140	19300	8570	3640	4060	7020	8940	12000	7120	4690	3760	3100
8	8190	19300	7810	3600	4000	7350	8910	11900	6750	4640	4690	3090
9	8250	19100	6880	3580	4000	7380	9120	11500	6750	4710	4900	3070
10	8440	19200	6520	3540	4040	7400	9590	11500	6700	4730	4140	3100
11	8630	20100	6450	4080	4040	7430	10500	11500	6220	4710	3980	3030
12	8410	23000	7180	4100	4080	7380	11300	11500	6220	4730	3980	3050
13	8280	29000	6320	4120	4000	7460	11300	11500	5820	4750	4000	3010
14	8300	28800	6280	4100	4040	7430	11300	11400	5720	4820	3660	3030
15	8360	30200	6220	4160	3980	7460	11300	11000	5350	4790	3580	3010
16	8440	31700	6220	4060	4060	7400	11400	11100	5280	4730	3560	3030
17	9530	31600	6200	4150	4280	7460	11400	11000	5280	4710	3520	3030
18	8770	31500	6180	4040	4730	7510	11600	10600	5250	4710	3520	3100
19	8460	29200	6200	4240	5210	7570	12100	10500	5210	4710	3680	3050
20	8410	24100	6200	4730	5400	7680	12200	10600	5160	4730	3700	3050
21	8300	19100	6130	5466	5400	7730	12200	10400	5230	4710	3760	3030
22	8940	15900	6100	5466	5420	7730	12100	10500	5230	4670	3600	3460
23	8660	14500	4240	5440	5440	7730	12100	10100	5180	4730	3620	3560
24	8460	12900	5070	5440	5470	7700	12300	10100	5210	4750	3760	3580
25	8410	13000	6300	5420	5440	7700	12500	10000	5210	4770	3820	3620
26	7840	13000	6050	5510	5420	7730	12300	10000	5160	4730	3980	4770
27	8000	13100	5960	5940	5420	7810	12400	9970	5070	4730	3700	8300
28	8910	13000	5980	6030	5700	7930	12200	9530	4730	4730	3780	6880
29	8710	—	5980	5910	5910	8000	12200	9530	4570	4750	3780	8000
30	8830	—	6010	5720	5910	7950	12300	9180	4690	4690	3580	7950
31	8800	—	4120	—	5960	—	12300	9090	—	4450	—	7890
Mean	8594	18780	7137	4516	4793	7396	10880	10890	6133	4720	3888	4249
Runoff in Ac.Ft.	528400	1043000	438900	268700	294700	440100	669100	669800	365000	290200	231400	261200
	Water Year Total 6336700								Calendar Year Total 5500500			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located at Mile 240.7 above Sacramento. Station is located below the diversion dam of Anderson-Cottonwood Irrigation District and is also known as Sacramento River above Churn Creek Pumps. Period of record 1945 to date. Records for 1951 computed by Division of Water Resources.

TABLE 11

FLOW OF SACRAMENTO RIVER AT BALLS FERRY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10800	10500	15600	5020	6590	6850	8070	12000	8570	5310	4920	22800
2	11700	11000	15400	4990	6140	6680	8220	11600	8870	5480	4970	13200
3	9160	11700	14000	4360	6670	6880	8690	11900	8840	5440	4950	17200
4	10100	25500	14800	4740	7850	6930	9160	12000	8870	5220	4970	13800
5	9500	27500	15600	4720	7820	7370	9130	11900	7930	5170	4760	9810
6	9040	16800	15400	4670	7090	7400	9070	11900	7710	5220	4420	6850
7	8900	24500	14700	4670	6640	7400	9130	11900	7320	5220	4460	5850
8	8870	24000	12000	4690	6160	7320	9070	11900	6850	5170	4970	5190
9	9040	23400	14200	4650	5800	7820	9160	11600	6820	5170	5530	4880
10	14700	23300	10700	4580	5730	7820	9720	11500	6850	5260	5190	4690
11	17200	26900	9530	4900	5830	7850	10700	11500	6400	5290	4990	4530
12	12700	30000	9750	5020	5610	7820	11700	11600	6320	5340	5730	4510
13	10800	35400	8630	4990	5480	7850	11700	11600	5950	5310	5020	4420
14	10100	34800	8540	5040	5410	7770	11700	11600	5830	5340	4510	4300
15	14200	35700	8400	5040	5220	7790	11800	11200	5480	5240	4330	4260
16	11400	37800	8300	5090	5140	7740	11700	11100	5440	5240	4300	4190
17	19700	37400	8050	6720	5260	7770	11700	11100	5440	5260	4230	4160
18	17300	37400	7850	4990	5580	7770	11700	10700	5440	5290	4210	4370
19	13800	34900	7770	4920	6000	7790	12400	10700	5410	5260	4440	5290
20	11800	28600	7650	5480	6220	7820	12500	10700	5360	5260	6610	4530
21	15200	24200	7630	6220	6220	7930	12500	10600	5410	5240	10000	4350
22	21900	19800	7540	6250	6110	7930	12500	10700	5460	5170	5340	4580
23	16500	18500	5660	6320	6110	7930	12500	10300	5440	5340	4720	4670
24	14400	16300	6400	6270	6160	7910	12500	10300	5240	5780	4650	4860
25	13100	16000	7490	6270	6060	7880	12700	10300	5240	5780	4620	4790
26	11600	15900	7230	6350	6000	7380	12800	10200	5460	5560	7510	11000
27	11200	16000	7090	6820	6000	7960	12600	10300	5410	5510	6590	57600
28	12100	15900	7070	7380	6190	8070	12500	9660	4990	5390	8450	27800
29	11400	—	7010	7540	6430	8070	12400	9750	5040	5410	6850	19900
30	9940	—	7040	7070	6400	8070	12600	9400	5090	5460	8510	17100
31	9620	—	5510	—	6400	—	12500	9370	—	4950	—	13400
Mean	12510	24280	9759	5560	6139	7692	11130	11000	6283	5325	5492	10290
Runoff in Ac.Ft.	769100	1348000	600100	330900	377500	457700	684500	676100	373800	327400	326800	632500
	Water Year Total 7658700								Calendar Year Total 6904400			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located at Mile 224.5 above Sacramento. Period of record 1945 to date. Records for 1951 computed by Division of Water Resources.

TABLE 12

FLOW OF SACRAMENTO RIVER NEAR RED BLUFF (IRON CANYON) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12300	12700	15600	6000	7670	7620	8670	13100	9210	5430	5060	27000
2	12600	12600	16200	5800	7160	7730	8670	11900	9260	5700	5060	25400
3	11500	13100	15100	5750	7730	7730	9180	12500	9260	5680	5080	21700
4	11500	30100	14500	5610	9860	7730	9660	12500	9150	5450	5150	21200
5	11300	47800	17500	5570	10400	8130	9750	12500	8760	5430	5020	16700
6	10500	26100	14900	5520	8840	8270	9720	12500	8210	5430	4660	9840
7	10200	29200	17700	5570	8350	8180	9720	12500	7830	5410	4580	7730
8	10200	29900	13200	5520	7620	8480	9720	12500	7350	5370	4660	6600
9	10400	28200	15400	5500	7140	8540	9720	12200	7270	5260	5640	6000
10	17100	27200	12000	5520	7010	8510	10100	12100	7270	5410	5750	5610
11	21900	31300	10600	5640	7210	8510	11000	12000	6820	5430	5150	5300
12	16500	39000	10400	6030	7030	8460	12000	12100	6700	5450	6030	5170
13	13100	41800	9810	5960	6800	8430	12100	12100	6400	5450	5520	5080
14	11900	41200	9580	6030	6620	8400	12200	12100	6220	5430	4930	4980
15	13500	40300	9490	6080	6340	8400	12100	11700	5860	5450	4520	4810
16	14000	43400	9400	6340	6170	8400	12200	11600	5750	5340	4400	4720
17	22000	42900	9260	6470	6200	8400	12100	11500	5750	5390	4330	4660
18	22200	42800	9070	6080	6620	8370	12100	11200	5750	5430	4290	4680
19	18300	41200	8930	5930	7010	8430	12300	11100	5700	5390	4640	5730
20	15000	33300	8810	6320	7290	8350	13000	11100	5610	5370	7730	5040
21	21200	23000	8810	6930	7270	8560	13000	11100	5680	5370	11000	4760
22	41200	22200	8790	7240	7210	8540	13000	11100	5700	5390	6220	4830
23	28100	20500	7730	7240	7240	8560	13000	10800	5700	5450	5060	5020
24	23100	17700	7640	7160	7210	8510	13000	10800	5730	6400	4740	5210
25	19500	17100	7670	7160	7110	8510	13300	10700	5750	6640	4830	5260
26	16800	16800	8350	7190	7060	8480	13100	10700	5700	5910	8160	10900
27	15400	17100	8290	7670	7030	8540	13300	10700	5680	5700	8320	87800
28	15700	16800	8210	8930	7110	8700	13000	10100	5080	5610	9370	63400
29	14700	—	8240	9150	7400	8670	13100	10200	5190	5610	8560	29500
30	14100	—	8180	8400	7350	8650	13000	9920	5170	5680	9260	23800
31	13300	—	7290	—	7240	—	13100	9840	—	5340	—	18100
Mean	16420	28960	10890	6477	7365	8360	11630	11510	6650	5542	5924	14730
Runoff in Ac.Ft.	1010000	1608000	669700	385400	452800	497400	714900	707600	395700	340800	352500	905500
	Water Year Total 8902500								Calendar Year Total 8040300			

U. S. Geological Survey station located near the Iron Canyon dam site at Mile 198.6 above Sacramento. Drainage area is 9,300 square miles. Period of record 1902 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 13

FLOW OF SAORAMENTO RIVER AT VINA BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12900	14700	17400	8100	9020	8020	9130	13500	9890	5830	6000	24900
2	13200	14100	17100	7130	9450	8320	9080	12500	9800	6230	5930	37400
3	13400	14900	16600	7130	8450	8210	9330	13000	9780	6410	5930	21400
4	12100	22200	15200	7030	11000	8260	9780	13000	9690	6180	5900	29600
5	12700	66600	17800	6900	12700	8450	10000	13000	9690	5980	5860	23200
6	11800	39000	16100	7030	10900	8720	10000	13000	8720	5960	5500	14700
7	11400	29600	18100	7030	10200	8670	10000	13000	8510	5960	5360	11000
8	11300	33900	15300	7060	9410	8800	10000	13000	8050	5900	5300	9190
9	11300	31300	15600	7060	8780	9020	10000	12800	7730	5800	6330	8210
10	14300	29500	14500	7190	8480	9020	10200	12600	7710	5930	6510	7520
11	22000	35300	12300	7210	8800	8970	10800	12600	7470	5980	6060	7080
12	21400	51200	11500	7710	9130	8990	11600	12600	7130	5980	6560	6870
13	15500	45700	11400	7680	8450	8970	12100	12600	7000	5960	6950	6850
14	13800	46300	11000	7710	8100	9940	12200	12600	6740	6080	6160	6720
15	14700	43900	11100	7760	7760	8910	12200	12400	6560	6030	5560	6480
16	17400	46200	11200	7940	7500	8970	12300	12100	6280	6000	5330	6330
17	19300	46000	11000	7910	7420	8940	12300	12100	6260	6000	5260	6230
18	24900	45500	10700	7810	7580	8880	12300	11900	6230	6060	5180	6230
19	22100	44200	10500	7450	7590	8860	12200	11700	6180	6000	5560	6900
20	18100	37300	10400	7520	8340	8860	13000	11600	6130	6030	10600	6950
21	22900	30400	10300	7970	8340	8970	13000	11600	6080	6000	11300	6380
22	71900	25200	10300	8430	8240	9970	13100	11600	6160	6080	9440	6200
23	42200	22300	10100	8400	8240	8970	13000	11500	6180	6200	6560	6460
24	29100	19700	6300	8290	8130	8940	13200	11300	6130	6690	5980	6640
25	23800	18400	8720	8260	8020	8940	13400	11200	6160	8020	5880	6900
26	20700	18000	9690	8180	7860	8940	13300	11200	6200	7000	8100	10500
27	18900	18000	9720	8400	7970	8910	13400	11200	6160	6610	10700	65600
28	18100	17700	9550	6820	7890	9080	13300	10900	5780	6510	10400	124000
29	17400	—	9580	10700	8160	9130	13400	10600	5760	6410	11300	46900
30	16300	—	9520	9690	8080	9100	13400	10600	5630	6430	11300	32200
31	15400	—	9360	—	7910	—	13500	10300	—	6540	—	23700
Mean	19690	32400	12190	7750	8622	8824	11770	12050	7193	6221	7127	19010
Runoff in Ac.Ft.	1210000	1799000	749600	461200	530200	525100	723800	741000	428000	382500	424100	1169000
	Water Year Total 9965500								Calendar Year Total 9143500			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located at Mile 166.5 above Sacramento. Period of record 1945 to date. Records for 1951 computed by Division of Water Resources.

TABLE 14

FLOW OF SACRAMENTO RIVER AT HAMILTON CITY (GIANELLA BRIDGE) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13100	14900	18300	7060	8320	5880	6690	10900	8160	5060	5000	23100
2	13000	14300	17900	6450	7270	6170	6690	10300	8100	5250	5200	43100
3	13500	14500	17400	6220	7400	6170	6830	10500	8160	5550	5430	24100
4	11800	20400	16000	6050	9740	6100	7320	10500	8130	5500	5410	33900
5	12500	53900	18200	5930	12100	6220	7690	10600	8080	5670	5450	26000
6	11500	42600	17200	5790	10500	6510	7720	10600	7240	5570	5130	15800
7	11000	30300	19000	5790	9680	6490	7660	10700	7160	5270	4910	11200
8	10900	34200	16400	5670	8710	6540	7720	10600	6850	4840	4910	9260
9	10900	32200	16000	5620	8130	6820	7640	10600	6440	4730	5640	8130
10	12900	30600	15700	5620	7580	6850	7750	10400	6340	4710	5080	7340
11	2 800	33400	13200	5570	7580	6850	8220	10400	6320	4780	5640	6880
12	23700	48100	12300	5910	8100	6800	9060	10400	6030	4820	5840	6510
13	16300	43000	12300	5790	7290	6750	9680	10400	5530	4780	6590	6460
14	13900	43900	11700	5880	6850	6690	9800	10400	5640	4780	5790	6270
15	13700	41900	11600	6000	6360	6670	9390	10300	5500	4730	5200	6100
16	18100	43100	11700	5960	5860	6670	9920	9950	5200	4640	4930	5910
17	18000	43500	11500	5930	5520	6640	9890	9920	5130	4640	4840	5840
18	26700	43100	11200	6000	5720	6720	9860	9300	5090	4710	4780	5810
19	24200	42300	10900	5570	6030	6640	10000	9480	5040	4710	4910	6240
20	19400	38100	10800	5410	6320	6620	10500	9400	5000	4690	8570	6590
21	21400	32300	10800	5810	6360	6670	10600	9370	4930	4670	10600	6030
22	59700	28000	10700	6360	6320	6720	10700	9340	4950	4690	10300	5760
23	45500	23800	10500	6320	6240	6750	10800	9340	4970	4710	6510	6030
24	31500	21300	9030	6220	6240	6770	10800	9080	5020	5450	5720	6150
25	26100	19400	9280	6170	6080	6770	11000	9000	5130	4970	5520	6410
26	24300	18900	10000	6080	5980	6720	10900	9060	5130	6540	6360	8350
27	19800	18800	9920	6150	5980	6620	10900	9080	5090	6120	10100	43800
28	18600	18600	9650	7190	5880	6690	10900	8940	5020	6000	8910	96500
29	18000	—	9200	9680	6080	6770	10800	8690	4750	5880	11900	52700
30	16600	—	9340	8970	6100	6750	10800	8600	4710	5640	10100	33900
31	15600	—	9560	—	5980	—	11000	8320	—	5480	—	26600
Mean	19770	31760	12820	6240	7170	6600	9348	9838	5975	5148	6539	17960
Runoff in Ac.Ft.	1216000	1764000	788000	371000	441000	393000	574800	604900	355500	316500	389100	1104000
	Water Year Total 9218900								Calendar Year Total 8317800			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located at Mile 149.5 above Sacramento. Period of record 1945 to date. Records for 1951 computed by Division of Water Resources.

TABLE 15

FLOW OF SACRAMENTO RIVER AT ORD FERRY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13700	16800	19600	7830	8630	6000	6810	10800	8080	4770	5250	19800
2	13400	16100	19200	7140	7530	6270	6860	10400	7860	4980	5250	46300
3	14000	16200	18800	6830	7280	6320	6950	10200	7860	5240	5580	27800
4	12200	18900	17300	6590	9270	6270	7370	10400	7740	5250	5540	36900
5	12900	54600	18100	6420	11600	6340	7740	10500	7670	5350	5560	30200
6	12100	58030	19000	6230	10600	6610	7830	10400	7180	5290	5470	19200
7	11500	35200	19700	6170	9650	6590	7780	10400	6930	5100	5220	13100
8	11300	38500	18400	6100	8930	6760	7880	10400	6670	4690	5180	10400
9	11200	36500	17000	5910	8230	6810	7830	10500	6360	4640	5560	9080
10	12900	33700	18100	5890	7780	6830	7830	10200	6270	4570	6060	8210
11	21800	35100	15100	5830	7550	6860	8130	10200	6290	4620	6060	7600
12	26000	56400	13800	5960	8110	6810	8780	10300	5960	4680	5940	7230
13	17900	51000	13600	5960	7600	6740	9460	10200	5940	4660	6670	7090
14	14800	50600	13000	5910	7140	6740	9620	10200	5640	4660	6100	6930
15	14000	47400	12700	6100	6720	6720	9700	10100	5450	4660	5640	6700
16	18600	46800	12800	6020	6230	6670	9810	9730	5120	4570	5310	6550
17	17600	47700	12700	6040	5870	6700	9840	9730	5060	4550	5220	6400
18	27200	46800	12400	6190	5890	6740	9840	9680	5040	4680	5160	6360
19	26900	46000	12000	5770	5910	6630	9920	9430	5040	4680	5270	6440
20	21200	42700	11900	5580	6400	6670	10400	9300	4940	4710	8130	7110
21	21200	36000	11800	5890	6500	6720	10500	9300	4870	4710	10400	6550
22	77000	31500	11600	6340	6460	6790	10600	9190	4890	4710	11000	6250
23	70300	26600	11400	6440	6340	6760	10700	9220	4930	4750	7140	6380
24	41500	24200	10000	6340	6360	6790	10600	9010	4940	5240	6150	6460
25	32300	21600	10100	6230	6170	6790	10660	8910	4980	7020	5850	6720
26	27100	20700	10700	6190	6100	6740	10800	8810	5020	6480	6170	8080
27	23600	20400	10600	6190	6100	6700	10800	8810	5000	6060	9730	37600
28	21600	20100	10200	6900	6100	6700	10800	8830	4930	5870	9160	106000
29	20600	—	9700	8980	6120	6810	10700	8510	4590	5940	11800	90400
30	18800	—	9650	9040	6270	6810	10700	8460	4690	5750	10100	43600
31	17800	—	9520	—	6100	—	10800	8260	—	5540	—	33400
Mean	22680	35580	13836	6434	7275	6656	9290	9690	5865	5110	6722	20670
Runoff in Ac.Ft.	1394000	1984000	853800	382800	447400	396100	571200	595800	349000	314200	400000	1271000
	Water Year Total 9930100								Calendar Year Total 8959300			

Division of Water Resources station located at Mile 130.8R above Sacramento. Records of flows in excess of 40,000 second-feet were computed by extending the rating curve. Period of record 1948 to date.

TABLE 16

FLOW OF SAORAMENTO RIVER AT BUTTE CITY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15300	18000	20500	8340	8320	5870	6540	10600	7920	4820	5240	16400
2	15000	17400	20000	7140	7590	6080	6560	10300	7570	5030	4980	35800
3	15400	17200	19400	6700	7070	6170	6560	9610	7660	5360	5340	31400
4	14100	18400	18300	6430	8770	6100	6920	10000	7620	5320	5360	32800
5	14300	34500	18400	6230	11400	6100	7200	10000	7520	5500	5400	32100
6	13800	57800	19700	6000	11100	6320	7390	10000	7250	5520	5360	23200
7	13100	36900	19000	5950	10100	6390	7390	10100	6850	5400	5090	15000
8	12700	34600	19300	5910	9280	6370	7460	9960	6740	4940	5010	11700
9	12500	34200	17000	5700	8460	6610	7480	10000	6410	4900	5160	9980
10	13300	33100	18400	5720	7940	6740	7430	9780	6210	4780	5850	8820
11	20600	32700	15700	5700	7570	6760	7640	9680	6170	4770	6040	8200
12	26500	45300	14300	5740	8100	6700	8320	9730	5980	4820	5740	7620
13	22900	51600	13800	5890	7640	6630	9030	9660	5870	4780	6480	7390
14	16100	48200	13000	5680	7180	6630	9420	9680	5680	4780	6100	7160
15	15000	45500	13000	5910	6870	6450	9390	9640	5500	4780	5620	6940
16	18800	42900	12900	5640	6260	6480	9610	9300	5280	4730	5240	6670
17	18100	44300	12800	5930	5870	6540	9640	9250	5130	4670	5050	6480
18	26000	43200	12500	6020	5830	6540	9640	9200	5090	4690	5050	6300
19	24400	42300	12100	5620	6040	6430	9640	8990	5050	4690	5110	6320
20	23000	39600	12000	5300	6300	6390	10100	8840	4930	4690	6390	7110
21	20200	34100	11700	5500	6480	6390	10300	8870	4960	4690	10400	6610
22	49200	32400	11600	5950	6450	6480	10400	8750	4960	4710	11300	6300
23	70800	29200	11500	6100	6300	6520	10500	8770	4980	4750	7710	6300
24	47900	26500	10500	5930	6300	6540	10500	8650	5050	5010	6320	6450
25	33600	23400	10200	5910	6170	6560	10400	8560	5070	6590	5850	6720
26	30000	22200	10300	5890	6080	6500	10700	8480	4990	6760	6000	7620
27	26100	21600	10500	5870	6080	6480	10500	8480	4990	6230	6810	26800
28	23600	21200	10400	6450	6040	6410	10500	8560	4990	5980	9420	69100
29	22500	—	9710	8340	6020	6500	10400	8290	4690	5850	11500	102000
30	20600	—	9470	9130	6100	6540	10500	8220	4820	5830	10400	57800
31	19300	—	9400	—	6020	—	10500	8010	—	5480	—	36600
Mean	23050	33870	14110	6222	7282	6441	8997	9289	5866	5189	6532	19990
Runoff in Ac.Ft.	1418000	1881000	867500	370300	447700	383200	553200	571200	349100	319000	388700	1229000
	Water Year Total 9747600								Calendar Year Total 8777900			

Station is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. Station is above Butte City Bridge and is at Mile 115.8 above Sacramento. Period of record 1921 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 17

FLOW OF SACRAMENTO RIVER AT COLUSA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16100	19300	20700	9220	7970	5660	6330	9970	7600	4990	5550	10900
2	15500	18100	20400	7900	7600	5620	6360	9980	7440	5120	5180	22000
3	15200	17100	19900	7420	7000	5780	6350	9460	7400	5400	5360	28700
4	15200	17000	19300	7110	7250	5790	6480	9460	7400	5640	5520	26500
5	14300	23900	18300	6920	9340	5780	6790	9550	7370	5640	5520	28400
6	14400	33400	19300	6770	10600	5830	7020	9620	7360	5760	5520	27000
7	13800	32900	19000	6600	9880	5980	7130	9580	6870	5680	5340	18500
8	13400	31000	19900	6480	9200	5980	7150	9540	6780	5450	5190	13800
9	13100	31000	18600	6370	8550	6040	7180	9510	6540	5200	5160	10900
10	13100	30500	17800	6240	7910	6230	7120	9520	6290	5040	5800	9320
11	16100	30100	17200	6150	7480	6300	7160	9370	6220	5020	6080	8320
12	22600	31500	15100	6040	7400	6300	7520	9370	6180	5080	5830	7710
13	23500	33500	13800	6080	7600	6310	8150	9360	5920	5050	6150	7300
14	19700	33400	13200	5950	7140	6310	8660	9300	5860	4970	6490	7220
15	16900	33400	12700	5910	6800	6230	8860	9300	5670	4940	5980	7080
16	16800	33200	12600	5970	6350	6180	8970	9140	5550	4910	5490	6880
17	18700	33200	12500	5900	5930	6170	9000	8910	5330	4890	5270	6730
18	21300	33200	12400	5840	5680	6220	9030	8880	5250	4900	5160	6570
19	26400	33500	12100	5790	5730	6170	9030	8800	5180	4930	5090	6460
20	25700	34000	11800	5420	5810	6140	9150	8550	5160	4920	5500	6870
21	22400	33100	11700	5320	6090	6070	9520	8450	5120	4940	8970	6850
22	28200	31400	11500	5400	6160	6150	9660	8460	5080	4900	10200	6490
23	37000	29200	11400	5810	6120	6190	9760	8360	5090	4890	8900	6360
24	36300	26300	11100	5800	6040	6240	9810	8380	5110	4880	6660	6460
25	33500	23600	10300	5730	6000	6320	9800	8190	5160	5550	5960	6580
26	31000	22000	10100	5650	5850	6310	9920	8160	5230	6880	5810	6870
27	27800	21300	10400	5600	5820	6250	9950	8120	5260	6430	7220	14200
28	24600	21000	10400	5730	5800	6240	9980	8080	5250	6140	9140	31800
29	23000	—	10000	6530	5710	6250	9970	8010	5100	6030	9410	38500
30	21800	—	9620	8260	5860	6300	9980	7870	4970	5930	10500	36900
31	20500	—	9490	—	5860	—	9950	7780	—	5670	—	32800
Mean	21220	28250	14280	6330	6985	6111	8443	8936	5958	5347	6465	14870
Runoff in Ac.Ft.	1305000	1569000	877900	376700	429500	363600	519200	549500	354500	328800	384700	914300
	Water Year Total 8692100								Calendar Year Total 7972700			

Station is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. Station is at the Colusa Bridge below Colusa Weir and is at Mile 89.4 above Sacramento. Period of record 1921 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 18

FLOW OF SACRAMENTO RIVER BELOW WILKINS SLOUGH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15500	18600	19600	10000	7820	4850	4770	8500	7160	5130	6030	10700
2	14300	17000	19400	9000	7410	4590	4820	8550	7140	5180	5740	16200
3	14300	16800	19000	8120	6860	4650	4790	8230	7020	5380	5630	21400
4	13900	16500	18600	7680	6900	4730	4850	7920	7050	5660	5790	21300
5	13200	18500	17700	7370	8530	4610	5180	8010	7030	5700	5790	21700
6	13100	21500	18100	7160	10400	4630	5430	8110	7200	5810	5720	21500
7	12700	21800	18500	6910	10300	4740	5560	8100	6950	5840	5570	20600
8	12200	21600	19000	6740	9600	4800	5660	8060	6790	5690	5360	16600
9	11900	21600	18700	6580	8950	4820	5710	8040	6770	5330	5270	13500
10	11800	21500	17800	6320	8220	5040	5620	8060	6540	5120	5500	11300
11	13100	21400	17800	6140	7740	5200	5570	7980	6480	5040	5970	9750
12	18000	21600	16200	6100	7560	5240	5850	8040	6480	5090	6040	8670
13	20000	21900	14800	6020	7880	5250	6450	8030	6280	5100	5980	8380
14	18400	22000	14200	5820	7510	5210	7020	7920	6220	5070	6480	8250
15	16000	22000	13700	5640	6960	5080	7340	7920	6110	4990	6250	7980
16	15100	21900	13400	5690	6450	4950	7520	7910	5940	4940	5810	7700
17	16500	21900	13400	5600	5850	4890	7500	7680	5760	4880	5490	7440
18	17400	21900	13300	5410	5380	4900	7530	7620	5590	4900	5320	7140
19	20200	21900	13000	5200	5320	4840	7540	7590	5530	4940	5220	7040
20	20400	21900	12800	4620	5490	4750	7580	7400	5460	4940	5400	7190
21	19800	21800	12500	4220	5690	4720	7910	7270	5430	4970	7310	7620
22	20200	21600	12400	4320	5680	4770	8120	7330	5370	4990	9650	7380
23	21800	21400	12200	4590	5640	4880	8240	7320	5320	4970	10100	7220
24	21900	21000	12000	4660	5520	4900	8280	7380	5330	5040	7920	7220
25	21500	20600	11200	4560	5430	5000	8260	7260	5360	5510	6640	7320
26	21100	20200	10900	4500	5220	4960	8340	7260	5430	6750	6150	7640
27	20800	20000	11100	4380	5200	4850	8440	7280	5440	7030	6380	9970
28	20300	19800	11100	4640	5110	4730	8450	7340	5440	6750	8610	20300
29	20000	—	10800	5410	4960	4710	8490	7450	5360	6500	9090	22700
30	19700	—	10400	7300	5010	4780	8460	7280	5150	6350	10500	23000
31	19300	—	10200	—	5060	—	8450	7280	—	6230	—	22600
Mean	17240	20720	14640	6023	6763	4869	6895	7746	6106	5478	6557	12820
Runoff in Ac.Ft.	1060000	1151000	900100	358400	415800	289700	423900	476300	363400	336800	390200	788100
	Water Year Total 7659900								Calendar Year Total 6953700			

Station is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. Station is located at Mile 62.9 above Sacramento, 0.3 of a mile below Wilkins Slough pumping plant of Reclamation District 108, and 1.3 miles below Tisdale Weir. Period of record 1931 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 19

FLOW OF SACRAMENTO RIVER AT KNIGHTS LANDING - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16100	20400	21200	10700	8860	5590	5420	9100	8370	5720	6560	11200
2	14800	19200	21400	10100	8580	5210	5340	9220	8610	5820	6290	14300
3	14400	18400	21100	9180	7990	5110	5380	9020	8410	5820	6150	22200
4	14400	17700	20800	8680	7330	5150	5480	8490	8430	6080	6230	21700
5	13700	18300	19100	8400	8080	5150	5590	8750	8570	6120	6250	21900
6	13600	21500	18900	7990	10700	5120	5910	8720	8760	6170	6200	22300
7	13400	22600	19600	7720	11400	5250	6110	8770	8700	6180	6010	21100
8	13100	22400	19400	7630	11000	5400	6250	8690	8510	6150	5890	17800
9	12700	22100	19700	7580	10200	5440	6260	8690	8690	5740	5720	14800
10	12400	22100	18300	7160	9230	5750	6260	8690	8450	5560	5780	13100
11	12500	22200	18500	6850	8360	5940	6180	8660	8150	5410	6230	12400
12	17400	22100	16800	6780	7730	6000	6330	8830	7990	5510	6400	11300
13	21900	22500	15400	6520	8360	6050	6330	8730	7720	5560	6070	10600
14	20700	22600	14600	6160	8360	6030	7330	8630	7430	5510	6570	9890
15	17900	22600	13900	5770	7960	5930	7690	8600	7330	5510	6750	9340
16	15800	22600	13700	5950	7440	5710	7930	8720	7210	5490	6260	8920
17	17400	22800	13700	5880	6900	5560	7390	8490	6940	5470	5990	8680
18	18000	22600	13700	5700	6250	5520	7900	8340	6640	5510	5710	8200
19	20300	22600	13300	5440	6040	5520	7960	8350	6640	5510	5660	7830
20	21300	22500	13000	4840	6780	5450	7930	8160	6540	5560	5740	7670
21	20900	22700	12900	4320	6650	5370	8140	7940	6440	5540	6640	8240
22	20700	22500	12700	4330	6670	5380	8600	8040	6370	5650	9510	8020
23	22300	22200	12600	4460	6690	5540	8630	8060	6310	5620	10700	7720
24	23000	22100	12600	4760	6500	5670	8800	8160	6280	5620	9110	7670
25	22600	21800	11800	4650	6390	5650	8810	8110	6290	5960	7590	7670
26	22200	21400	11500	4720	6100	5590	8830	8230	6190	7230	6850	8010
27	21800	21600	11500	4700	5850	5490	8940	8240	6140	8200	6970	8700
28	21600	21700	11700	4840	5810	5350	8970	8300	6110	7690	9040	19400
29	20900	—	11400	5680	5630	5230	9090	8540	5980	7240	9860	22600
30	20600	—	11000	7610	5560	5320	9100	8540	5810	6950	10700	22600
31	20400	—	11000	—	5680	—	9100	8430	—	6780	—	22500
Mean	18030	21640	15330	6503	7583	5516	7386	8524	7334	6028	6981	13500
Runoff in Ac.Ft.	1108000	1202000	945700	387000	466300	328200	454200	524100	436400	370700	415400	829800
	Water Year Total 8102700								Calendar Year Total 7467800			

Station is maintained jointly by the Division of Water Resources and 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. Period of record 1921 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 20

FLOW OF SACRAMENTO RIVER AT VERONA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	31900	47500	40500	24400	18900	11500	6400	9800	9730	8060	10000	19400
2	29800	43900	38700	23400	17900	10800	6300	9900	9950	7740	9730	33500
3	28600	40700	36900	22200	16900	9790	6160	9700	9890	8530	9480	43600
4	26500	38300	35200	21200	18500	9330	6080	9200	9880	9420	9550	50000
5	27500	41400	34800	20800	24900	8920	6200	9400	10100	9400	9350	53100
6	26400	51100	36200	20900	26200	8530	6370	9400	10600	8920	8720	53900
7	25700	56100	38000	20900	26200	8180	6490	9500	11000	9340	8910	51600
8	24400	56400	40500	20700	25200	8230	6700	9400	10900	9580	8840	46300
9	23600	56300	40400	20300	24000	8300	6870	9400	11100	8230	8720	38500
10	23900	56000	39600	20200	23100	8450	6810	9420	10800	8140	8650	31500
11	27800	55700	38400	21200	22900	8450	6700	9450	10200	7940	9130	27100
12	35000	56400	36000	21600	24700	8530	6640	9660	10400	8010	10100	24000
13	37900	57200	33200	21200	24200	8500	6940	9640	10300	8240	11300	21300
14	37100	57300	31400	21200	22300	8280	7580	9480	10300	8260	12600	18900
15	33700	57100	30400	20400	20100	7910	8070	9470	10200	8210	11900	17400
16	32700	56800	29900	19800	18700	7620	8300	9590	10100	7860	11000	16200
17	33800	56200	29800	19500	18200	7300	8300	9470	9700	8020	10300	14700
18	36800	55800	29600	18900	18100	7200	8530	9210	9330	8010	9820	13900
19	48000	55400	29100	18000	18300	7000	8650	9160	9330	7990	9660	14000
20	53800	55100	28400	17000	13800	7100	8750	9080	9250	8070	9980	14600
21	52800	54700	28200	16000	18300	7110	9000	8860	9470	7960	13700	14100
22	54400	54200	23100	15600	17800	7100	9400	8840	9300	7690	17600	13700
23	53500	53400	28000	14900	17600	7200	9400	8860	8940	7220	19500	13100
24	55900	52300	27600	14600	17100	7200	9500	8910	8460	7830	15300	12800
25	59100	50500	27000	14400	16300	7100	9500	9130	8330	9450	13000	13200
26	58100	48000	26200	14200	15800	6800	9500	9320	8800	12500	11800	14300
27	56800	45400	25900	13300	15600	6700	9600	9450	9030	12800	11200	21400
28	55300	42600	26000	13000	15300	6600	9600	9660	8990	12100	13200	35600
29	53800	—	25800	15900	14400	6400	9700	9860	8740	11200	15500	49000
30	52400	—	25400	18700	13700	6400	9800	9860	8310	10500	17700	58700
31	50300	—	25000	—	12900	—	9800	9790	—	10400	—	59700
Mean	40430	51850	31940	18810	19450	7951	7938	9415	9716	8907	11540	29330
Runoff in Ac.Ft.	2486000	2880000	1964000	1119000	1196000	473100	491200	578900	578100	547700	686800	1803000
	Water Year Total 16885600								Calendar Year Total 14803800			

Station is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. It is located at Mile 19.6 above Sacramento at the mouth of "Cross Canal", main drain between Reclamation Districts 1000 and 1001, and below the mouth of the Feather River. Flows are measured below the mouth of Cross Canal. Drainage area is 21400 square miles. Period of record 1926 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 21

FLOW OF SACRAMENTO RIVER AT SACRAMENTO - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	38500	57800	47200	32200	25800	16400	7880	10100	10000	8630	11000	27000
2	36100	53600	44900	30200	24600	14900	7900	10300	10100	8320	10600	45100
3	35000	49600	42500	29100	23500	13700	7630	10000	10400	8520	10200	50900
4	35500	46400	40700	28000	28400	13200	7250	9630	10400	9360	10100	58400
5	35100	51500	42600	27700	34700	12800	7380	9470	10600	9700	10000	63300
6	33300	63900	45700	28900	35600	12300	7060	9440	10700	9200	9220	63300
7	31200	68500	49600	29300	35800	11700	6990	9400	11000	8920	9490	60100
8	29500	69500	52300	29100	34400	11400	7000	9380	11000	8700	9550	54300
9	28400	69100	50600	29000	33100	11200	7170	9300	11100	8360	9580	45800
10	29200	68200	49200	29400	32700	11100	7160	9500	11100	8530	9540	37500
11	35600	68200	46700	31400	33600	11000	7250	9670	10800	8250	9750	32300
12	43700	70900	43700	31800	35500	10900	6760	9740	10700	8200	11000	28700
13	45500	71100	40600	31400	33800	10900	6960	9850	10700	8550	13500	25900
14	44300	69700	38600	31200	31000	11000	7630	9690	10500	8560	13100	23200
15	41100	68800	37700	31100	27600	11100	8250	9760	10400	8590	13900	21200
16	39400	67700	37200	29900	26100	10900	8720	10100	10400	8260	13500	19900
17	40300	66600	36900	29200	25700	10800	8750	9970	10100	8310	12100	18200
18	46300	65900	36500	27900	26400	10700	8880	9690	9810	8210	11100	17300
19	67000	65000	35800	26100	26800	10700	9150	9690	9680	8100	11400	17300
20	68200	64100	35200	24700	27300	10500	9360	9550	9620	7970	12600	18200
21	65600	63700	35300	23400	27000	10400	9290	9280	9550	7550	17000	17500
22	76400	63000	35500	22800	26400	9810	9570	9290	9420	7560	20800	16900
23	88600	62000	35400	22200	25700	9400	9830	8920	9110	7320	20600	16300
24	82200	60500	34800	21500	25000	9370	9660	8780	8570	8170	19000	15900
25	77200	58400	34500	21000	24400	9250	9360	8900	8500	10800	16100	16300
26	74000	55700	34200	20600	23700	8660	9240	9160	8920	13000	14300	18000
27	71500	53000	33400	19200	23700	7920	9420	9640	9650	13700	13400	26100
28	69100	50000	33300	18600	23500	7880	9600	10300	9820	12900	15700	39200
29	66600	—	33400	23800	21700	7720	9770	10100	9320	12100	19700	63300
30	64400	—	33300	26100	19800	7680	9720	9980	9510	11300	21000	74400
31	61300	—	32600	—	18200	—	9830	9970	—	11100	—	74800
Mean	51620	62230	39670	26890	27790	10840	8401	9631	10050	9250	13360	35700
Runoff in Ac.Ft.	3174000	3456000	2440000	1600000	1709000	645200	516500	592200	598000	568700	795000	2195000
	Water Year Total 21677300								Calendar Year Total 18289600			

Division of Water Resources station located at Mile 0.4 above M Street Bridge. 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 via East Borrow Pit of Yolo By-Pass. (See Tables 76 and 83) Daily mean flows are computed from newly derived curves which take into account tidal fluctuations during low stages. Period of record 1904, 1905, 1921, 1924 to date.

TABLE 22

FLOW OF CLEAR CREEK NEAR IGO - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	329	624	516	329	224	168	64	28	27	94	46	4440
2	325	612	498	316	221	162	62	27	26	96	45	2030
3	329	700	469	308	586	159	64	25	24	61	44	2710
4	329	2550	522	312	1600	153	66	26	23	45	44	2640
5	316	3530	528	312	1330	147	68	26	22	40	44	1720
6	299	2330	729	308	950	147	64	26	22	38	43	1050
7	286	1870	638	308	768	144	64	25	22	35	43	740
8	282	1690	681	299	650	142	56	25	20	34	44	572
9	290	1480	775	290	560	136	53	24	20	33	44	469
10	553	1500	638	286	534	131	49	23	20	33	66	405
11	915	2460	572	278	486	128	48	22	18	39	160	366
12	754	2110	528	270	442	125	46	22	18	39	197	357
13	598	1690	510	262	415	120	48	22	18	39	118	352
14	522	1440	510	258	380	113	46	22	17	39	98	329
15	546	1280	528	258	352	110	45	22	17	38	84	308
16	653	1150	534	246	329	108	44	21	17	38	76	286
17	1520	1050	516	262	312	103	41	20	18	38	69	266
18	1590	958	480	246	295	96	39	20	18	38	64	312
19	1210	873	452	235	282	92	38	20	19	39	207	295
20	936	852	447	224	270	88	37	22	19	39	664	258
21	1390	796	464	214	258	90	37	22	19	38	398	239
22	1370	747	458	207	242	92	35	22	17	39	207	232
23	1290	705	436	203	235	90	34	23	17	48	150	235
24	1340	657	410	203	228	86	33	27	16	86	125	250
25	1290	624	405	200	217	82	33	28	17	86	150	250
26	1210	605	395	197	207	78	32	26	17	62	566	2090
27	1130	572	380	203	197	76	32	22	18	52	366	5160
28	1010	540	366	398	190	71	31	22	19	49	653	3550
29	887	—	361	278	187	69	31	22	21	46	624	2060
30	782	—	357	235	180	69	29	25	28	46	2220	1510
31	698	—	343	—	174	—	29	27	—	46	—	1150
Mean	806	1286	498	265	429	112	45.1	23.7	19.8	48.2	255	1182
Runoff in Ac.Ft.	49550	71400	30640	15760	26380	6690	2770	1460	1180	2960	15190	72660
	Water Year Total 314480								Calendar Year Total 296640			

U. S. Geological Survey and U. S. Army Corps of Engineers cooperative station located 9 miles upstream from the mouth. Clear Creek is a west-side tributary to the Sacramento River at Mile 237.1R. Drainage area is 231 square miles. Period of record 1940 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 23

FLOW COW CREEK NEAR MILLVILLE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	385	660	690	433	425	166	55	19	33	58	105	5860
2	373	645	630	433	405	157	52	19	33	90	101	2410
3	437	1610	585	417	646	147	52	17	25	135	100	3990
4	1390	9290	2430	417	1000	137	51	20	28	92	101	3330
5	920	7510	2250	421	842	137	51	28	25	79	97	1830
6	650	2720	1950	425	966	135	42	30	23	74	100	950
7	555	2040	1720	433	762	141	51	28	25	73	100	650
8	535	1710	1510	441	625	132	56	24	31	68	100	512
9	675	1450	2760	445	540	125	56	21	29	64	100	421
10	3980	1520	1850	476	522	119	50	18	30	65	126	365
11	4630	3180	1030	504	595	119	47	21	30	84	302	337
12	1920	2560	900	494	517	114	50	26	26	93	818	320
13	1140	1690	923	494	481	101	45	22	31	85	320	302
14	900	1330	796	512	441	95	40	16	28	79	203	278
15	1590	1200	757	508	401	95	38	18	29	79	181	256
16	1740	1060	730	504	385	95	36	17	27	81	155	244
17	5480	1070	670	508	369	92	36	20	35	81	139	238
18	3630	1040	625	499	354	90	34	26	29	81	134	318
19	2100	872	605	472	340	81	31	31	26	79	183	787
20	1380	960	585	441	323	74	33	24	27	79	1420	405
21	2420	1340	580	417	302	77	35	22	33	76	3930	330
22	6060	994	570	397	285	79	33	24	34	68	740	298
23	3400	884	530	381	278	76	28	30	35	77	369	295
24	2250	768	512	377	265	74	29	33	35	285	265	381
25	1690	725	512	369	244	74	27	32	32	340	227	334
26	1370	768	504	358	232	73	21	30	31	155	1510	3590
27	1170	746	481	362	221	63	28	27	27	119	1170	32400
28	1030	762	476	834	205	60	27	21	23	105	2460	9660
29	906	—	472	635	200	55	32	25	34	105	1220	6500
30	757	—	463	481	188	57	28	33	43	108	1510	4630
31	710	—	441	—	177	—	26	32	—	107	—	2320
Mean	1812	1827	950	463	437	101	39.4	24.3	29.9	102	610	2727
Runoff in Ac.Ft.	111400	101500	58390	27550	26850	6030	2420	1500	1780	6280	36270	167700
	Water Year Total 526450								Calendar Year Total 547670			

U. S. Geological Survey station located approximately five miles southwest of Millville. Cow Creek is an eastside tributary to the Sacramento River at Mile 228.8. Period of record October 1949 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 24

FLOW OF COTTONWOOD CREEK NEAR COTTONWOOD - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	600	1360	874	430	373	276	96	45	56	90	87	6010
2	585	1300	825	460	362	264	94	49	56	127	84	5640
3	585	1400	776	464	525	251	90	50	64	98	84	6470
4	590	7000	860	440	1430	244	94	46	59	122	85	4970
5	575	8000	1030	436	1100	239	97	48	59	139	82	3820
6	555	5000	1030	436	846	230	95	56	60	145	82	2300
7	540	3500	1150	436	734	222	94	58	64	127	83	1680
8	525	3000	923	432	648	216	92	60	61	97	80	1360
9	525	2500	1100	424	612	212	100	62	64	88	80	1130
10	1040	2500	902	420	590	206	95	64	67	76	84	954
11	1350	4500	811	420	575	196	78	54	62	73	110	736
12	1320	4000	769	409	545	198	74	50	53	69	169	722
13	909	3300	748	406	525	190	67	47	56	66	183	736
14	762	2800	748	413	492	181	68	45	57	70	156	667
15	755	2500	755	413	464	176	66	46	54	69	128	602
16	853	2200	783	406	424	174	68	47	52	78	112	556
17	1690	2000	769	406	416	169	61	53	50	109	102	520
18	2820	1800	727	406	402	160	62	46	45	96	97	520
19	2530	1600	702	391	398	152	66	46	45	89	112	563
20	1840	1500	684	377	388	150	65	50	42	85	196	478
21	2740	1400	684	366	377	150	65	47	46	104	232	430
22	14000	1300	672	348	366	148	67	52	50	104	196	402
23	9990	1200	648	345	362	132	69	56	52	90	163	386
24	7950	1100	624	342	355	121	70	63	58	131	139	424
25	5360	1000	612	348	348	121	64	67	60	169	129	472
26	3660	970	600	342	342	131	63	68	63	136	427	1260
27	3000	951	585	348	332	121	59	67	66	112	480	29300
28	2520	909	575	452	319	104	58	61	63	107	535	15300
29	2100	—	565	484	313	100	56	58	64	115	734	6120
30	1750	—	520	402	300	94	48	58	64	103	1170	5020
31	1540	—	492	—	284	—	45	58	—	97	—	3110
Mean	2437	2521	759	408	502	178	73.7	54.1	57.2	103	213	3328
Runoff in Ac.Ft.	149900	140000	46700	24300	30840	10570	4530	3330	3400	6310	12700	204600
	Water Year Total 621980								Calendar Year Total 637180			

U. S. Geological Survey and U. S. Army Corps of Engineers cooperative station located 2 miles upstream from the mouth. Cottonwood Creek is a west-side tributary to Sacramento River at Mile 222.2R. Drainage area is 945 square miles. Period of record 1940 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 25

FLOW OF BATTLE CREEK NEAR COTTONWOOD - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	379	473	481	410	420	359	260	196	184	199	232	2350
2	383	469	477	410	420	346	263	189	178	201	222	1050
3	438	578	457	420	453	336	254	192	184	206	219	890
4	561	2030	465	417	510	346	254	187	196	194	227	820
5	442	1580	514	424	465	342	254	187	184	194	222	616
6	403	1030	465	413	473	339	246	196	184	206	227	450
7	376	912	442	424	442	326	232	194	182	204	224	389
8	389	876	424	431	427	311	229	189	180	214	238	355
9	393	796	461	438	417	302	232	192	178	219	224	330
10	816	768	438	465	420	299	227	192	187	222	235	326
11	1250	1250	413	481	554	299	224	189	182	227	284	320
12	650	1290	427	485	518	296	219	182	182	227	359	320
13	493	906	427	481	465	296	219	196	180	222	317	317
14	446	807	431	497	438	302	211	189	182	214	263	311
15	858	730	446	493	417	305	209	184	182	219	260	296
16	612	695	442	497	420	314	211	187	175	224	246	287
17	558	660	435	501	438	314	211	182	187	219	235	299
18	779	640	424	493	450	305	206	178	180	222	227	293
19	635	603	427	477	450	302	214	182	178	222	281	320
20	576	612	442	469	450	299	209	194	182	222	789	302
21	2390	758	438	457	442	296	209	187	182	214	506	284
22	3120	640	442	442	442	293	199	194	182	227	302	281
23	1090	655	435	435	446	284	206	192	175	224	272	267
24	846	562	431	420	424	284	204	187	189	244	249	311
25	736	544	435	417	413	278	199	182	180	401	243	305
26	660	531	438	413	431	278	199	180	180	290	479	946
27	612	510	431	406	450	269	196	187	182	260	427	6270
28	562	501	431	497	450	269	196	182	180	235	558	3160
29	554	—	427	497	424	269	194	182	182	252	442	1590
30	501	—	429	431	400	269	201	184	175	238	493	1030
31	477	—	417	—	379	—	199	187	—	243	—	715
Mean	741	800	442	451	443	304	219	188	182	236	317	833
Runoff in Ac.Ft.	45590	44440	27160	26860	27270	18100	13460	11550	10820	14490	18850	51210
	Water Year Total 321320								Calendar Year Total 309800			

U. S. Geological Survey and U. S. Army Corps of Engineers cooperative station located 3 miles upstream from the mouth. Battle Creek is an east-side tributary to Sacramento River opposite Mile 221.5L. Drainage area is 362 square miles. Period of record 1940 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 26

FLOW OF PAYNES CREEK NEAR RED BLUFF - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30	83	76	30	8.7	3.0	0	0.4		0	6.4	948
2	29	76	69	30	7.4	3.2	0	.4		0	6.4	524
3	31	78	62	30	14	6.8	0	.2		0	6.4	584
4	64	499	61	29	41	6.0	0	0		0	6.4	538
5	52	452	61	30	34	2.8	0	0		0	6.0	448
6	42	279	60	28	22	3.0	0	0		0	6.0	210
7	39	210	56	24	18	2.8	0	0		0	6.0	121
8	37	167	54	24	16	2.4	0	0		0	6.0	83
9	37	142	54	24	12	2.3	0	0		0	6.0	62
10	435	132	52	20	9.4	2.2	0	0		0	8.7	52
11	820	452	50	16	12	2.0	0	0		0	10	45
12	365	641	48	18	14	2.0	0	0	N	0	20	37
13	207	309	46	14	10	1.9	0	0	0	0	18	34
14	149	226	45	6.8	9.4	1.9	0	0		0	11	31
15	413	179	44	8.0	8.7	1.6	0	0		0	9.4	28
16	403	149	41	8.0	6.8	.5	0	0		0	8.7	27
17	337	137	37	7.4	6.8	.3	0	0	F	0	8.7	26
18	361	139	36	6.8	6.4	.2	0	0	L	0	8.7	24
19	294	113	36	6.4	6.0	.2	0	0	0	0	30	27
20	213	104	34	6.4	6.0	.2	0	0	W	0	515	28
21	1140	160	34	6.4	5.6	.2	0.7	0		0.2	217	24
22	1500	147	33	6.8	5.2	.2	.2	0		.2	71	22
23	552	191	33	6.8	5.2	.1	.1	0		.4	37	22
24	369	130	33	6.0	4.9	.1	.2	0		81	27	22
25	279	112	33	5.6	4.6	.1	.3	0		65	26	24
26	213	98	31	5.6	4.6	.1	.2	0		11	208	471
27	185	90	31	6.0	4.3	0	.2	0		8.0	139	2740
28	142	81	30	12	4.3	0	.4	0		6.8	262	1280
29	126	—	30	10	4.0	0	.4	0		6.8	117	621
30	106	—	30	8.0	4.3	0	.4	0		6.8	132	385
31	94	—	30	—	4.0	—	.4	0	—	6.4	—	247
Mean	292	199	44.2	14.7	10.3	1.54	.11	.03	0	6.21	64.7	314
Runoff in Ac.Ft.	17980	11060	2720	873	634	91	6.9	2.0	0	382	3850	19310
	Water Year Total 55818								Calendar Year Total 56909			

U. S. Geological Survey station located approximately one mile above mouth. Paynes Creek is an east-side tributary to the Sacramento River at Mile 201.5. Period of record October 1949 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 27

FLOW OF REDBANK CREEK AT FOOTHILLS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10				1.9							217
2	10				1.9							55
3	9.7				13							388
4	9.0				123							222
5	7.5				48							86
6	7.0			6.5	25							39
7	6.0			6.0	16							23
8	6.0	(a)77	(a)20	5.5	14							17
9	5.5			4.5	9.7							11
10	22			4.0	7.0							7.0
11	55			3.4	6.0							5.0
12	33			3.1	5.0	N	N	N	N	N	N	3.7
13	24			2.8	3.7	0	0	0	0	0	0	3.1
14	20			2.8	3.1							2.5
15	20			2.8	2.5							0
16	20			2.2	1.9							0
17	60			2.2	1.9	F	F	F	F	F	F	0
18	143			2.2	2.2	L	L	L	L	L	L	0
19	101			2.2	1.9	0	0	0	0	0	0	0
20	77			1.9	1.9	W	W	W	W	W	W	0
21	*1610			1.9	1.6							0
22	*236			1.9	1.6							0
23	*222			1.6	1.6							0
24	(a)213			1.6	1.6							0
25				1.6	1.3							0
26				1.6	1.3							0
27				1.9	0							1800
28				1.9	0							NR
29		—	(a)7.8	3.1	0							NR
30		—		1.9	0							NR
31		—		—	0	—			—		—	97
Mean					9.6	0	0	0	0	0	0	
Runoff in Ac.Ft.					592	0	0	0	0	0	0	
	Water Year Total								Calendar Year Total			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located approximately 15 miles above the mouth. Redbank Creek is a west-side tributary to the Sacramento River at Mile 191.2R. Period of record 1948 to date. Records for 1951 computed by Division of Water Resources.

* Estimated.

NR No record

(a) Recorder was inoperative during the period January 24 to April 5. Figures represent results of current meter measurements made on the days indicated.

TABLE 28

FLOW OF ANTELOPE CREEK NEAR RED BLUFF - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	69	121	124	88	91	75	38	31	33	38	41	2060
2	66	114	114	86	88	70	38	31	32	43	41	595
3	67	121	110	86	110	69	37	31	32	41	41	638
4	85	432	112	88	257	68	37	31	32	39	41	660
5	75	770	119	93	182	66	37	31	32	37	41	550
6	69	500	114	95	157	65	37	31	32	37	42	370
7	66	381	114	99	143	63	36	31	32	36	42	250
8	65	324	112	106	131	62	36	32	32	36	43	150
9	65	280	126	110	124	60	35	31	32	36	43	100
10	191	264	121	119	121	57	35	31	32	36	49	75
11	480	819	114	128	146	56	35	31	32	39	68	73
12	304	742	110	131	149	54	35	31	33	39	70	69
13	177	455	110	136	133	52	35	31	33	39	68	65
14	134	352	112	141	126	49	35	31	33	39	55	61
15	504	293	116	141	116	47	35	31	33	39	52	58
16	418	251	119	141	114	46	34	31	33	39	49	56
17	395	225	116	138	114	46	34	30	34	39	48	55
18	488	222	112	131	114	44	33	31	34	38	47	56
19	354	191	108	121	112	42	33	31	34	37	137	94
20	260	177	106	116	110	41	32	32	34	37	653	69
21	1380	213	106	112	106	41	32	34	34	37	198	61
22	1810	219	106	106	101	41	32	34	33	37	99	58
23	612	203	104	101	99	41	32	34	33	40	66	58
24	414	177	99	97	97	41	32	33	34	97	52	66
25	317	162	99	95	93	40	32	32	34	96	47	65
26	257	149	99	91	90	39	32	31	34	49	84	1450
27	219	143	95	90	88	39	32	31	34	44	110	4260
28	191	131	93	141	84	39	31	31	34	42	301	1710
29	174	—	91	116	81	39	31	32	35	36	162	723
30	152	—	93	97	76	39	31	32	35	40	239	580
31	133	—	90	—	72	—	31	33	—	40	—	450
Mean	322	301	109	111	117	51.0	34.0	31.5	33.1	42.6	101	503
Runoff in Ac.Ft.	19820	16720	6670	6620	7190	3040	2090	1940	1970	2620	6010	30910
	Water Year Total 99160								Calendar Year Total 105600			

U. S. Geological Survey and U. S. Army Corps of Engineers cooperative station located 6 miles upstream from the Mouth. Antelope Creek is an east-side tributary to the Sacramento River at Mile 180.7L. Drainage area is 124 square miles. Period of record 1940 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 29

FLOW OF ANTELOPE NEAR MOUTH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	17	22	24	12	20	0	.1			0	0	575
2	15	52	22	11	19	0	.1			0	0	437
3	14	54	19	11	19	0	.1			0	0	296
4	20	193	19	11	73	0	.1			.5	0	376
5	22	1190	21	10	52	0	.2			.3	0	262
6	18	309	20	10	35	0	NR			0	0	115
7	16	222	24	10	28	0	NR			0	0	53
8	16	240	20	10	21	0	NR			0	0	41
9	14	181	20	11	16	.1	NR			0	0	28
10	122	148	20	12	12	0	NR			0	0	20
11	354	469	18	12	10	.1	NR			0	0	15
12	175	961	17	14	11	.2	NR	N	N	0	0	12
13	72	705	16	16	10	0	0	0	0	0	0	8.9
14	49	671	16	17	5.5	0	0			0	0	7.0
15	138	607	16	18	3.0	0	0			0	0	6.3
16	225	724	16	18	1.6	0	0			0	0	0
17	171	691	15	20	.6	0	0	F	F	0	0	0
18	184	691	14	18	.2	0	0	L	L	0	0	0
19	122	626	13	18	0	0	0	0	0	0	0	0
20	138	330	13	18	0	0	0	W	W	0	129	0
21	525	222	13	17	0	0	0			0	53	0
22	1480	128	13	17	0	0	0			0	24	0
23	419	90	12	16	0	0	0			0	8.4	0
24	192	54	12	16	0	0	0			13	3.4	0
25	114	41	11	14	0	0	0			28	2.8	0
26	77	32	12	13	0	0	0			1.0	23	100
27	56	28	12	13	0	0	0			0	41	2810
28	45	24	11	13	0	0	0			0	89	3470
29	37	—	10	24	0	0	0			0	62	542
30	30	—	12	21	0	.1	0			0	71	233
31	25	—	12	—	0	—	0		—	0	—	108
Mean	160	347	15.9	14.9	10.9	0		0	0	1.4	16.9	307
Runoff in Ac.Ft.	9822	19250	978	885	668	0		0	0	55	1005	18890
	Water Year Total								Calendar Year Total			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located approximately 2.3 miles above the mouth. Antelope Creek is an east-side tributary to the Sacramento River at Mile 180.7L. Period of record 1948 to date. Records for 1951 computed by Division of Water Resources.
NR No record.

TABLE 30

FLOW OF ELDER CREEK NEAR GERBER - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	38	164	85	56	29	19	0				0	657
2	37	150	78	53	29	17	0				0	411
3	37	158	73	51	70	16	0.1				0	910
4	35	630	83	49	345	15	0				0	420
5	32	1360	98	49	222	14	0				0	272
6	31	536	88	53	141	13	0				0	145
7	29	414	95	56	116	13	0				0	99
8	29	361	83	58	100	12	0				0	77
9	28	305	90	58	90	11	0				0	64
10	60	284	78	60	88	11	0				0	55
11	80	316	73	60	85	9.8	0				0	52
12	66	425	71	58	78	8.6	0	N	N	N	0	52
13	45	274	68	56	68	7.6	0	O	O	O	0	57
14	39	230	76	56	62	5.8	0				0	53
15	41	210	80	53	56	4.0	0				0	48
16	45	185	90	49	49	3.2	0				0	46
17	113	167	85	47	45	2.6	0	F	F	F	0	44
18	265	153	78	44	44	2.3	0	L	L	L	0	44
19	170	138	73	41	44	2.0	0	O	O	O	0	46
20	116	130	73	38	39	1.8	0	W	W	W	0	40
21	1790	127	73	35	34	2.0	0				0	37
22	1750	119	73	32	32	1.2	0				0	34
23	610	116	68	31	31	1.8	0				0	34
24	456	106	66	31	29	1.2	0				0	34
25	392	100	66	31	27	1.2	0				0	37
26	344	93	66	29	25	0.5	0				13	271
27	316	95	62	29	24	.3	0				38	4130
28	270	88	60	42	22	.1	0				18	1200
29	236	—	60	45	21	0	0				27	452
30	204	—	60	34	19	0	0				50	358
31	185	—	58	—	18	—	0		—		—	239
Mean	254	266	75.2	46.1	67.2	6.57	0.003	0	0	0	4.87	336
Runoff in Ac.Ft.	15650	14750	4620	2750	4130	391	.2	0	0	0	290	20660
	Water Year Total 59461								Calendar Year Total 63241			

U. S. Geological Survey station located 1.0 mile west of Gerber and 3.5 miles above the mouth. Elder Creek is a west-side tributary to the Sacramento River at Mile 178.5. Period of record October 1949 to date. Records for 1951 computed by U. S. Geological Survey.
(Prior records are available at a site approximately 20 miles upstream).

TABLE 31

FLOW OF MILL CREEK NEAR LOS MOLINOS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	217	286	286	296	371	334	191	119	110	115	112	3040
2	214	274	270	296	356	316	188	119	108	177	110	1060
3	220	286	258	313	405	313	180	117	108	150	110	842
4	248	805	261	330	597	310	174	117	106	115	110	801
5	229	1500	270	367	465	316	171	117	104	108	110	582
6	214	902	280	394	465	316	169	115	104	106	108	352
7	205	712	283	401	433	303	160	115	104	104	108	263
8	202	650	274	413	409	296	158	115	104	102	110	223
9	202	577	345	449	409	286	152	115	102	102	110	196
10	303	541	299	517	417	286	152	110	102	102	121	178
11	473	1580	280	513	657	293	147	110	102	108	158	173
12	397	1150	274	505	505	293	147	110	100	106	217	170
13	296	766	280	521	433	299	147	110	102	104	185	164
14	267	617	306	553	386	306	147	110	102	102	177	156
15	569	537	327	541	375	320	145	108	100	102	166	148
16	445	469	345	541	397	330	142	108	100	102	145	146
17	433	429	327	533	441	323	140	110	102	102	133	140
18	687	413	310	489	465	306	137	110	100	102	130	140
19	525	371	306	473	461	290	135	110	100	102	322	145
20	409	356	313	465	453	280	133	121	100	102	789	140
21	1370	489	330	449	457	274	130	119	100	102	296	140
22	2120	485	334	429	449	261	130	125	100	100	208	135
23	928	413	323	421	457	251	128	121	98	104	169	140
24	672	367	316	417	417	238	125	117	98	254	150	170
25	557	341	327	397	433	235	125	115	93	205	145	160
26	489	330	323	397	485	229	123	112	98	137	177	1000
27	437	313	323	386	517	220	123	110	98	121	223	3000
28	397	303	320	533	509	214	121	110	98	117	387	1600
29	363	—	327	437	441	205	121	110	102	117	316	1000
30	323	—	320	378	401	199	121	110	106	115	575	700
31	303	—	303	—	356	—	121	110	—	115	—	550
Mean	475	581	305	438	446	281	145	114	102	119	206	569
Runoff in Ac.Ft.	29180	32260	18720	26090	27420	16740	8890	6990	6060	7340	12250	35020
	Water Year Total 248110								Calendar Year Total 226960			

U. S. Geological Survey and Division of Water Resources cooperative station located 5 miles upstream from the mouth. Mill Creek is an east-side tributary to the Sacramento River at Mile 178.0L. Drainage area 134 square miles. Period of record 1909 to 1913; 1928 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 32

FLOW OF NORTH FORK OF MILL CREEK NEAR MOUTH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.8	5.0	4.2	3.3	7.8	6.0	2.1	.4	*.8	3.8	1.0	194
2	3.7	4.6	3.8	2.9	7.0	4.0	2.2	.2	*.7	3.3	1.0	47
3	3.7	5.0	3.3	3.7	10	3.3	1.2	.3	*.7	2.6	.9	30
4	4.4	25	3.5	5.3	21	4.4	1.0	.2	*.6	2.1	.8	26
5	3.7	71	3.7	5.8	14	4.8	1.3	.7	*.6	1.2	.7	17
6	3.3	35	3.7	6.5	12	6.0	1.0	.9	*.5	.7	.7	6.5
7	3.3	24	4.2	7.8	12	4.6	1.1	.7	*.4	.6	.7	4.0
8	3.1	21	3.8	8.8	10	3.8	1.1	1.2	*.4	.5	.7	2.5
9	3.1	14	5.3	9.4	11	3.7	1.7	.5	*.4	.5	.9	1.7
10	5.8	13	4.4	11	12	2.9	2.5	.7	*.5	.7	.9	1.2
11	12	71	3.8	10	25	2.9	1.9	.6	*.6	.7	1.7	.9
12	9.7	57	3.7	10	17	2.5	2.0	.4	*.8	.7	2.5	.7
13	6.2	25	3.8	11	13	3.7	1.6	.4	*1.2	1.2	2.8	.7
14	5.0	16	4.4	12	10	4.0	1.1	.6	*1.4	1.2	2.2	.6
15	18	13	4.8	11	8.1	4.2	1.6	.8	*1.7	2.1	2.1	.4
16	11	9.7	5.3	12	7.8	4.0	1.6	.6	*2.1	1.2	1.6	.4
17	11	8.4	5.3	12	8.8	4.2	1.2	.2	*2.6	.7	1.3	.2
18	24	7.5	4.4	11	9.7	5.0	1.5	.2	*2.9	.7	1.2	.2
19	15	6.5	4.6	10	9.7	4.2	2.1	.2	*3.7	.7	6.6	.2
20	10	5.8	4.0	9.7	9.1	4.0	1.9	1.2	*3.5	.7	36	.2
21	74	10	4.0	9.7	8.8	3.5	1.5	1.4	*3.5	.6	7.0	.1
22	118	11	4.6	11	8.8	3.1	1.5	1.2	*3.5	.6	3.8	.1
23	35	7.8	4.0	10	9.4	2.9	1.5	1.4	*3.5	.7	2.4	.1
24	21	6.5	3.8	10	7.5	3.7	1.6	2.6	*3.3	3.3	2.0	0
25	15	5.8	4.0	7.2	8.1	4.0	1.0	2.2	*3.1	5.0	1.6	0
26	12	5.3	4.0	7.0	9.7	4.0	1.3	1.6	2.8	2.2	3.1	15
27	9.7	5.0	4.4	7.5	12	2.0	1.3	1.5	2.8	1.4	3.5	368
28	8.1	4.8	4.0	14	11	2.5	1.3	1.4	1.7	1.2	7.0	2920
29	7.0	—	4.2	11	8.8	1.5	.9	2.4	2.0	1.2	6.5	42
30	6.0	—	4.6	8.4	7.0	1.6	.8	1.5	2.5	1.2	16	19
31	5.3	—	4.0	—	7.5	—	.5	*.8	—	1.2	—	8.1
Mean	15.2	17.6	4.2	9.0	10.8	3.7	1.4	.9	1.8	1.4	4.0	120
Runoff in Ac.Ft.	934	979	257	534	662	220	89	58	109	88	236	7352
	Water Year Total 6257								Calendar Year Total 11518			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located approximately 0.5 mile above the mouth. This creek is an east-side tributary to the Sacramento River at Mile 179.3L. Period of record 1948 to date. Records for 1951 computed by Division of Water Resources.
* Estimated.

TABLE 33

FLOW OF MILL CREEK NEAR MOUTH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	213	262	253	210	245	190	50	NR	1.4	14	99	4230
2	207	242	234	213	248	177	47	NR	1.5	66	97	NR
3	213	245	218	229	326	170	43	NR	1.4	66	97	NR
4	242	701	221	242	599	181	39	NR	1.5	38	99	NR
5	224	1880	229	283	496	195	36	NR	2.1	33	99	NR
6	207	1060	237	307	471	197	36	NR	2.5	31	97	NR
7	200	800	248	313	439	177	31	1.0	2.5	28	94	NR
8	195	711	237	323	400	158	29	1.5	2.5	29	94	NR
9	195	604	310	347	388	141	26	1.2	1.5	30	92	NR
10	298	553	268	400	388	135	0	.9	1.5	31	104	NR
11	488	1550	245	400	579	133	0	.9	1.7	34	141	141
12	265	1420	237	384	514	126	0	.9	2.1	33	186	139
13	301	872	245	404	396	126	0	.9	1.8	31	158	133
14	262	681	274	446	340	128		1.0	2.9	30	146	124
15	544	553	301	439	292	145		1.2	3.0	29	133	115
16	484	471	323	435	295	165		1.1	2.7	31	116	112
17	458	419	304	423	326	168		1.4	3.4	34	105	107
18	758	396	283	374	347	150	N	1.5	4.2	35	99	105
19	579	347	280	350	350	133	0	1.7	4.4	35	205	NR
20	435	330	262	336	340	122		2.7	5.2	34	872	NR
21	1250	471	265	316	330	110		5.2	3.6	34	259	NR
22	2840	475	271	298	326	105		3.0	3.7	35	163	NR
23	1160	400	251	286	336	110		3.2	3.9	48	124	NR
24	818	340	242	283	301	102	R	2.5	3.9	213	110	NR
25	640	313	251	256	298	92	E	2.0	3.4	207	105	112
26	539	298	242	253	340	88	C	1.8	3.6	128	129	986
27	466	283	245	242	370	80	O	1.5	3.6	100	172	4870
28	404	268	237	367	367	68	R	1.1	4.2	96	301	2880
29	357	—	248	330	319	61	D	1.2	5.4	97	280	1260
30	304	—	245	262	262	56		1.2	6.7	100	462	742
31	280	—	224	—	216	—		1.4	—	99	—	NR
Mean	511	605	256	325	363	133			3.1	59.6	175	
Runoff in Ac.Ft.	31390	33610	15730	19340	22300	7912			182	3667	10390	
	Water Year Total								Calendar Year Total			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located approximately 0.8 mile above the mouth. Mill Creek is an east-side tributary to the Sacramento River at Mile 178.0L. Period of record 1948 to date. Records for 1951 computed by Division of Water Resources.
NR No record.

TABLE 34

FLOW OF THOMES CREEK AT PASKENTA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	*160	506	238	270	181	104	25	3.4	1.8	3.0	22	2760
2	*150	468	225	256	193	102	24	3.4	1.6	3.4	20	1160
3	*145	664	208	247	306	92	22	3.4	1.8	3.9	18	826
4	*140	4390	229	251	520	88	22	3.4	1.8	14	16	601
5	*145	3880	234	270	408	88	21	3.4	1.8	9.8	14	493
6	146	1950	225	305	372	86	20	3.0	1.8	7.5	14	320
7	134	1720	216	320	360	32	20	3.4	1.8	5.5	14	247
8	131	1450	216	330	320	80	18	2.6	1.8	4.9	14	204
9	131	1190	260	345	335	76	16	2.3	1.4	4.4	14	177
10	163	1170	216	384	360	70	14	2.3	1.2	4.9	14	160
11	160	1540	200	378	360	68	14	2.3	0.9	5.5	40	208
12	146	1310	204	360	315	67	14	2.0	.8	5.5	268	305
13	131	1000	242	366	280	65	14	1.8	.7	4.9	117	295
14	146	855	315	360	251	62	12	1.6	.7	5.5	97	247
15	193	722	390	325	234	60	12	1.4	.8	6.1	88	220
16	204	622	456	315	234	60	12	1.4	.7	6.1	60	208
17	390	559	390	335	242	56	11	1.4	.8	5.5	47	193
18	994	493	355	300	256	53	9.8	1.4	.9	5.5	40	193
19	552	444	355	275	251	48	9.0	1.6	.9	5.5	42	229
20	396	420	366	256	229	46	8.2	1.4	.8	5.5	78	189
21	2620	390	396	234	225	46	7.5	1.4	.8	5.5	70	163
22	4250	372	384	216	216	44	7.5	1.4	.7	6.1	52	150
23	2000	335	345	208	204	41	6.8	1.8	.8	7.5	44	170
24	1580	310	330	200	189	38	6.8	1.8	1.1	44	40	251
25	1300	295	340	189	177	37	6.1	1.8	1.1	74	40	212
26	1140	280	330	177	185	34	5.5	1.8	1.2	56	225	*2000
27	1050	256	325	174	177	31	4.9	1.6	1.1	38	260	*4000
28	880	247	325	290	160	30	4.9	1.8	1.4	31	461	*2200
29	738	—	330	242	137	29	4.9	1.8	1.6	33	402	*1000
30	630	—	305	189	126	26	4.4	2.0	2.0	31	989	*800
31	559	—	285	—	114	—	3.9	2.0	—	25	—	*650
Mean	694	994	298	279	255	60.3	12.3	2.13	1.22	15.1	121	672
Runoff in Ac.Ft.	42650	55220	18320	16600	15700	3590	756	131	73	928	7190	41320
	Water Year Total 220630								Calendar Year Total 202468			

U. S. Geological Survey and Division of Water Resources cooperative station located 0.5 mile upstream from Paskenta. Thomes Creek is a west-side tributary to the Sacramento River at Mile 173.2R. Drainage area is 188 square miles. Period of record 1920 to date. Records for 1951 computed by U. S. Geological Survey.
* Estimated.

TABLE 35

FLOW OF DEER CREEK NEAR VINA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	260	422	422	426	442	253	136	110	105	108	108	3730
2	255	395	391	422	418	242	134	110	103	150	106	1390
3	260	391	368	434	508	235	134	110	103	154	106	948
4	290	784	380	454	790	228	134	108	101	112	106	1170
5	270	1890	391	498	615	224	134	108	101	105	105	740
6	250	1380	410	514	624	214	132	108	101	103	105	474
7	240	1060	474	510	558	205	132	108	101	101	105	353
8	230	998	442	514	518	202	130	108	99	101	105	296
9	230	875	606	534	486	192	130	108	99	101	105	253
10	400	795	584	574	466	186	127	108	98	103	110	224
11	600	1700	510	592	570	181	127	106	98	110	164	211
12	550	1830	470	579	588	178	127	106	96	108	290	202
13	450	1220	466	574	538	178	125	105	98	106	214	192
14	380	974	510	602	502	172	125	105	98	105	172	178
15	700	840	554	615	462	167	125	105	98	103	159	170
16	580	741	579	579	442	164	123	103	98	105	132	164
17	540	669	570	566	430	162	121	103	98	105	119	162
18	918	633	530	542	426	157	119	103	98	103	115	162
19	696	566	498	518	410	154	119	103	98	103	256	172
20	554	530	494	498	399	152	119	105	98	103	728	154
21	1060	620	514	474	383	152	117	110	96	101	311	150
22	2860	600	526	450	372	152	117	108	95	101	208	147
23	1610	580	502	434	361	150	117	110	96	105	164	154
24	1110	540	482	422	349	147	115	108	96	253	147	189
25	885	500	482	410	334	145	115	106	95	253	138	184
26	760	475	478	410	323	142	115	103	96	152	167	2240
27	678	460	474	395	315	142	114	103	96	123	208	3670
28	606	450	462	672	304	140	114	103	96	117	373	2700
29	554	—	466	570	289	138	112	105	98	112	376	1630
30	486	—	466	474	274	136	112	105	101	112	519	1050
31	454	—	438	—	260	—	112	105	—	110	—	736
Mean	636	818	482	509	444	176	123	106	98.5	120	201	780
Runoff in Ac.Ft.	39110	45460	29630	30260	27280	10490	7560	6540	5860	7390	11940	47990
	Water Year Total 289710								Calendar Year Total 269510			

U. S. Geological Survey and Division of Water Resources cooperative station located 9 miles northeast of Vina and 0.8 mile upstream from a diversion dam. Deer Creek is an east-side tributary to the Sacramento River at Mile 168.5L. Drainage area is 200 square miles. Period of record 1911 to 1915; 1920 to 1937; 1939 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 36

FLOW OF DEER CREEK NEAR MOUTH[a] - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	210	*390	*310	308	342	138	20	9.0	0	13	54	7170
2	206	*330	*300	311	319	140	20	13	0	54	51	2030
3	213	*300	*290	319	354	134	12	15	0	121	51	989
4	234	*480	*300	325	617	123	14	16	0	54	53	1340
5	222	*900	*320	351	500	125	14	12	0	54	51	806
6	206	*1380	*340	369	486	125	16	14	0	44	49	397
7	197	*1200	*370	381	459	117	11	14	0	47	54	284
8	192	*1020	381	375	403	110	13	14	0	47	68	236
9	194	*860	384	394	381	109	14	10	0	39	82	208
10	286	*680	476	429	369	107	14	1.0	0	40	82	188
11	490	*930	419	435	416	105	14	2.2	0	59	127	175
12	422	*1320	400	432	476	97	14	3.9	1.4	48	194	171
13	280	*1240	394	416	435	90	12	5.7	0	55	184	165
14	256	*1100	422	422	400	81	14	6.6	0	62	147	156
15	366	*980	462	456	354	78	15	4.4	0	51	138	147
16	*345	*850	480	426	331	72	17	0	1.1	42	116	141
17	*325	*740	466	426	305	70	20	3.6	2.5	50	105	138
18	*410	*660	432	403	299	68	22	5.7	1.0	63	103	141
19	*390	*600	406	384	288	59	22	7.5	1.1	65	178	150
20	*360	*550	384	366	272	55	20	8.0	2.2	75	836	135
21	*630	*510	384	348	262	52	14	9.0	2.2	70	284	130
22	*1350	*530	387	336	254	47	18	9.6	1.1	56	204	127
23	*1900	*460	369	322	244	46	21	9.6	3.9	62	162	132
24	*1470	*420	357	308	234	39	19	9.0	9.6	151	147	159
25	*1130	*390	351	302	222	38	20	9.0	16	153	138	156
26	*940	*370	342	288	210	34	18	10	6.6	155	188	1690
27	*800	*340	339	278	201	31	17	8.4	8.4	117	208	7240
28	*690	*320	331	459	188	10	17	9.0	12	98	292	4200
29	*600	—	334	449	177	14	19	11	11	77	325	1560
30	*520	—	348	372	160	20	13	7.5	7.0	56	486	654
31	*450	—	316	—	143	—	2.5	0	—	56	—	334
Mean	525	709	374	373	326	77.8	16.0	8.3	2.9	63.5	172	1018
Runoff in Ac.Ft.	32300	39370	23000	22200	20040	4629	983	511	173	4213	10230	62580
	Water Year Total 213953								Calendar Year Total 220229			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located approximately 0.7 mile above the mouth. Deer Creek is an east-side tributary to the Sacramento River at Mile 168.5L. Period of record 1948 to date. Records for 1951 computed by Division of Water Resources.

* Estimated.

(a) Recorder was moved upstream approximately 2 miles to Highway 99 Crossing on October 29, 1951.

TABLE 37

FLOW OF CHICO CREEK NEAR CHICO - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	73	250	182	137	94	51	35	26	26	28	28	1930
2	70	230	171	130	89	50	35	28	26	33	30	874
3	74	250	162	125	116	50	34	26	25	34	30	560
4	89	700	174	122	264	49	34	26	25	28	28	748
5	78	1000	216	118	218	49	34	26	25	27	27	667
6	71	800	259	113	194	50	34	26	25	26	25	342
7	67	650	307	108	169	49	33	26	25	26	26	241
8	64	570	296	103	151	48	31	26	25	26	31	201
9	64	530	543	98	135	48	31	26	24	26	30	178
10	135	500	444	94	123	46	30	26	24	27	30	162
11	274	1000	333	88	127	45	30	26	24	29	61	152
12	233	900	288	84	132	45	30	26	24	27	106	148
13	180	550	291	82	123	44	29	26	24	27	64	142
14	153	450	324	80	116	43	29	26	24	27	45	134
15	266	370	339	82	105	40	30	26	23	26	40	126
16	321	320	333	74	97	39	29	26	23	27	35	124
17	603	290	302	73	90	39	26	26	24	27	33	119
18	1090	280	264	70	84	39	29	26	24	27	32	122
19	696	260	240	69	82	42	28	26	24	27	73	140
20	456	250	227	66	80	43	28	26	24	26	392	130
21	714	300	222	63	76	44	28	26	24	26	240	124
22	1670	290	218	60	73	43	30	26	24	26	153	120
23	1090	250	204	60	70	42	28	26	24	27	102	120
24	752	230	192	60	67	40	26	26	24	57	76	130
25	585	220	184	62	64	40	28	26	24	78	62	134
26	486	210	174	62	62	38	28	25	24	35	66	1600
27	417	200	165	62	60	39	27	25	24	30	89	2760
28	354	190	156	146	58	37	27	25	24	29	153	2260
29	304	—	153	134	56	36	27	26	25	28	173	1410
30	280	—	151	105	54	35	26	26	26	28	196	984
31	260	—	144	—	53	—	26	26	—	28	—	673
Mean	386	430	247	91.0	106	43.4	29.8	25.9	24.4	30.4	82.7	566
Runoff in Ac.Ft.	23740	23880	15190	5410	6510	2580	1830	1590	1450	1870	4920	34820
	Water Year Total 122630								Calendar Year Total 123790			

U. S. Geological Survey and Division of Water Resources cooperative station located 6 miles northeast of Chico. Chico Creek is an east-side tributary to the Sacramento River at Mile 141.5L. Drainage area is 68.3 square miles. Period of record 1930 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 38

FLOW OF CHICO CREEK NEAR MOUTH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	64		NR	120	66		NR			0	0	1520
2	59		NR	117	61		NR			1.3	0	994
3	59		NR	112	71		NR			11	0	579
4	67		NR	103	185		NR			6.0	0	651
5	61		NR	98	169		NR			2.0	0	720
6	55		NR	93	144		NR			.8	0	392
7	51		NR	91	126	N	NR			.1	0	272
8	47		*274	86	109	0	NR			0	0	214
9	46		410	82	95		NR			0	0	177
10	89		390	82	83		0			0	0	155
11	180		306	76	80		0			4.6	NR	139
12	188	N	263	72	87	R	1.0	N	N	4.0	NR	128
13	142	O	256	70	83	E	0	O	O	0	32	*110
14	120		278	70	76	C	0			0	23	*109
15	158		291	69	71	0	0			0	20	*100
16	247		287	65	61	R	0			0	18	*99
17	384	R	261	61	58	D	0	F	F	0	16	*91
18	796	E	232	59	51		0	L	L	.1	15	*89
19	1030	C	209	55	43		0	O	O	0	18	*103
20	1150	O	193	54	42		0	W	W	0	236	*102
21	1190	R	188	52	40		0			0	205	NR
22	NR	D	185	48	37	*11	NR			0	127	NR
23	NR		174	47	38	11	NR			0	82	NR
24	NR		163	45	36	10	NR			0	62	NR
25	NR		153	45	34	10	NR			11	51	NR
26	NR		145	44	33	9.7	NR			2.6	52	702
27	NR		137	42	34	8.5	0			0	87	2440
28	NR		128	92	32	2.3	0			0	103	2470
29	NR	—	123	105	32	3.9	0			0	152	1610
30	NR	—	126	78	31	NR	0			0	136	920
31	NR	—	124	—	19	—	0		—	0	—	598
Mean				74.1	68.6			0	0	1.4		
Runoff in Ac.Ft.				4409	4219			0	0	86		
	Water Year Total								Calendar Year Total			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located approximately 1.5 miles above mouth. Chico Creek is an east-side tributary to the Sacramento River at Mile 141.5L. Period of record 1948 to date. Records for 1951 computed by Division of Water Resources.
* Estimated.
NR No record.

TABLE 39

FLOW OF STONY CREEK NEAR HAMILTON CITY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	164	1180	722	59	27	2.9	0	0	21	20	0	1300
2	149	1090	716	59	27	1.8	3.4	0	11	25	0	3000
3	138	1050	692	38	27	1.2	5.8	0	11	30	0	2000
4	141	1360	686	37	22	0.7	4.0	0	6.8	23	0	900
5	145	4100	728	38	25	.4	1.3	0	1.9	16	0	808
6	130	3730	746	29	22	1.5	0	0	0	11	0	612
7	116	2760	758	32	22	2.9	0	3.9	0	6.4	0	425
8	105	2280	758	32	25	1.6	0	3.2	0	0.6	0	308
9	98	1920	777	32	27	1.4	0	0	0	0	0	246
10	116	1690	833	26	27	1.1	0	0	0	0	0	236
11	153	1630	819	24	29	0.4	0	0	3.1	0	0	178
12	176	2340	639	33	30	.1	0	0	9.2	0	0	166
13	145	2300	455	35	32	0	0	0	9.6	0	0	178
14	116	1960	440	30	33	0	0	0	7.2	0	0	186
15	116	1380	470	27	35	0	0	0	6.4	0	0	182
16	134	1160	606	29	35	0	0	0	4.8	0.8	0	172
17	164	840	728	23	33	0	0	0	6.4	6.0	0	163
18	420	710	798	24	30	0	0	0	5.5	2.0	0	160
19	716	656	770	32	27	0	0	7.6	1.4	0	0	157
20	716	692	728	33	27	0	0	14	0	0	10	182
21	1750	798	704	32	29	0	0	3.0	0	0	100	175
22	9990	826	644	33	29	0	0	5.2	0	0	80	172
23	7700	833	562	35	29	0	0	4.2	0	0	70	166
24	4630	812	525	35	27	0	0	3.4	0	0	60	169
25	3220	784	460	35	27	0	0	6.0	0	2.6	50	222
26	2510	752	395	35	27	0.2	0	8.4	0	9.2	250	264
27	2140	728	350	35	19	.1	0	8.0	0	6.4	400	1900
28	1850	716	196	27	8.0	0	0	8.4	1.5	1.6	600	4060
29	1630	—	106	26	5.8	0	0	6.0	7.2	0	550	3210
30	1440	—	57	27	4.0	0	0	8.8	16	0	500	3360
31	1290	—	61	—	3.4	—	0	30	—	0	—	2570
Mean	1365	1467	578	33.1	24.8	.54	.47	4.04	4.33	5.18	89.0	897
Runoff in Ac.Ft.	83920	81480	35560	1970	1530	32	29	248	258	319	5300	55130
	Water Year Total 278446								Calendar Year Total 265776			

U. S. Geological Survey and U. S. Army Corps of Engineers cooperative station located about 5 miles above the mouth and above the Glenn-Colusa Irrigation District canal crossing. The flow to the Sacramento River is cut off during irrigation season by an earth fill installed by Glenn-Colusa Irrigation District to transport water from their main canal across Stony Creek. Stony Creek is a west-side tributary to the Sacramento River at Mile 136.3R. Water diverted from Stony Creek by G.C.I.D. in acre-feet amounted to: March 840, April 1970, May 1540, June 32, July 29, August 248, September 258 and October 319. Drainage area is 761 square miles. Period of record 1941 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 40

FLOW OF BUTTE CREEK NEAR CHICO - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	328	617	579	507	413	283	175	128	137	131	131	2910
2	328	556	556	493	407	278	154	115	118	174	115	1270
3	343	594	507	474	474	268	154	124	128	182	124	880
4	385	1320	594	493	769	249	154	137	118	160	121	962
5	348	2140	690	493	579	259	147	131	121	124	124	850
6	323	1510	796	507	594	244	150	124	131	95	121	516
7	313	1310	859	521	564	249	168	128	109	134	101	377
8	308	1200	733	521	474	249	161	124	115	98	118	291
9	308	1080	994	514	455	235	128	118	121	112	118	272
10	436	1040	823	535	449	235	143	118	137	112	134	245
11	733	1930	690	564	521	208	150	115	121	128	208	250
12	579	2090	640	564	486	226	147	124	104	121	355	216
13	449	1470	682	564	486	213	143	112	137	118	241	229
14	390	1280	751	564	443	208	150	128	124	106	208	216
15	480	1120	769	556	418	217	150	106	121	112	193	208
16	571	1020	742	535	407	200	150	121	118	124	171	205
17	985	940	733	542	407	204	150	124	121	109	157	201
18	1710	877	657	521	418	183	147	118	112	124	143	208
19	1080	778	665	467	402	196	147	101	134	109	254	267
20	787	769	640	500	407	192	140	128	115	115	612	267
21	1290	823	690	443	379	196	143	121	128	115	434	258
22	2840	742	682	443	385	196	147	115	118	115	291	245
23	1760	690	649	436	363	196	143	112	104	115	233	250
24	1360	632	609	413	353	192	140	124	124	233	201	282
25	1160	632	632	418	348	192	143	121	118	263	178	291
26	1000	665	609	407	328	172	140	118	112	157	212	2220
27	985	649	571	390	328	179	137	124	115	157	258	3750
28	895	624	549	624	313	179	128	115	121	124	416	3840
29	787	—	571	514	318	175	134	106	98	137	428	2560
30	733	—	579	418	293	175	134	137	101	121	482	1750
31	657	—	514	—	283	—	128	112	—	137	—	1270
Mean	798	1039	670	498	428	215	146	120	119	134	229	889
Runoff in Ac.Ft.	49050	57720	41170	29640	26310	12790	8980	7400	7100	8260	13650	54660
	Water Year Total 342980								Calendar Year Total 316730			

U. S. Geological Survey and Division of Water Resources cooperative station located 0.8 mile downstream from Little Butte Creek and 7.5 miles east of Chico. Butte Creek is a tributary to the Sacramento River, via Butte Slough, at Mile 84.0L. (See notes on Tables 43 and 54. Drainage area of Butte Creek near Chico is 148 square miles and period of record 1930 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 41

FLOW OVER MOULTON WEIR FROM SACRAMENTO RIVER TO BUTTE BASIN[a] - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0										0
2	0	0										0
3	0	0										0
4	0	0										0
5	0	0										0
6	0	140										0
7	0	0										0
8	0	0										0
9	0	0										0
10	0	0										0
11	0	0										0
12	0	0	N	N	N	N	N	N	N	N	N	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0										0
15	0	0										0
16	0	0										0
17	0	0	F	F	F	F	F	F	F	F	F	0
18	0	0	L	L	L	L	L	L	L	L	L	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	W	W	W	W	W	W	W	W	W	0
21	0	0										0
22	14	0										0
23	2800	0										0
24	460	0										0
25	0	0										0
26	0	0										0
27	0	0										0
28	0	0										330
29	0	—										5740
30	0	—										2070
31	0	—		—		—			—		—	0
Mean	106	5.0	0	0	0	0	0	0	0		0	375
Runoff in Ac.Ft.	6494	278	0	0	0	0	0	0	0	0	0	23090
	Water Year Total 12659								Calendar Year Total 29362			

Elevation of crest is 76.75 U.S.E.D. datum; length of crest is 500 feet. Weir is on left bank at Mile 104.0. Period of record 1940 to date. Records for 1951 computed by Division of Water Resources.

(a) Flow occurred over Moulton Weir in February 1950 which was not reported in Table 39 of the 1950 Water Supervision Report. The flow amounted to 150 second-feet on February 6 and 310 second-feet on February 7. Table 2 of the 1950 report has been revised accordingly on page 44 of this report.

TABLE 42

FLOW OVER COLUSA WEIR FROM SACRAMENTO RIVER TO BUTTE BASIN[a] - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0										
2	0	0										350
3	0	0										2380
4	0	0										400
5	0	600										1600
6	0	19000										70
7	0	13000										0
8	0	3500										0
9	0	3600										0
10	0	2300										0
11	0	1500										0
12	0	5400	N	N	N	N	N	N	N	N	N	0
13	0	18500	0	0	0	0	0	0	0	0	0	0
14	0	15200										0
15	0	14000										0
16	0	11000										0
17	0	11500	F	F	F	F	F	F	F	F	F	0
18	0	11200	L	L	L	L	L	L	L	L	L	0
19	0	11000	0	0	0	0	0	0	0	0	0	0
20	0	9700	W	W	W	W	W	W	W	W	W	0
21	0	4700										0
22	2700	1600										0
23	34000	170										0
24	26000	0										0
25	6000	0										0
26	310	0										0
27	0	0										0
28	0	0										11200
29	0	—										54200
30	0	—										32600
31	0	—		—		—			—		—	6500
Mean	2242	3624	0	0	0	0	0	0	0	0	0	3526
Runoff in Ac.Ft.	137900	312300	0	0	0	0	0	0	0	0	0	216800
	Water Year Total 779900								Calendar Year Total 667000			

Elevation of crest is 61.80 U.S.E.D. datum; length of crest is 1650 feet. Weir is on left bank at Mile 92.4. Period of record 1950 to date. Records for 1951 computed by Division of Water Resources.

(a) Flow occurred over Colusa Weir in February 1950 which was not reported in Table 40 of the 1950 Water Supervision Report. The flows for February 5, 6, 7 and 8 were respectively 5270, 21500, 23200 and 3800. Table 2 of the 1950 report has been revised accordingly on page 44 of this report.

TABLE 43

FLOW OF BUTTE SLOUGH TO SACRAMENTO RIVER - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1			0	298	349	542	153	169	354	153	235	*0
2			0	519	434	262	155	121	411	*0	*278	*0
3			0	536	700	235	152	86	345	*131	*257	*0
4			0	544	574	284	150	69	433	*0	*205	*0
5			0	549	457	244	148	47	427	*0	*186	*0
6			0	592	449	252	108	57	485	*0	*135	*0
7			0	490	612	249	113	74	485	*0	*140	*0
8			0	458	674	219	122	83	423	0	*146	*524
9			0	361	753	215	143	97	527	*47	*146	*994
10			0	383	852	213	156	96	545	*80	*108	*1230
11	N	N	0	373	888	269	162	140	535	121	*130	*1310
12	0	0	0	371	895	304	162	*134	522	*101	*133	*1250
13			0	290	760	321	111	*135	605	*121	*123	*1180
14			0	213	767	332	94	*140	567	258	*117	*1070
15			0	215	790	270	67	140	531	46	*136	*958
16			284	226	1110	263	71	144	366	*68	*156	*851
17	F	F	259	224	757	225	85	140	430	*52	*163	*694
18	L	L	248	201	773	207	89	148	362	*63	*157	*533
19	0	0	233	32	843	212	100	154	415	*64	*154	*472
20	W	W	248	48	684	191	116	188	466	*64	*143	*420
21			196	9.3	647	144	108	201	*476	*64	*0	*466
22			180	8.9	636	173	56	224	*452	62	*0	*479
23			188	0	623	290	49	309	*401	40	*106	*466
24			180	0	654	241	50	278	*396	*28	*190	*435
25			314	46	557	274	59	327	*359	57	*211	*506
26			248	45	687	268	68	346	*374	310	*217	*645
27			218	33	677	271	78	370	*364	*319	*160	*0
28			203	8.6	701	209	111	408	*348	*235	*86	*0
29		—	279	72	718	211	140	396	*240	*224	*138	*0
30		—	273	112	793	174	136	366	*336	222	*92	*0
31		—	248	—	656	—	167	362	—	*233	—	*0
Mean	0	0	122	242	692	252	112	192	433	102	148	467
Runoff in Ac.Ft.	0	0	7535	14400	42580	15000	6900	11800	25740	6294	8823	28730
	Water Year Total 162868								Calendar Year Total 167802			

This is the discharge to the Sacramento River at Mile 84.0L and is measured at and regulated by the gravity culverts at the mouth of the slough. These flows, together with those shown in Tables 54 and 55 are, during the summer months, made up almost entirely of return water from lands irrigated by Feather River diversions. Discharge from the Sacramento to Butte Basin over Moulton and Colusa Weirs is shown in Tables 41 and 42. This is a Division of Water Resources station. Period of record 1924 to date.

* Estimated.

TABLE 44

FLOW OF RECLAMATION DISTRICT 70 DRAIN - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	29	33	29	52	72	25	21	31	38	22	0	0
2	29	27	26	19	71	23	0	21	36	22	13	0
3	29	34	26	3.8	83	27	0	35	36	22	0	0
4	29	32	22	0	78	27	13	33	36	26	0	39
5	29	34	27	0	106	27	22	31	0	27	0	98
6	29	46	26	0	109	26	22	34	0	30	0	73
7	20	38	26	0	109	33	25	7.2	0	31	6.6	8.6
8	16	39	26	0	109	33	36	7.2	53	31	6.6	0
9	22	35	20	0	107	32	36	38	40	37	2.2	0
10	29	34	20	5.9	106	39	32	40	36	40	0	28
11	29	36	19	8.5	92	34	30	38	42	42	0	30
12	35	68	17	8.5	78	34	36	40	42	4.6	0	30
13	36	60	18	8.5	76	29	43	48	30	4.6	0	0
14	33	50	20	14	32	18	57	41	30	2.2	0	0
15	29	39	23	15	20	26	72	45	17	4.6	0	0
16	28	38	14	18	0	27	48	46	0	6.6	0	16
17	28	33	15	18	0	18	24	38	0	6.6	6.6	15
18	31	38	13	18	0	26	33	42	0	6.6	2.2	0
19	30	40	11	18	0	22	33	42	0	6.6	2.2	0
20	30	26	5.7	0	0	23	28	27	64	0	0	2.2
21	32	38	14	0	0	24	34	36	68	0	0	0
22	48	38	7.8	0	0	23	35	33	66	0	0	0
23	64	34	.4	0	0	30	34	32	64	0	0	2.2
24	75	35	0	0	0	30	32	32	60	4.6	0	2.2
25	39	25	0	0	0	28	33	32	57	0	0	0
26	42	34	0	0	0	29	36	34	57	0	4.6	0
27	45	34	0	0	0	26	38	52	53	0	0	19
28	38	29	0	43	0	25	31	37	45	0	0	16
29	37	—	18	47	0	29	31	30	36	0	0	25
30	30	—	0	0	0	25	31	28	34	0	0	63
31	30	—	0	—	0	—	38	30	—	0	—	24
Mean	33.9	37.4	14.3	9.9	40.2	27.3	31.7	34.2	34.7	12.2	1.5	15.8
Runoff in Ac.Ft.	2083	2077	880	589	2475	1622	1952	2103	2063	748	87	974
	Water Year Total 19690								Calendar Year Total 17653			

This is the drainage from Reclamation District 70 returned to the Sacramento River at Mile 68.8L. This is a combination irrigation and drainage plant and discharges both to the Sacramento River and to an irrigation canal. The above flow includes gravity as well as pumped drainage. Period of record 1924 to date. Records for 1951 computed by Division of Water Resources.

TABLE 45

FLOW OVER TISDALE WEIR FROM SACRAMENTO RIVER TO SUTTER BY-PASS[a]-1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	20	400									0
2	0	0	130									730
3	0	0	0									9800
4	0	0	0									8400
5	0	900	0									7900
6	0	13200	0									6300
7	0	17000	0									1700
8	0	13200	20									0
9	0	13200	0									0
10	0	11200	0									0
11	0	11200	0									0
12	420	13200	0	N	N	N	N	N	N	N	N	0
13	2300	17800	0	0	0	0	0	0	0	0	0	0
14	100	17800	0									0
15	0	17800	0									0
16	0	17000	0									0
17	0	17000	0	F	F	F	F	F	F	F	F	0
18	60	17000	0	L	L	L	L	L	L	L	L	0
19	4100	17000	0	O	O	O	O	O	O	O	O	0
20	5400	17000	0	W	W	W	W	W	W	W	W	0
21	2400	15800	0									0
22	4400	11200	0									0
23	18600	9800	0									0
24	19300	6600	0									0
25	17200	4200	0									0
26	11000	1900	0									0
27	7600	1300	0									0
28	4800	800	0									4300
29	2800	—	0									15900
30	1700	—	0									18400
31	600	—	0	—		—			—		—	17000
Mean	3315	10110	17.7	0	0	0	0	0	0	0	0	2933
Runoff in Ac.Ft.	203900	561600	1091	0	0	0	0	0	0	0	0	180400
	Water Year Total 1298641								Calendar Year Total 946991			

Elevation of crest is 45.45 U.S.E.D. datum; length of crest is 1155 feet. Weir is on left bank at Mile 64.2L. Period of record 1940 to date. Records for 1951 computed by Division of Water Resources.

(a) Flow occurred over Tisdale Weir in January and February of 1950 which was not reported in Table 43 of the 1950 Water Supervision Report. The flows for January 19, January 20 and February 5, 6, 7, 8, 9, 10 were respectively: 650, 540, 2540, 11700, 15800, 10200, 2200 and 670 second-feet. Table 2 of the 1950 report has been revised accordingly on page 44 of this report.

TABLE 46

FLOW OF RECLAMATION DISTRICT 108 DRAIN AT ROUGH AND READY BEND - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	83	82	78	72	344	387	465	474	488	77	73	114
2	0	77	73	0	343	359	396	466	733	61	0	215
3	132	0	0	0	361	461	390	466	649	47	81	354
4	0	114	100	0	215	298	516	466	481	34	0	85
5	134	110	97	0	355	331	396	591	488	0	65	322
6	94	100	84	0	597	382	434	436	488	90	45	339
7	62	90	69	0	325	384	435	427	488	0	0	250
8	42	93	65	0	333	383	605	474	488	80	89	72
9	61	87	68	0	328	353	465	470	675	35	0	97
10	0	106	0	0	325	528	487	466	510	0	47	96
11	0	0	92	99	313	397	484	474	403	49	0	96
12	144	221	77	0	301	414	475	642	395	0	94	88
13	111	112	67	86	468	434	482	462	395	73	0	25
14	134	112	67	0	330	417	467	473	387	0	60	91
15	107	112	0	40	351	422	583	474	386	45	0	92
16	73	110	86	99	360	404	430	481	389	0	0	0
17	127	0	0	101	367	446	458	480	342	0	90	112
18	0	148	65	101	377	358	470	473	317	42	0	77
19	133	114	0	101	377	347	459	622	263	0	66	81
20	0	102	91	118	634	347	457	446	213	83	62	0
21	123	0	65	0	366	347	445	467	261	0	0	98
22	124	141	0	241	372	347	539	473	249	0	51	51
23	133	114	68	213	446	364	434	474	182	0	87	0
24	124	0	0	240	488	473	438	481	191	71	45	98
25	111	135	79	247	488	347	446	481	244	292	56	0
26	118	108	0	244	488	372	0	640	176	52	40	98
27	0	88	81	250	470	389	466	470	158	128	52	94
28	139	90	0	271	424	376	466	481	54	93	85	76
29	124	—	0	399	415	368	624	481	102	62	0	88
30	103	—	80	309	426	383	466	481	91	5.5	85	153
31	94	—	0	—	361	—	474	488	—	112	—	96
Mean	84.8	91.6	50.1	108	392	387	456	490	356	49.4	42.4	112
Runoff in Ac.Ft.	5217	5090	3078	6409	24100	23040	28070	30110	21200	3038	2525	6859
	Water Year Total 159761								Calendar Year Total 158736			

This is the drainage from Reclamation District 108 discharged to the Sacramento River at Mile 44.0R. Additional drainage from Reclamation District 108 is sometimes discharged to Back Borrow Pit at Mile 20.2L. Period of record 1924 to date. Records for 1951 computed by Division of Water Resources.

TABLE 47

FLOW OF RECLAMATION DISTRICT 787 DRAIN - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13	Records sufficient to compute only monthly flows.											
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29		—										
30		—										
31		—		—		—			—		—	
Mean	17.1	24.1	5.4	11.3	19.8	20	15.4	17.1	6.4	0	1.8	6.2
Runoff in Ac.Ft.	1051	1340	335	670	1219	1188	944	1051	381	0	107	381
	Water Year Total 10350								Calendar Year Total 8667			

This is the drainage from Reclamation District 787 discharged by pumping to the Sacramento River at Mile 37.0R. Additional drainage from Reclamation District 787 via Sycamore Slough, (See Table 52). Period of record 1949 to date. Records for 1951 computed by Division of Water Resources.

TABLE 48

FLOW OF COLUSA TROUGH AT COLUSA-WILLIAMS HIGHWAY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	220	348	290	156	813	628	517	685	1340	507	319	1100
2	228	321	279	268	509	457	547	664	1400	467	383	1850
3	258	302	239	323	555	413	531	723	1440	359	361	2000
4	258	317	209	401	1150	447	533	773	1430	315	311	2450
5	273	553	199	455	1340	449	585	782	1480	273	287	2540
6	387	545	190	469	1290	461	549	754	1520	232	245	2430
7	357	445	173	457	1170	529	537	734	1560	154	237	2340
8	334	375	161	535	1030	569	561	811	1590	132	239	2100
9	327	319	152	612	914	591	583	767	1530	134	199	1770
10	355	287	144	620	708	631	585	803	1410	175	182	1230
11	515	447	135	507	664	664	567	782	1300	262	178	936
12	698	1470	132	403	668	664	569	815	1160	290	143	631
13	569	1410	130	313	675	633	581	834	1030	289	152	545
14	433	916	121	289	767	555	599	843	1010	319	154	469
15	359	563	123	425	872	473	612	832	1020	327	137	407
16	330	447	123	379	880	489	612	870	984	381	130	363
17	290	379	117	247	931	505	631	838	922	387	126	342
18	287	330	112	296	1010	513	633	847	904	395	132	321
19	330	289	107	315	1060	531	639	878	868	429	139	325
20	264	260	100	321	1050	521	631	891	832	411	328	310
21	406	256	105	332	1020	533	579	902	805	393	543	289
22	1710	252	105	332	964	519	622	937	782	381	415	268
23	2000	292	98	349	927	513	679	968	759	393	323	268
24	1950	281	80	389	902	527	622	1010	731	479	245	336
25	1910	241	85	431	895	511	599	1060	643	1150	226	344
26	1750	218	98	491	910	487	652	1160	535	1160	421	487
27	1360	281	90	479	918	427	660	1230	467	595	986	866
28	857	285	85	635	820	475	692	1250	413	419	830	979
29	599	—	78	1010	765	479	738	1220	399	353	635	1150
30	467	—	83	1060	723	495	754	1220	427	317	549	1030
31	289	—	114	—		—	719	1260	—	292	—	742
Mean	657	444	137	443	897	523	610	908	1023	393	318	1004
Runoff in Ac.Ft.	40400	24650	8444	26380	53350	31120	37520	55820	60880	24140	18950	61720
	Water Year Total 534294								Calendar Year Total 443374			

Division of Water Resources station located 37.0 miles above the mouth of Back Borrow Pit of Reclamation District 108. This station is also known as Colusa Trough at Highway 20 and Colusa Trough at Tahoe-Ukiah Highway. The flow 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, Maxwell and Jacinto Irrigation Districts. Flow reaches Sacramento River, at Mile 34.15R, through the Knights Landing outfall gates via Back Borrow Pit, (See Table 51). Period of record 1924 to date.

TABLE 49

FLOW OF COLUSA TROUGH (BACK BORROW PIT) NEAR COLLEGE CITY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	244	392	290	229	973	628	496	653	1340	550	316	814
2	297	400	282	262	682	420	532	634	1420	547	375	1710
3	316	339	300	342	586	331	556	640	1490	465	420	2040
4	308	386	414	400	1020	360	505	726	1550	398	373	2260
5	287	499	300	456	1310	400	568	739	1610	342	334	2210
6	360	538	355	490	1270	406	523	742	1650	287	284	2260
7	389	473	279	484	1150	448	517	691	1700	219	272	2260
8	406	395	279	607	1060	508	547	752	1760	184	274	2260
9	437	368	244	675	1040	550	574	730	1760	176	256	2064
10	496	381	209	755	707	601	586	749	1660	194	*204	1780
11	526	392	216	675	622	666	544	742	1540	262	*189	1280
12	571	1080	209	556	628	688	520	746	1390	292	*184	742
13	577	1300	174	499	601	688	535	771	1240	313	*182	598
14	462	1010	206	386	678	634	541	784	1150	360	176	431
15	426	653	216	459	787	517	571	797	1160	368	170	352
16	412	502	172	520	844	476	568	841	1140	400	159	303
17	502	476	120	395	861	517	583	807	1060	448	134	282
18	375	381	186	344	970	526	598	797	1010	445	141	259
19	373	334	212	375	1090	559	607	841	997	490	148	269
20	334	349	222	349	1090	538	613	844	950	484	252	262
21	368	313	246	373	1040	541	556	875	912	473	505	239
22	1230	308	202	395	994	538	556	899	885	465	437	229
23	1520	303	196	392	922	523	622	939	848	465	352	232
24	1530	331	196	420	882	517	622	977	820	468	277	246
25	1580	308	204	448	875	499	577	1060	765	990	242	295
26	1590	305	150	493	868	484	610	1160	685	1310	310	355
27	1460	300	152	514	953	417	628	1250	577	771	878	685
28	1100	342	184	601	858	442	631	1300	493	468	851	814
29	762	—	206	960	755	459	714	1310	462	381	637	1075
30	487	—	152	1140	733	476	733	1260	470	342	535	1218
31	437	—	167	—	765	—	691	1280	—	308	—	490
Mean	650	470	224	500	891	512	581	882	1150	441	329	978
Runoff in Ac.Ft.	39990	26100	13760	29740	54770	30460	35750	54220	68420	27100	19570	60130
	Water Year Total 454660								Calendar Year Total 460010			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located on Back Borrow Pit of Reclamation District 108 at Mile 22.7. This is return water derived chiefly from lands irrigated by Glenn-Colusa, Provident, Princeton-Codora-Glenn, Compton-Delevan, Maxwell and Jacinto Irrigation Districts. Period of record 1946 to date. Records for 1951 computed by Division of Water Resources.
* Estimated.

TABLE 50

FLOW OF RIDGE CUT AT KNIGHTS LANDING - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	218	390	274	21	21	37	47	43	48	0	0	14
2	205	339	267	9.9	9.9	27	50	37	59	0	0	297
3	218	312	251	1.3	1.5	20	52	37	66	0	0	869
4	234	295	226	0	.6	25	43	46	72	0	0	1180
5	230	345	249	0	20	34	41	56	50	0	0	1460
6	240	414	224	0	173	40	46	58	38	0	0	1560
7	262	433	226	2.0	358	43	44	56	37	0	0	1640
8	196	452	210	6.3	280	47	43	52	41	0	0	1640
9	135	436	210	9.4	157	50	45	55	48	0	0	1650
10	120	411	190	11	81	52	47	51	46	0	0	1270
11	196	405	180	6.8	57	58	40	48	40	0	0	679
12	370	550	173	4.1	54	62	34	38	28	0	0	269
13	449	813	168	2.5	58	58	32	38	16	0	0	43
14	430	885	150	2.8	58	48	35	40	9.0	0	0	4.1
15	378	770	144	4.5	56	36	38	43	7.8	0	0	.1
16	342	616	145	7.4	62	30	40	44	6.3	0	0	0
17	319	499	138	3.8	57	42	40	41	5.4	0	0	0
18	337	439	120	1.7	65	50	46	40	3.6	0	0	0
19	326	393	119	1.1	81	52	45	45	2.8	0	0	0
20	334	376	116	1.8	71	49	41	51	2.3	0	0	0
21	329	358	109	3.6	57	43	39	55	1.8	0	0	0
22	527	342	114	5.5	47	45	33	58	1.3	0	.3	0
23	1090	329	108	5.8	39	44	37	61	1.0	0	2.9	0
24	1600	314	101	4.8	38	43	42	63	.7	0	0	0
25	1720	290	95	5.2	35	42	40	63	.6	0	0	0
26	1670	262	87	5.8	34	43	40	74	.2	5.8	0	0
27	1560	253	89	6.1	40	38	41	77	0	4.3	0	0
28	1370	269	78	8.8	45	37	40	82	0	.1	.2	50
29	1090	—	80	15	32	44	45	82	0	0	.5	345
30	732	—	80	24	32	46	50	57	0	0	3.3	833
31	485	—	74	—	43	—	48	47	—	0	—	1630
Mean	571	428	155	6.1	69.8	42.8	42.2	52.8	21.1	0.3	0.2	498
Runoff in Ac.Ft.	35130	23780	9531	361	4290	2549	2592	3249	1253	20	14	30610
	Water Year Total 146895								Calendar Year Total 113379			

Knights Landing Ridge Cut diverts water from the Back Borrow Pit of Reclamation District 108 at a point above the outfall gates, into the Yolo By-Pass above Elkhorn. Winter flows are uncontrolled. Summer flows for irrigation are controlled at the outfall gates and at the junction with Yolo By-Pass by weir boards and gates. This is a Division of Water Resources station. Period of record 1933 to date.

TABLE 51

FLOW OF COLUSA BASIN DRAINAGE TO SACRAMENTO RIVER AT KNIGHTS LANDING - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0		0	388	591	563	247	547	1240	674	432	592
2	0		0	564	528	399	257	524	1280	756	428	0
3	0		0	608	672	186	324	492	1300	729	491	0
4	0		0	482	683	120	329	509	1490	664	499	0
5	0		0	418	656	148	325	569	1710	558	459	0
6	0		0	367	925	191	341	593	1750	471	414	0
7	388		0	222	1150	213	336	585	1750	410	371	0
8	554		0	334	1120	258	334	598	1770	338	354	0
9	554		0	459	978	317	342	633	1800	288	331	0
10	515		0	605	719	342	374	692	1790	267	297	845
11	0		0	591	499	416	365	715	1760	309	259	1140
12	0	N	0	496	411	519	346	677	1690	381	254	*1160
13	0	0	0	344	415	531	319	678	1520	399	227	903
14	0		0	205	478	489	317	682	1390	428	195	642
15	0		0	140	536	430	325	689	1360	483	207	512
16	0		C	301	670	267	362	749	1340	507	174	446
17	0	F	0	345	735	221	377	738	1310	558	170	309
18	0	L	0	260	756	273	414	700	1240	585	165	254
19	0	O	0	154	893	325	450	689	1200	617	137	270
20	0	W	0	74	991	334	458	705	1160	659	200	217
21	0		0	84	987	317	440	718	1140	645	325	195
22	0		0	102	956	323	416	756	1090	612	296	212
23	0		0	124	860	319	430	784	1070	603	336	202
24	0		0	129	821	316	447	836	1030	626	448	217
25	0		C	137	809	313	438	874	1010	834	364	232
26	0		0	191	762	316	435	941	930	1240	361	217
27	0		0	223	773	275	464	1050	860	1130	554	0
28	0		0	272	792	196	470	1090	772	848	750	0
29	0	—	0	522	663	220	488	1200	693	674	542	0
30	0	—	0	682	563	243	551	1250	648	545	410	0
31	0	—	233	—	585	—	567	1230	—	475	—	0
Mean	64.9	0	7.5	327	742	313	390	758	1303	591	348	276
Runoff in Ac.Ft.	3989	0	462	19480	45590	18600	23980	46600	77540	36320	20730	16990
	Water Year Total 276423								Calendar Year Total 310281			

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 34.15R, just above the Knights Landing gaging station. Flows are controlled at the Knights Landing outfall gates and a portion of the flow of the Back Borrow Pit is diverted to the Knights Landing Ridge Cut. This diversion is shown in Table 50. Total flow to Sacramento River is sum of Tables 51 and 52. This is a Division of Water Resources station. Period of record 1924 to date.

* Estimated.

TABLE 52

FLOW OF SYCAMORE SLOUGH NEAR KNIGHTS LANDING - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29		—										
30		—										
31		—		—		—			—		—	
Mean	5.8	6.4	2.4	14.9	18	21.2	17.4	15.4	6.4	.6	2.0	3.0
Runoff in Ac.Ft.	357	357	147	889	1105	1260	1073	948	379	35	116	184
		Water Year Total 7729							Calendar Year Total 6850			

Records sufficient to compute only monthly flows.

This water is discharged from Reclamation District 787 by pumping into Colusa Basin Drain below the outfall gates and is not included in the flow shown in Table 51. Daily distribution of flows are not available since the plant operates on an automatic float switch. A small amount of additional drainage by gravity is not included in the above flows. See Table 47 for additional drainage from Reclamation District 787. Period of record 1940 to date. Records for 1951 computed by Division of Water Resources.

TABLE 53

FLOW OVER FREMONT WEIR FROM SACRAMENTO RIVER TO YOLO BY-PASS[a] - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0										0
2	0	0										0
3	0	0										0
4	0	0										2500
5	0	0										14800
6	0	5900										23000
7	0	31800										7200
8	0	35000										0
9	0	35000										0
10	0	31800										0
11	0	23700										0
12	0	35000	N	N	N	N	N	N	N	N	N	0
13	0	42300	0	0	0	0	0	0	0	0	0	0
14	0	42300										0
15	0	42300										0
16	0	42300										0
17	0	35000	F	F	F	F	F	F	F	F	F	0
18	0	35000	L	L	L	L	L	L	L	L	L	0
19	700	31800	0	0	0	0	0	0	0	0	0	0
20	14800	28700	W	W	W	W	W	W	W	W	W	0
21	9700	25300										0
22	9700	23000										0
23	61200	17500										0
24	65000	9700										0
25	61200	2200										0
26	50000	0										0
27	38400	0										0
28	28700	0										0
29	17500	—										4000
30	7200	—										56800
31	400	—		—		—			—		—	69000
Mean	11760	20750	0	0	0	0	0	0	0	0	0	5719
Runoff in Ac.Ft.	723000	1153000	0	0	0	0	0	0	0	0	0	351700
		Water Year Total 5502200							Calendar Year Total 2227700			

Station is located on Sacramento River at Mile 23.0R. Elevation of crest is 33.5 U.S.E.D. datum; length is 9120 feet. Period of record 1947 to date. Records for 1951 computed by Division of Water Resources.

(a) Flow occurred over Fremont Weir during February of 1950 which was not reported in Table 51 of the 1950 report. The daily second-foot flows for February 6, 7, 8, 9, 10 and 11 were respectively 15,200, 58,600, 56,000, 38,100, 17,800, 850. The monthly acre-feet totals are included in the revised figures for Table 2 of the 1950 report on page 44 of this report.

TABLE 54

FLOW OF BUTTE SLOUGH TO SUTTER BY-PASS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1150	2710	2050	247	220	104	167	191	143	0	15	398
2	1040	2340	1880	185	190	114	171	188	135	0	10	956
3	925	2120	1700	152	165	141	164	182	129	0	14	1470
4	873	1960	1540	133	183	111	159	191	132	0	6.8	2410
5	728	1940	1450	123	254	124	164	212	143	0	14	4170
6	692	3120	1360	123	353	136	184	220	151	0	39	5060
7	546	10200	1320	141	345	145	191	219	139	0	36	4950
8	504	10700	1330	166	306	150	190	221	127	0	32	4160
9	480	9240	1330	189	274	157	184	223	113	0	30	3180
10	486	7680	1350	192	258	173	187	221	104	0	24	2210
11	683	6270	1420	184	236	167	187	226	99	0	40	1540
12	986	6010	1440	168	220	156	176	223	98	0	51	1070
13	1280	10000	1290	173	212	140	171	211	89	0	60	737
14	1510	14900	1170	193	182	138	183	211	133	0	72	522
15	1640	16300	1050	191	164	152	195	214	110	16	70	415
16	1620	15900	994	183	154	145	202	218	67	24	62	320
17	1670	14600	959	185	123	142	195	215	35	24	57	222
18	1710	14800	940	183	112	150	187	195	21	31	45	138
19	1730	14100	893	208	113	146	204	191	14	36	37	115
20	1840	13200	818	201	127	147	210	203	7.8	38	49	122
21	2050	12300	747	202	131	162	188	203	2.9	39	118	134
22	2330	9700	704	194	124	179	182	189	2.6	32	223	119
23	5110	6830	680	194	116	156	187	195	2.0	32	303	108
24	17300	5210	626	193	109	163	195	197	0.5	53	273	100
25	17800	4100	506	199	108	153	210	187	0	83	256	109
26	13300	3150	478	187	115	151	211	176	0	146	257	163
27	9160	2590	500	180	123	148	204	175	0	108	264	339
28	6090	2210	498	212	132	158	202	169	0	44	301	1190
29	5020	—	468	231	134	159	211	153	0	32	319	9241
30	4130	—	424	226	124	159	213	140	0	26	377	27400
31	3230	—	260	—	113	—	204	140	—	20	—	26600
Mean	3471	8006	1038	185	178	148	190	197	66.6	25.3	115	3215
Runoff in Ac.Ft.	213400	444600	63820	10980	10950	8779	11660	12100	3963	1555	6852	197700
	Water Year Total 1216975								Calendar Year Total 986359			

This is discharge from Butte Slough to Sutter By-Pass. During low flow periods gates at head of slough are regulated (Table 43) which forces water under Long Bridge as shown in this table. Normal summer flows are primarily from Feather River sources. During flood periods Sacramento River water enters Butte Basin above Butte City by bank spill and over Moulton and Colusa weirs. The purpose of the summer regulation is to make water available for use on Sutter By-Pass lands (below Long Bridge) and Butte Slough Irrigation Company in R. D. 70. This is a Division of Water Resources station. Period of record 1939 to date.

TABLE 55

FLOW OF WADSWORTH CANAL TO SUTTER BY-PASS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	64	80	*75	24	201	112	171	52	71	105	58	182
2	62	78	*74	*16	*145	78	156	50	80	120	53	217
3	59	73	*72	*10	165	76	120	42	92	122	50	399
4	57	139	*70	*0	224	99	130	49	95	98	54	487
5	55	371	*69	*0	220	123	117	61	94	75	62	451
6	52	210	*67	*7.5	219	122	96	66	90	63	58	323
7	48	152	*66	*24	217	120	71	70	92	62	53	226
8	47	130	*64	*92	202	145	83	98	96	65	54	180
9	46	113	*62	*105	202	143	76	95	109	62	53	147
10	90	104	*61	*85	188	148	48	75	122	74	46	128
11	190	184	*59	*94	193	136	33	81	*130	90	45	115
12	163	260	*58	86	186	125	45	89	119	90	46	108
13	104	164	*56	99	155	120	60	93	122	105	50	100
14	87	141	*55	106	172	111	58	84	138	89	*41	95
15	90	135	*53	109	166	106	68	92	156	82	30	91
16	94	126	*52	119	148	95	66	98	156	83	24	88
17	86	112	*50	106	123	97	78	93	168	87	28	87
18	146	102	*49	99	140	96	81	106	170	78	27	86
19	133	95	*48	99	158	77	81	115	188	77	26	86
20	100	88	*48	89	212	65	74	106	172	61	56	83
21	236	86	*46	71	193	72	68	103	148	46	*138	84
22	470	78	*46	72	*150	81	71	82	151	44	*83	84
23	299	70	*43	72	77	80	74	58	151	58	*75	83
24	229	62	*41	90	84	95	80	83	143	110	*74	82
25	211	58	*38	84	111	126	92	86	130	320	*67	85
26	171	60	*36	74	130	118	96	99	122	202	*53	147
27	133	58	30	84	122	118	89	108	112	123	47	171
28	115	55	30	215	*111	117	106	138	101	109	46	262
29	105	—	28	246	142	145	92	84	107	90	50	297
30	98	—	27	212	138	171	81	72	102	79	50	275
31	89	—	24	—	140	—	62	65	—	79	—	284
Mean	127	121	51.5	86.3	162	110	84.6	83.6	124	95.1	53.2	178
Runoff in Ac.Ft.	7793	6712	3168	5136	9985	6579	5203	5143	7392	5847	3168	10970
	Water Year Total 84949								Calendar Year Total 77096			

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 primarily of Feather River drainage or return flows. This flow and flow from Butte Slough (Table 54) makes up the entire Feather River contribution to the Sutter By-Pass. This is a Division of Water Resources station. Period of record 1939 to date.

* Estimated.

TABLE 56

FLOW OF RECLAMATION DISTRICT 1500 DRAIN - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	251	212	144	0	441	353	378	446	513	124	77	361
2	185	206	154	80	441	360	361	446	513	137	75	304
3	152	149	204	53	210	403	368	446	513	154	56	375
4	98	245	276	55	525	402	386	446	513	126	61	522
5	67	206	145	84	531	349	354	446	513	132	58	532
6	76	243	172	82	480	472	367	446	513	118	58	452
7	155	236	150	84	460	356	367	446	140	91	56	274
8	110	236	152	86	417	475	708	446	610	108	52	252
9	356	207	153	87	428	472	543	514	797	100	52	275
10	148	58	98	87	430	472	466	514	615	96	52	198
11	206	309	178	0	429	457	262	514	563	58	57	160
12	152	578	156	90	407	471	404	514	503	116	50	0
13	103	203	98	90	401	466	390	514	552	81	48	205
14	202	308	51	90	414	464	454	446	590	83	46	149
15	211	297	61	91	444	315	454	446	519	84	46	137
16	177	254	67	116	438	454	394	514	658	84	43	158
17	180	229	70	106	441	354	394	514	539	84	38	0
18	191	271	146	98	276	449	390	446	480	83	71	158
19	149	251	63	107	460	353	474	446	405	77	26	136
20	154	241	219	114	441	433	386	446	369	84	102	0
21	253	238	110	152	464	353	386	514	435	84	88	186
22	305	245	86	182	463	468	335	514	273	78	73	0
23	292	227	0	128	276	353	386	514	275	42	69	136
24	292	152	64	293	397	469	386	514	199	98	64	0
25	289	276	83	213	347	354	386	514	192	284	0	203
26	249	164	65	242	466	435	386	514	192	156	0	131
27	206	235	66	246	460	353	386	514	277	99	0	142
28	352	142	63	294	427	468	574	576	219	103	108	165
29	207	—	65	545	381	351	445	514	171	93	0	157
30	212	—	63	384	468	244	513	514	158	92	103	292
31	212	—	0	—	402	—	513	576	—	78	—	139
Mean	200	236	110	143	421	406	419	489	427	104	54.3	200
Runoff in Ac.Ft.	12280	13130	6788	8437	25910	24150	25780	30100	25410	6400	3231	12300
	Water Year Total 208109								Calendar Year Total 193966			

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, (See Table 57). Drainage is by pumping and gravity. Period of record 1930 to date. Records for 1951 computed by Division of Water Resources.

TABLE 57

FLOW OF SACRAMENTO SLOUGH TO SACRAMENTO RIVER - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2570	NR	2430	700	812	711	606	695	NR	414	286	
2	2340	NR	2120	675	911	770	627	655	NR	319	276	
3	1970	NR	2490	493	946	635	*595	691	NR	378	226	
4	1420	NR	2390	0	754	650	607	706	NR	376	180	
5	1610	NR	1950	0	653	662	618	675	NR	441	264	
6	1460	NR	1080	0	1070	682	628	686	NR	374	162	
7	1330	NR	617	0	1330	624	658	688	NR	324	166	
8	1270	NR	0	0	1480	749	665	688	944	312	164	
9	1060	NR	1270	0	1440	779	703	701	1110	298	162	
10	0	860	1350	0	1340	782	704	713	1020	320	160	
11		0	1770	0	1250	781	668	742	908	288	0	
12	N	0	2480	0	1220	827	617	823	939	245	0	
13	0	0	2620	0	1430	849	612	786	973	357	0	
14		0	2210	0	1310	834	602	821	1000	253	0	
15		0	1890	0	1180	696	628	806	899	387	0	
16	R	0	1580	364	903	711	675	786	1080	240	262	F
17	E	0	1280	936	878	626	668	799	863	0	292	L
18	C	0	1370	629	902	705	676	744	883	222	0	O
19	O	0	1390	604	910	573	709	730	871	148	229	O
20	R	0	1320	520	899	662	724	774	773	0	311	D
21	D	0	1060	546	878	568	701	770	828	186	387	E
22		0	1060	370	946	674	712	749	640	141	408	D
23		0	1260	422	847	594	718	751	615	218	585	
24		0	1050	457	828	678	587	741	531	238	700	
25		0	1310	274	796	622	506	760	503	439	718	
26		0	1060	449	803	710	506	753	531	583	707	
27		1330	740	426	823	603	720	804	552	623	643	
28		2260	742	464	849	724	725	832	506	672	625	
29		—	1040	0	764	631	697	852	369	638	743	
30		—	922	806	820	653	734	914	261	422	923	
31		—	717	—	821	—	730	*923	—	414	—	
Mean			1438	304	993	692	656	760		331	319	
Runoff in Ac.Ft.			88400	18120	61080	41190	40320	46730		20370	19000	
	Water Year Total								Calendar Year Total			

This is the discharge to the Sacramento River at Mile 21.2L via Sacramento Slough. This is the entire outflow of the Sutter By-Pass area and R. D. 1500. During high water periods the slough is entirely submerged as it lies within the By-Pass area. Sharp rises in river elevation will cause zero or negative flow. See Tables 54, 55, 56, and 45. which, when combined, will give the measured flow entering the By-Pass area. This is a Division of Water Resources station. Period of record 1924 to date.

* Estimated.

NR No record.

TABLE 58

FLOW OF FEATHER RIVER NEAR OROVILLE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6600	8670	7520	7780	7050	4890	2350	2040	1710	2030	2330	28800
2	6940	8380	7180	7660	6860	4200	2500	2040	1700	2870	2410	21500
3	6780	8640	7100	7740	7340	4320	2400	2040	1690	3050	2530	13300
4	5540	16600	7280	7980	9260	4060	2400	2030	1780	2010	1630	12800
5	6040	25500	8270	8340	8520	3660	2400	2040	2120	1900	1910	12600
6	5950	19200	7980	8400	8560	3370	2450	2030	2050	1910	2380	8550
7	5130	17400	9550	9420	8260	3170	2450	2040	2020	1860	2350	7010
8	5590	13200	8620	7680	8100	3430	2450	2050	1860	2250	2120	5820
9	5670	17600	9640	8260	8420	2930	2400	2080	1700	2200	2120	4860
10	6840	17000	8920	9520	8760	2990	2250	2060	1730	2000	2210	4800
11	8740	22000	7480	10100	9860	2860	2260	2050	1790	2290	3160	4520
12	7340	23200	7510	9770	8830	2580	2240	2040	1870	2330	4310	4530
13	6100	20200	7720	9860	8320	2370	2220	2040	1990	2500	4780	4330
14	4450	18200	8130	9440	7460	2580	2210	1960	1890	1820	3400	4590
15	6500	16200	8470	8920	7660	2460	2210	1940	1870	2350	3160	4030
16	6760	14100	8550	9360	7800	2420	2220	1940	1700	2280	2750	3050
17	10400	13400	8560	9300	8040	2390	2170	1920	1900	2200	2660	3550
18	20800	12500	8260	9190	8000	2780	2150	1920	1700	2280	2480	4020
19	14000	11900	8260	8690	7800	3070	2150	1910	1920	2480	2420	4380
20	10600	10500	8440	8420	6820	3000	2170	1910	2070	2470	5740	3580
21	13300	10100	8870	8200	6680	2940	2170	1900	1960	1380	5960	3660
22	31300	9520	9070	5760	7040	2800	2140	1890	1740	2300	4180	3580
23	22800	8990	8870	6740	6820	2800	2130	1870	1520	2350	3140	3620
24	20800	8290	8600	7000	6500	2300	2080	1830	1980	3150	3150	3740
25	18700	8130	8150	6940	6420	2600	2080	1800	2210	4480	3140	4110
26	16100	8480	8900	6710	6350	2750	2120	1780	2280	3170	2810	14300
27	13800	3020	9580	6150	6000	2750	2100	1740	2150	2870	3490	24300
28	12600	7680	8440	8050	5800	2700	2130	1720	2130	2180	4420	32900
29	11900	—	8380	7320	5790	2680	2130	1730	1970	2300	6210	28600
30	10300	—	8340	7320	4740	2700	2090	1930	1510	2340	5440	19200
31	9240	—	8100	—	4480	—	2080	1950	—	2290	—	13800
Mean	10390	13880	8314	8197	7366	3018	2235	1944	1884	2384	3293	10080
Runoff in Ac.Ft.	669600	770800	511200	487800	452900	179600	137500	119500	112100	146600	195900	619700
	Water Year Total 5403000								Calendar Year Total 4403200			

U. S. Geological Survey and Division of Water Resources cooperative station located at highway crossing about 4.5 miles above Oroville on right bank, at Mile 71.0. Drainage area is 3611 square miles. Period of record 1902 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 59

FLOW OF FEATHER RIVER NEAR GRIDLEY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	*7330	9070	7550	8310	4810	2740	252	18	279	1180	2300	20400
2	7620	8570	7300	8090	4600	2430	95	14	*292	2170	2410	25200
3	7350	8340	7300	7930	4950	2060	112	12	*350	2460	2510	14800
4	6550	12500	7050	7910	6990	1750	80	13	*475	1770	1920	13200
5	6260	24200	8680	8180	6900	1530	61	15	*724	1280	1660	14100
6	6580	20400	7410	8320	6650	999	51	16	*840	1460	2350	9780
7	5910	17400	9800	7980	6530	990	36	14	*835	1350	2350	7870
8	5590	17600	9000	7320	6260	1060	59	15	*770	1510	2200	6410
9	6040	17400	9660	7170	6450	921	86	15	*720	1670	2120	5620
10	6960	16500	9370	8380	6790	650	82	13	*780	1440	2260	4950
11	8860	18400	8160	8940	7480	705	63	15	*745	1640	3210	4770
12	8510	23700	7640	8570	7440	497	54	76	*770	1760	4120	4720
13	7170	20400	7950	8430	6690	288	58	154	*1120	1930	4780	4610
14	5460	18400	8360	8020	5840	167	46	145	*973	1640	3500	4610
15	5570	16500	8740	7480	5790	288	34	69	1020	1480	3250	4540
16	7640	14300	8840	7420	5790	167	36	39	930	1760	2900	3490
17	9190	13400	8960	7460	5930	130	42	30	990	1700	2780	3590
18	19000	12600	8740	7300	5930	101	39	20	921	1760	2690	3950
19	16000	12100	8620	6690	5730	597	25	22	1040	1950	2590	4680
20	11900	10800	8900	6230	5120	642	24	30	1220	1970	5830	3860
21	11400	10200	9270	6040	4390	531	38	30	1190	1420	5990	3880
22	27700	9680	9540	4830	4890	531	52	36	1070	1220	4360	3800
23	25200	9170	9540	4220	4780	426	42	74	778	1850	3330	3730
24	21300	8570	9250	4510	4420	381	39	86	1190	2450	3320	3800
25	19600	8110	8900	4750	4240	123	28	69	1460	4060	3370	4030
26	17100	8590	9190	4340	4110	220	23	44	1620	3090	2950	8970
27	14800	8180	9130	4160	4220	285	20	34	1500	2650	3450	23300
28	13000	7840	9020	4840	3330	285	19	31	1490	2250	4030	29200
29	12600	—	8860	5520	3590	291	18	27	1340	1950	6210	30200
30	10900	—	8800	4660	3150	371	19	20	1010	2220	5150	21800
31	9740	—	8530	—	2360	—	19	279	—	2140	—	15800
Mean	11250	13680	8647	6800	5360	738	53.3	47.6	948	1909	3330	10120
Runoff in Ac.Ft.	691900	759500	531700	404600	329600	43940	3277	2926	56410	117400	198100	622100
	Water Year Total 4756053								Calendar Year Total 3761453			

Division of Water Resources station located at Gridley Bridge, Mile 49.7 above mouth. Period of record 1944 to date.
* Estimated.

TABLE 60

FLOW OF FEATHER RIVER AT YUBA CITY (5TH ST. BRIDGE) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	*8250	10100	9260	8720	5690	3220	520	191	492	1300	2400	8750
2	8110	9600	8940	8470	5610	3060	397	177	516	2090	2540	19100
3	7950	9300	8930	8330	5560	2550	315	204	538	2680	2470	19200
4	7320	7100	8680	8090	5360	2500	312	207	586	2580	2490	14900
5	7420	9500	7820	8090	7100	2080	289	235	804	1850	1590	13900
6	7510	25100	9220	8360	6730	1830	254	202	1180	1840	2240	13800
7	7680	21900	9230	8350	6780	1520	230	171	1150	1740	2400	10800
8	7300	18400	10300	8360	6590	1380	232	168	1190	1650	2350	8110
9	7190	17700	9640	7870	6150	1470	242	179	1150	1950	2190	7150
10	6380	16900	10100	7620	6380	1170	249	184	1000	1850	2320	5970
11	6270	14500	9720	8070	5770	1100	239	187	1220	1760	2620	5790
12	9850	20400	8730	8440	6990	970	239	184	1180	2000	3280	5630
13	10500	23200	8920	8060	6610	820	236	180	1290	2010	5250	5440
14	7930	21200	8970	7810	6280	620	236	228	1520	2150	3790	5130
15	5780	18400	8990	7360	5920	*500	223	230	1450	1620	3380	5370
16	6730	15900	9280	7220	5840	472	249	214	1530	1980	3040	4220
17	7200	14000	9390	7290	5840	417	258	204	1370	1980	2840	3510
18	5800	13300	9490	7210	5820	397	256	185	1500	1970	2780	4450
19	15000	12700	9180	6980	5580	438	267	175	1370	2070	2570	5520
20	15900	12000	9200	6530	5400	677	278	166	1590	2130	3910	4390
21	9470	10900	9210	6140	4890	678	265	161	1720	2040	7300	4160
22	9200	10700	9460	5650	4960	652	253	172	1730	1140	5380	4240
23	33000	10400	9660	4840	5090	613	233	200	1490	1910	4020	4130
24	29000	10000	9570	4890	4900	572	206	228	1240	2270	3660	4320
25	23600	9600	9370	5180	4750	429	207	280	1680	4330	3670	4880
26	20000	9560	9040	5120	4650	314	190	274	1820	4210	3480	8350
27	16300	9750	9160	4930	4690	419	189	309	1860	3040	3560	16800
28	13700	9350	9160	4710	4190	435	183	368	1890	2720	4100	19100
29	12600	—	9000	5980	4360	414	187	358	1810	2140	5590	27900
30	12000	—	8860	5500	3990	398	190	328	1770	2370	5940	29900
31	10900	—	8830	—	3310	—	208	338	—	2390	—	21200
Mean	11480	13980	9204	7006	5541	1070	253	222	1321	2186	3438	10200
Runoff in Ac.Ft.	705800	776500	565900	416900	340700	63700	15530	13660	78620	134400	204600	627000
	Water Year Total 4903510								Calendar Year Total 3943310			

Division of Water Resources station located at Yuba City-Marysville (5th Street) Bridge, Mile 28.0 above mouth. Backwater from the Yuba River at times affects the stage-discharge relationship of this station. Period of record 1944 to date.

* Estimated by subtracting flow of Yuba River at Marysville from the flow of the Feather River at Shanghai Bend because of the erroneous gage heights obtained from the recorder at the Yuba-Feather river junction prevented the use of the slope-discharge relationship.

TABLE 61

FLOW OF FEATHER RIVER BELOW YUBA RIVER - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							1110	362	848	1580	3050	15100
2							943	345	896	2160	3140	36400
3							805	354	902	2930	3110	31400
4							805	336	970	2900	3100	25300
5							732	314	1210	2330	2240	26900
6							641	318	1630	2300	2690	20700
7							622	287	1610	2240	2810	13400
8							622	279	1500	2180	2920	10200
9							604	306	1320	2420	2860	8530
10							610	323	1140	2350	2990	7170
11							535	327	1430	2330	3360	6910
12							524	323	1480	2540	3940	6620
13							562	302	1660	2560	5520	6510
14							535	362	1920	2650	4490	6280
15							484	358	1750	2210	4070	6330
16						(a)1600	524	354	1660	2520	3790	5940
17						1490	562	323	1510	2520	3540	5320
18						1470	604	294	1720	2480	3530	5350
19						1440	634	279	1790	2450	3310	5090
20						1750	641	256	2030	2460	4960	5520
21						1650	641	252	2170	2300	8000	5720
22						1560	583	263	2020	1560	6040	5490
23						1480	488	340	1700	2140	4580	5340
24						1400	440	474	1460	2560	4150	5250
25						1220	431	562	1880	4420	4150	5370
26						1030	421	519	2210	4150	3930	6440
27						1110	407	610	2320	3520	3980	22400
28						1160	412	720	2290	3360	4460	36000
29		—				1070	393	683	2170	2860	5770	53800
30		—				1020	384	671	1990	3060	6060	47600
31		—		—		—	440	665	—	3050	—	32400
Mean							585	392	1640	2616	4018	15510
Runoff in Ac.Ft.							35980	24120	97560	160800	239100	953600
	Water Year Total								Calendar Year Total			

Station is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. It is located on the right bank of the Feather River just below the mouth of the Yuba River at Mile 27.0R. Station was installed December 6, 1949. Station is rated at high stages by simultaneously measuring the flows of the Feather River at 5th Street Bridge and the Yuba River at Simpson Lane Bridge. Period of record 1949 to date. Records for 1951 computed by Division of Water Resources.

(a) A sand bar developed over the recorder well intake pipe causing erroneous gage heights to be recorded during the period of January 1 to June 16.

TABLE 62

FLOW OF FEATHER RIVER BELOW SHANGHAI BEND - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11600	14900	12400	12500	9070	5580	1130	341	810	1450	3100	12800
2	11300	14100	12000	12100	8710	5070	992	334	895	2090	3160	31800
3	11300	13600	11800	11900	8620	4340	800	334	885	3030	3210	30400
4	11500	15200	11600	11800	12000	4160	810	334	943	3090	3250	25400
5	11100	30200	12700	12000	13500	3660	718	313	1170	2380	2270	26300
6	10900	40100	14000	12600	12100	3350	614	320	1590	2250	2660	21200
7	10800	31900	16700	12700	12100	2990	589	292	1630	2200	2800	14200
8	10400	26900	16200	12600	11500	2830	573	285	1520	2140	2950	11000
9	10200	25700	15500	12300	11600	2900	564	285	1310	2440	2890	9210
10	10500	24400	15700	12600	12300	2540	581	320	1080	2360	2970	7860
11	12800	24400	14400	13600	13800	2420	507	327	1360	2300	*3250	7540
12	15200	32400	12900	14000	15200	2260	499	327	1430	2540	*3990	7270
13	13700	34200	13000	13700	12800	2080	532	313	1600	2590	*5600	7130
14	11000	29200	13200	14200	11400	1840	507	370	1840	2710	*4600	6870
15	9420	25400	13400	13600	10400	1680	452	407	1700	2240	*4200	6940
16	12000	22200	13800	13200	10300	1660	491	385	1560	2550	*3950	6230
17	12500	19800	14000	13000	10800	1520	523	348	1410	2580	3630	5520
18	24200	19000	13800	12600	11300	1470	581	313	1610	2510	3570	5880
19	34300	17900	13300	11900	11400	1460	623	285	1680	2480	3410	6600
20	23500	16900	13300	11200	11200	1800	657	246	1960	2480	4770	6790
21	18700	16000	13500	11000	10400	1710	648	240	2100	2320	8310	6100
22	41600	15400	13900	10600	10200	1610	598	233	2020	1460	6580	5900
23	54100	14700	14000	9780	10100	1540	476	292	1610	2100	5050	5760
24	42100	14000	13800	9450	9690	1440	429	452	1280	2510	4450	5730
25	33600	13200	13600	9490	9270	1270	399	556	1770	4560	4390	6140
26	28400	13200	13400	8980	9000	1040	392	523	2150	4510	4240	8330
27	23900	13300	13500	8370	8820	1130	377	556	2300	3700	4180	21800
28	20600	12700	13400	8340	8320	1190	385	745	2260	3490	4700	*33600
29	18900	—	13200	11400	8040	1100	362	692	2110	2930	5960	*51300
30	17800	—	13200	9580	7320	1030	370	648	1910	3140	6580	*49200
31	16100	—	12900	—	6210	—	407	632	—	3160	—	32300
Mean	19160	21100	13620	11700	10560	2289	567	389	1583	2654	4156	15580
Runoff in Ac.Ft.	1178000	1172000	837200	696400	649500	136200	34880	23900	94200	163200	247300	958200
	Water Year Total 8204180								Calendar Year Total 6190980			

Division of Water Resources station located on the right bank at Mile 23.0 above mouth. Station is rated above 30,000 c.f.s. by means of simultaneous measurements of Yuba River and Feather River at Marysville with appropriate time lag between Marysville and Shanghai Bend. Period of record 1944 to date.
* Estimated.

TABLE 63

FLOW OF FEATHER RIVER AT NICOLAUS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10800	14700	11500	13200	9330	5380	903	286	620	1690	2890	9490
2	10900	13400	11200	12700	8720	4290	924	252	794	1660	2970	25900
3	11200	12600	11000	12500	8450	4250	756	257	801	2620	2990	31100
4	11400	14500	10800	12400	11800	3950	704	262	834	3080	3040	28900
5	10700	26200	12000	12700	15900	3470	680	252	945	2580	2440	29000
6	10200	38300	15300	13200	13800	3060	579	248	1240	2100	2220	26800
7	9080	35400	20400	13300	13300	2800	520	248	1430	2260	2580	21200
8	9480	29700	21200	13200	12500	2610	504	229	1420	2130	2710	17700
9	9410	27700	16000	12600	12100	2640	494	214	1310	2260	2670	13100
10	12600	26700	16500	13100	12400	2440	494	238	1110	2350	2700	9760
11	16800	25900	15000	14300	13500	2230	474	252	1120	2180	2900	8400
12	20600	31600	13500	14800	15900	2140	414	267	1340	2400	3800	7720
13	14500	36300	13000	14500	14000	1950	369	252	1440	2500	5530	7460
14	9170	32400	13600	14800	12300	1690	434	238	1660	2600	5470	7120
15	11900	28700	14800	14400	10900	1520	394	296	1750	2370	4620	7110
16	13300	25900	14600	13700	10500	1510	379	296	1550	2280	4320	6630
17	13600	23000	14500	13200	10900	1430	404	281	1480	2480	4040	5680
18	22200	21200	14000	12800	11500	1400	419	267	1480	2410	3920	5780
19	37200	20000	13500	12300	11700	1340	464	248	1620	2380	3850	6360
20	32600	18800	13500	11900	11600	1550	469	229	1800	2380	4640	7250
21	23300	17700	14000	11700	10700	1620	489	224	1960	2260	8690	6200
22	37900	16800	14500	11400	10100	1520	489	224	1940	1760	7780	5980
23	55400	15900	14400	10300	10200	1450	414	238	1700	1670	5900	5820
24	46900	14600	13700	9790	9760	1350	359	329	1420	2200	4900	5740
25	37900	13200	13600	9950	9250	1260	324	434	1520	3720	4710	6070
26	32800	12800	13800	9500	8950	987	329	474	1960	4650	4430	7380
27	28300	12500	13900	8660	8710	945	300	469	2200	3750	4150	16900
28	24300	12000	13800	8440	8260	994	291	584	2140	3420	4710	27300
29	21000	—	13800	11800	7960	973	286	632	2160	2960	5700	45000
30	19200	—	13900	10700	7240	903	281	614	1890	2890	7170	57700
31	16800	—	13700	—	6100	—	281	602	—	2970	—	44400
Mean	20690	22090	14160	12260	10910	2122	472	321	1488	2547	4281	16480
Runoff in Ac.Ft.	1272000	1227000	870700	729600	671100	126300	29000	19710	88530	156600	254800	1013000
	Water Year Total 8892140								Calendar Year Total 6458340			

Station is maintained jointly by Division of Water Resources and U. S. Geological Survey. It is located on left bank at Mile 9.34 above mouth. Period of record 1921 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 64

FLOW OF SOUTH HONCUT CREEK NEAR BANGOR - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	21	58	41	17	11	1.8	.3			0	.9	595
2	20	52	37	16	9.7	1.6	.3			0	1.0	76
3	50	52	35	15	19	1.6	.3			0	1.0	270
4	53	445	86	15	102	1.6	.3			0	.9	398
5	36	482	170	15	23	1.5	.2			0	.9	136
6	28	160	236	12	17	1.6	.2			0	1.0	52
7	26	113	184	12	15	1.7	.2			0	1.2	31
8	24	94	116	12	12	1.7	.1			0	1.3	22
9	24	80	135	11	11	1.7	.1			0	1.4	19
10	172	80	96	11	9.5	1.6	.1			0	2.1	16
11	355	179	82	9.7	8.4	1.3	.1			0	20	13
12	150	132	74	9.7	9.2	1.0	.1	N	N	0	30	13
13	95	95	62	9.5	8.6	.8	.1	O	O	0	14	12
14	75	81	56	9.2	8.4	.8	.1			0	6.4	10
15	248	71	52	9.2	7.4	.7	.1			0	4.4	8.9
16	160	62	48	9.2	6.6	.6	.1			0	4.0	7.9
17	316	67	46	8.4	6.2	.6	.1	F	F	0	3.6	7.6
18	772	70	42	8.1	6.0	.6	.1	L	L	0	3.2	24
19	238	58	40	7.4	5.5	.5	0	O	O	0	30	49
20	146	59	40	7.1	5.3	.5	0	W	W	0	112	22
21	814	65	40	6.9	4.9	.5	0			0	52	16
22	872	62	29	6.4	4.4	.5	0			0	25	13
23	288	56	26	6.0	4.1	.5	0			0	14	12
24	177	51	25	6.0	3.6	.4	0			10	9.8	28
25	138	45	24	6.4	3.9	.4	0			20	7.0	47
26	113	48	23	6.9	3.5	.4	0			4.0	7.0	507
27	98	48	22	6.6	2.8	.4	0			2.3	9.8	230
28	87	44	21	24	2.4	.4	0			1.8	14	634
29	83	—	20	22	2.2	.4	0			1.5	16	582
30	75	—	19	14	2.1	.3	0			1.5	14	200
31	64	—	18	—	2.0	—	0		—	1.3	—	95
Mean	189	104	62.7	11	10.9	.93	.09	0	0	1.37	13.6	131
Runoff in Ac.Ft.	11600	5770	3860	652	668	56	5.8	0	0	84	809	8030
	Water Year Total 42048								Calendar Year Total 31535			

U. S. Geological Survey and Division of Water Resources station located approximately 2.5 miles southeast of Bangor and 16 miles above the mouth. Honcut Creek is an east-side tributary to the Feather River at Mile 43.7L. Drainage area is 68.6 square miles. Prior records available at a site 8 miles downstream. Records for 1951 computed by the U. S. Geological Survey. Period of record 1950 to date.

TABLE 65

FLOW OF YUBA RIVER AT NARROWS DAM - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2340	4050	2820	3410	3320	2500	790	490	715	490	665	11800
2	2270	3760	2740	3320	3130	2200	768	495	710	670	660	9490
3	2530	3580	2570	3350	3410	2040	734	500	700	670	655	5860
4	2800	6510	2850	3410	6380	1920	680	400	700	670	655	6740
5	2460	14300	3670	3790	5470	1860	600	400	700	670	395	6930
6	2270	10400	4050	4080	5250	1800	591	490	695	665	255	4730
7	1990	8210	5400	4170	4940	1740	608	470	560	665	600	3730
8	2180	7690	4570	4250	4740	1780	598	460	290	660	655	3130
9	2040	6930	4870	4500	5290	1700	620	460	305	660	655	2730
10	2510	6580	4430	5110	5970	1640	530	493	560	660	650	2530
11	3350	8200	3790	5430	8600	1600	570	405	695	660	650	2330
12	2900	9460	3550	5330	7060	1560	570	395	695	660	645	2330
13	2430	7480	3610	5470	5470	1510	585	490	695	660	655	2230
14	2230	6560	3980	5380	4740	1470	516	500	550	650	670	2130
15	2520	5830	4240	6000	4240	1420	541	500	275	650	675	2140
16	2900	5310	4370	5640	4570	1400	580	420	270	650	680	2040
17	3540	4870	4370	5410	5150	1510	660	435	540	650	680	2040
18	15500	4760	3980	5110	5580	1230	720	325	675	525	680	2240
19	9500	4240	3890	4670	5860	1280	720	325	675	360	680	2440
20	6120	4000	3920	4670	5760	1220	720	455	675	130	685	2240
21	7140	4060	4140	4860	5500	1170	670	455	480	150	700	2040
22	23900	3730	4240	5000	5320	1130	685	580	145	330	710	1930
23	15600	3490	4050	4860	5100	1080	525	715	145	335	720	2130
24	10500	3240	3920	4660	4900	1040	550	715	500	315	720	2230
25	8400	3190	3980	4240	4660	989	530	715	675	300	720	2730
26	7290	3210	4010	3850	4520	965	530	715	675	520	720	5730
27	6570	3160	3950	3490	4320	935	525	715	675	670	720	8730
28	5940	2950	3820	4600	4520	895	460	715	485	665	720	13700
29	5400	—	3850	4910	3700	809	455	715	150	665	715	13700
30	4840	—	3950	3760	3540	814	525	715	150	665	739	9230
31	4400	—	3640	—	2980	—	495	715	—	665	—	6230
Mean	5625	5705	3910	4574	4967	1440	595	528	525	560	658	4781
Runoff in Ac.Ft.	345800	316900	240400	272200	305400	85700	36600	32490	31260	34460	39130	294000
	Water Year Total 2938840								Calendar Year Total 2034340			

U. S. Geological Survey and Division of Water Resources cooperative station located above spillway of Narrows Dam. For total flow of Yuba River near Smartville combine with flows in Table 67. Drainage area is 1110 square miles. Period of record 1941 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 66

FLOW OF YUBA RIVER AT MARYSVILLE (SIMPSON LANE BRIDGE) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3350	4800	3140	3780	3380	2360	627	177	418	102	588	9000
2	3190	4500	3060	3630	3100	2010	592	183	414	189	584	14100
3	3350	4300	2870	3570	3060	1790	556	174	414	390	584	8720
4	4180	8100	2920	3710	6640	1660	522	180	426	439	588	8560
5	3680	20700	4880	3910	6400	1580	487	162	435	456	552	10600
6	3390	15000	4780	4240	5370	1520	452	148	431	468	336	6650
7	3120	10000	7470	4350	5320	1470	417	154	426	468	291	3580
8	3100	8500	5950	4240	4910	1450	382	154	295	473	503	2950
9	3010	8000	5860	4430	5450	1430	374	165	186	494	552	2370
10	4120	7500	5560	4980	5920	1370	355	168	134	490	579	2010
11	6530	9900	4680	5530	8030	1320	277	168	233	530	616	1860
12	5350	12000	4170	5560	8210	1290	284	159	328	525	653	1820
13	3180	11000	4080	5640	6190	1260	328	134	358	512	732	1770
14	3070	8000	4230	6390	5120	1220	302	142	386	503	667	1680
15	3640	7000	4410	6240	4480	1180	260	148	256	512	648	1590
16	5270	6300	4520	5980	4460	1150	274	165	156	512	639	1490
17	5300	5800	4610	5710	4960	1120	302	148	124	512	630	1410
18	18400	5700	4310	5390	5480	1080	374	142	236	494	630	1370
19	19300	5200	4120	4920	5820	1050	410	131	351	317	672	1730
20	7600	4900	4100	4670	5800	1010	418	113	382	226	1140	1790
21	9230	5070	4290	4860	5510	976	418	126	406	125	1160	1530
22	32400	4680	4440	4950	5240	941	362	134	253	99	1030	1410
23	21100	4300	4340	4940	5010	906	260	189	140	111	860	1350
24	13100	3970	4230	4560	4790	870	246	317	98	177	785	1350
25	10000	3600	4230	4310	4520	836	260	347	165	435	745	1600
26	8400	3640	4360	3860	4360	801	246	321	310	201	715	3090
27	7600	3550	4340	3440	4130	766	236	418	358	426	735	9250
28	6900	3350	4240	3630	4130	731	240	373	386	534	800	13100
29	6300	—	4200	5420	3680	696	217	414	240	593	817	19300
30	5800	—	4340	4080	3330	661	186	422	134	658	783	12300
31	5200	—	4070	—	2900	—	240	414	—	625	—	8460
Mean	7683	7120	4413	4697	5023	1217	352	213	296	406	687	5090
Runoff in Ac.Ft.	472400	395400	271300	279500	308800	72400	21630	13070	17610	24980	40890	313000
	Water Year Total 3253070								Calendar Year Total 2230980			

Station is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. Station is at 7th Street Bridge at Mile 0.9L above mouth. Stage-discharge relationship is affected at times by variable backwater from the Feather River. Period of record 1939 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 67

FLOW OF DEER CREEK NEAR SMARTSVILLE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	330	392	243	227	73	11	7.8	4.8	3.9	7.5	14	1560
2	328	385	238	218	65	12	7.8	5.0	4.2	45	13	248
3	386	380	229	198	107	11	7.8	5.2	4.0	15	13	840
4	380	623	390	216	690	10	7.8	5.8	4.2	8.4	13	666
5	342	896	620	207	124	10	8.8	8.1	3.9	5.8	13	320
6	330	491	916	202	93	11	8.4	7.4	3.9	5.2	14	123
7	328	437	725	176	82	10	8.1	5.4	3.9	5.2	14	77
8	322	413	402	63	147	10	8.1	6.0	3.9	5.2	14	60
9	322	400	473	59	97	11	8.8	6.4	3.6	5.2	14	52
10	645	413	355	142	59	14	8.4	5.6	3.6	5.8	16	48
11	1070	602	318	152	54	11	7.8	4.6	3.5	8.4	55	43
12	488	664	298	168	50	9.5	49	5.8	3.5	7.0	88	39
13	390	458	308	139	46	14	15	6.0	3.3	7.4	46	35
14	355	419	158	122	49	11	8.1	5.6	3.3	7.8	30	33
15	546	402	137	110	63	8.8	8.1	5.6	3.2	8.8	29	32
16	461	390	129	118	97	8.8	7.8	5.4	3.3	16	28	31
17	606	398	118	112	98	8.8	7.8	5.6	3.7	14	22	30
18	2230	405	107	89	88	9.2	7.0	5.4	3.7	12	18	35
19	774	375	100	66	66	10	5.8	5.0	3.7	15	97	79
20	521	372	96	61	66	10	5.4	4.8	3.9	14	333	44
21	1580	382	94	65	62	8.8	5.2	4.4	4.0	13	146	35
22	2660	330	92	59	47	8.8	5.4	4.4	3.7	13	77	33
23	748	287	87	58	42	9.2	5.6	4.2	4.2	15	50	33
24	590	243	115	53	42	10	5.6	3.7	4.4	107	58	36
25	521	238	188	55	36	8.4	5.4	3.7	4.0	112	35	39
26	479	243	257	52	32	8.1	5.6	3.9	3.6	36	32	380
27	455	255	255	33	31	7.8	5.6	3.6	3.5	21	61	157
28	431	247	242	122	33	7.8	5.0	4.2	3.6	16	49	1120
29	434	—	224	198	23	7.8	5.0	4.2	4.0	16	40	1480
30	419	—	236	142	15	7.8	5.4	3.9	4.6	16	36	392
31	402	—	243	—	10	—	5.2	4.0	—	14	—	193
Mean	641	412	271	123	83.5	9.85	8.47	5.09	3.79	19.3	48.9	268
Runoff in Ac.Ft.	39420	22890	16650	7300	5130	586	521	313	226	1190	2910	16450
	Water Year Total 156747								Calendar Year Total 113586			

U. S. Geological Survey and Division of Water Resources cooperative station located 1 mile upstream from the mouth. Deer Creek is tributary to the Yuba River 1 mile below Narrows Dam. For total flow of Yuba River near Smartville combine with flows in Table 65. Drainage area is 83.5 square miles. Period of record 1935 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 68

FLOW OF DRY CREEK AT VIRGINIA RANCH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	82	196	154	53	8.5	16	4.2	6.2	2.3	3.7	9.1	2050
2	78	183	141	53	7.9	16	4.4	2.5	2.5	3.3	9.1	264
3	237	182	130	54	48	14	5.4	3.0	2.6	2.8	9.4	812
4	192	1020	351	56	464	14	6.2	3.0	2.6	2.4	9.1	1320
5	128	1240	674	50	142	14	7.3	2.8	2.6	2.3	9.1	441
6	106	447	857	46	96	14	2.4	2.8	2.6	2.2	9.1	159
7	98	328	720	46	86	14	1.7	2.6	2.5	2.2	8.8	99
8	94	254	392	46	67	14	1.6	2.6	2.5	2.2	8.8	72
9	94	232	526	46	57	13	1.3	3.0	2.4	2.2	8.8	56
10	529	240	334	47	50	12	1.3	3.0	2.4	2.5	10	47
11	958	477	276	50	51	12	1.2	2.5	2.3	2.5	13	42
12	359	412	243	46	55	11	1.1	2.2	2.2	2.4	17	38
13	220	260	222	472	50	11	1.1	2.0	2.4	2.4	12	35
14	179	224	200	84	46	9.7	1.9	1.9	2.5	2.4	11	32
15	539	203	189	52	40	9.1	1.8	2.0	2.5	2.4	11	31
16	398	185	183	44	38	8.8	2.0	1.9	2.4	2.4	10	31
17	1170	207	169	8.2	36	8.8	1.8	1.9	2.6	2.4	10	30
18	2260	232	157	6.0	35	8.5	1.5	2.0	2.5	2.4	10	81
19	663	179	150	5.4	32	8.8	1.0	2.0	2.5	2.4	57	194
20	435	192	144	4.9	32	8.5	.7	2.0	2.5	2.3	362	84
21	2440	243	137	4.7	30	8.2	1.3	2.2	2.4	2.6	187	55
22	3070	217	130	4.2	28	8.2	1.5	2.0	2.3	3.0	88	47
23	749	185	123	4.4	28	6.0	1.5	2.0	2.4	3.3	45	43
24	531	165	96	4.7	27	5.2	2.4	1.9	2.4	9.5	31	78
25	419	156	45	4.9	25	5.2	2.5	2.0	2.4	14	26	132
26	356	167	47	5.2	24	5.2	2.6	2.0	2.4	10	25	1090
27	311	181	48	4.9	23	5.2	2.5	1.8	2.4	9.4	52	606
28	276	165	50	14	21	4.7	2.4	1.8	2.4	9.4	47	1870
29	266	—	53	52	20	4.2	2.4	1.8	2.4	9.1	42	1530
30	238	—	53	46	19	4.2	2.4	1.8	2.4	8.8	56	628
31	210	—	53	—	17	—	2.4	1.8	—	8.8	—	304
Mean	570	299	227	47.2	54.9	9.78	2.38	2.35	2.44	4.44	40.1	397
Runoff in Ac.Ft.	35080	16610	13980	2810	3380	582	146	145	145	273	2390	24400
	Water Year Total 130626								Calendar Year Total 99941			

U. S. Geological Survey station located 0.4 miles south of Virginia Ranch and 2.9 miles southwest of Oregon House. Dry Creek is a north-side tributary to the Yuba River. Period of record 1948 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 69

FLOW OF DRY CREEK NEAR WHEATLAND - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	70	98	44	9.8	32	.6					0	899
2	64	89	44	9.8	41	.3					0	422
3	89	84	35	9.8	46	.2					0	834
4	210	298	50	9.1	402	.8					0	530
5	116	630	255	9.1	110	1.6					0	455
6	91	255	210	3.4	45	1.6					0	188
7	81	177	398	6.5	28	2.2					0	117
8	78	141	160	6.5	19	2.2					0	86
9	75	121	162	9	12	2.6					0	70
10	535	116	114	9	17	2.2					0	55
11	865	405	81	9	12	1.8					0	46
12	416	467	68	9	16	1.8	N	N	N	N	0	41
13	232	207	62	9	17	1.4	0	0	0	0	.1	32
14	179	145	53	9	15	1.6					4.3	24
15	330	119	45	9	15	1.6					1.8	20
16	374	101	41	12	9.8	1.6					.8	16
17	302	89	38	8.4	8.4	1.4	F	F	F	F	.6	14
18	1350	114	31	8.4	7.1	1.4	L	L	L	L	.3	14
19	638	79	28	10	5.9	1.6	0	0	0	0	1.6	22
20	335	68	28	9.8	5.3	1.4	W	W	W	W	89	34
21	919	70	25	8.4	5.3	1.1					147	21
22	2520	68	22	7.8	5.9	1.1					76	14
23	562	64	20	7.8	5.3	.8					32	10
24	347	52	18	8.4	5.9	.2					9.8	8.4
25	253	45	18	12	6.5	0					3.4	10
26	205	45	17	16	5.9	0					2.2	139
27	173	58	14	19	3.4	0					2.2	175
28	147	49	12	28	5.3	0					7.1	809
29	137	—	11	70	12	0					14	1620
30	151	—	12	39	2.2	0					5.3	497
31	110	—	12	—	1.1	—			—		—	268
Mean	386	152	68.6	13.1	29.8	1.07	0	0	0	0	13.2	242
Runoff in Ac.Ft.	23710	8440	4220	778	1630	66	0	0	0	0	788	14900
	Water Year Total 87784								Calendar Year Total 54732			

U. S. Geological Survey and Division of Water Resources cooperative station located 2300 feet upstream from Highway 99E bridge and 1.3 miles northwest of Wheatland. Dry Creek is an east-side tributary to the Feather River above Nicolaus at Mile 120.0L via Bear River. Period of record October 1946 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 70

FLOW OF BEAR RIVER NEAR WHEATLAND - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	755	1150	942	1010	203	97	11	6.9	10	23	23	*1300
2	740	1090	1030	980	117	124	10	7.6	13	26	24	*1300
3	826	1040	952	958	110	112	13	10	12	53	28	*1300
4	1030	1240	1070	974	2500	121	13	9.5	10	62	25	*1300
5	848	3100	1960	986	1530	70	10	9	7.4	57	23	*1300
6	780	2140	2360	986	1100	117	9.5	9	7.6	29	30	*1300
7	745	1720	3560	969	854	83	10	9	8.6	20	22	*1300
8	715	1580	2240	952	735	105	10	8	7.8	17	20	*1300
9	652	1430	2020	908	222	53	9	8	10	13	18	*370
10	1090	1360	1730	831	136	39	9	8	13	12	20	*370
11	2360	1790	1490	832	317	28	8	7	13	14	76	*370
12	1540	2380	1300	853	453	22	7	7	10	18	389	*370
13	1080	1860	1180	859	425	24	6	7	9	20	594	*370
14	1020	1580	1110	790	394	18	5	6	9.8	17	602	*370
15	1420	1430	1090	697	361	33	4	6	9.5	13	560	*370
16	1420	1300	1090	300	323	34	4	6	10	14	560	*370
17	1330	1200	1290	75	311	33	3.2	6	11	23	552	*370
18	7260	1250	1280	75	320	26	2.1	5	11	28	528	*370
19	4980	1150	1250	350	339	20	2.6	5	9.5	30	560	*370
20	2510	1090	1250	735	212	22	2.9	5	8.8	30	392	*370
21	3030	1080	1190	720	178	19	3.6	4.5	20	35	735	*370
22	13000	1110	1170	692	126	15	8.6	4.1	25	31	648	*370
23	5040	1060	1110	480	194	13	9.7	5.4	25	35	564	*370
24	3250	1030	1050	607	184	11	7	5.8	28	149	524	*370
25	2530	1030	1080	657	151	14	4	6.3	30	333	442	*370
26	2110	1030	1060	572	175	9.3	4.5	4.7	70	103	214	*3000
27	1860	963	1080	488	151	9.3	4.5	7.2	59	67	305	*3000
28	1680	925	1080	796	89	10	3.6	8.6	39	53	320	*3000
29	1520	—	1070	952	136	9.3	3.2	8.8	16	44	335	*3000
30	1450	—	1110	620	119	9.8	4.5	9	14	43	350	*3000
31	1270	—	1080	—	80	—	6.1	9.5	—	36	—	*3000
Mean	2253	1397	1364	725	405	43.4	6.73	7.06	17.6	46.7	333	1119
Runoff in Ac.Ft.	138500	77570	83850	43150	24880	2580	414	434	1050	2870	19800	68810
	Water Year Total 645268								Calendar Year Total 463908			

U. S. Geological Survey and Division of Water Resources cooperative station located on Highway 99E bridge. The Bear River flows into the Feather River above Nicolaus at Mile 12.0L. Drainage area is 295 square miles. Period of record 1928 to date. Records for 1951 computed by U. S. Geological Survey.
* Estimated.

TABLE 71

FLOW OF COON CREEK AT HIGHWAY 99E - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	69	102	76	29	59	17	26	5.6	24	52	*91	697
2	66	94	85	39	56	15	21	1.4	25	104	*82	322
3	96	93	69	40	87	16	19	1.4	24	98	*75	537
4	137	168	131	43	616	14	18	4.9	18	85	*66	412
5	93	423	272	42	154	14	19	8.1	24	71	*57	371
6	80	179	215	33	94	17	21	9.2	22	67	*51	208
7	76	141	390	32	69	19	18	5.6	18	62	45	166
8	76	121	179	28	59	22	14	11	17	64	39	145
9	290	111	177	35	48	19	12	8.1	21	49	36	135
10	731	111	129	46	48	16	16	9.2	12	42	32	131
11	616	222	104	52	38	14	11	11	14	59	57	108
12	300	307	94	43	43	26	7.0	15	5.6	52	80	98
13	188	162	87	45	45	26	11	7.0	11	54	93	96
14	150	145	78	32	29	24	10	5.6	16	57	78	89
15	250	129	73	25	33	17	10	7.0	15	51	76	85
16	265	113	67	24	25	10	6.3	6.3	14	54	73	82
17	219	109	62	21	25	7.0	9.2	4.9	25	36	75	80
18	878	127	54	22	17	15	6.3	11	28	28	75	80
19	501	106	54	22	17	10	4.9	15	28	31	104	117
20	265	96	56	22	19	8.1	4.9	14	22	25	277	91
21	414	106	51	22	22	11	3.5	10	25	22	203	78
22	1690	111	51	21	21	14	6.3	9.2	21	22	158	73
23	473	102	49	15	24	17	1.4	11	26	26	109	71
24	302	94	48	16	24	18	5.6	12	25	109	98	71
25	238	89	48	19	19	14	6.3	11	24	*181	91	73
26	197	89	39	22	16	14	7.0	15	22	*137	89	156
27	173	111	38	16	17	12	11	15	*36	*111	108	113
28	152	98	35	54	17	15	9.2	18	*36	*96	111	814
29	135	—	28	96	22	10	8.1	17	*36	*87	93	724
30	135	—	25	71	22	14	7.0	14	*39	*82	80	396
31	115	—	24	—	22	—	8.1	24	—	*82	—	224
Mean	302	138	93.2	34.2	58.3	15.5	10.9	10.2	22.4	67.6	90.1	221
Runoff in Ac.Ft.	18580	7654	5728	2037	3584	922	671	630	1336	4157	5359	13570
	Water Year Total 90418								Calendar Year Total 64228			

Division of Water Resources station located at the Highway 99 E bridge. Coon Creek is an east-side tributary to the Sacramento River at Mile 19.6L, via "Cross Canal", the main drain between Reclamation Districts 1000 and 1001. Drainage area is 82.5 square miles. Period of record 1947 to date. Records for 1951 computed by Division of Water Resources.
* Estimated.

TABLE 72

FLOW OF AUBURN RAVINE AT HIGHWAY 99E - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	93	111	99	19	72	62	67	64	50	*34	24	*258
2	90	107	76	18	70	49	67	64	50	*39	18	*115
3	118	103	73	17	131	45	68	64	49	*36	16	*342
4	113	149	147	17	247	43	71	66	49	*30	15	*170
5	101	178	197	15	79	57	70	66	50	*21	15	*145
6	95	125	186	11	66	71	68	66	43	*13	16	88
7	92	117	265	10	57	72	67	64	42	*15	27	74
8	91	110	162	11	49	71	66	64	38	*13	31	67
9	91	104	173	10	41	69	63	64	37	*13	30	63
10	244	111	134	10	43	69	63	63	37	12	32	60
11	266	167	121	8.3	52	66	64	64	35	11	33	57
12	183	169	118	6.2	58	61	64	64	29	11	44	57
13	141	131	112	5.8	54	59	62	64	28	*9.1	58	55
14	128	118	108	5.1	54	59	60	63	28	*9.1	42	54
15	176	111	102	5.2	45	51	61	64	27	*9.1	24	53
16	156	104	111	5.2	39	52	62	64	25	*9.1	22	50
17	209	118	67	4.0	48	51	60	65	27	*8.3	18	50
18	422	99	51	3.1	55	50	59	66	25	*8.3	17	55
19	305	95	50	2.9	75	52	59	67	13	*7.2	82	71
20	199	95	43	2.3	73	59	63	67	7.2	*9.1	89	52
21	254	104	43	1.8	72	62	64	68	7.0	*9.1	120	48
22	698	102	52	1.1	73	64	65	68	7.6	*9.1	71	47
23	312	102	48	1.0	71	66	64	70	9.1	*13	60	45
24	222	76	50	1.0	59	66	64	70	9.1	*48	55	45
25	182	*51	52	1.7	59	66	66	70	8.0	*106	53	47
26	161	*61	49	1.5	58	64	65	71	8.0	*114	54	73
27	147	*114	38	1.6	72	65	64	69	*8.3	*71	65	57
28	136	108	25	21	71	66	64	64	*14	*54	59	375
29	133	—	22	31	65	65	66	63	*19	*42	57	463
30	125	—	21	102	69	65	65	62	*25	*37	57	266
31	117	—	20	—	68	—	63	59	—	34	—	137
Mean	187	112	90.8	11.7	69.2	60.6	64.3	65.4	26.8	27.6	43.5	114
Runoff in Ac.Ft.	11500	6228	5584	694	4255	3604	3955	4020	1595	1695	2586	7020
	Water Year Total 67552								Calendar Year Total 52736			

Division of Water Resources station located at the Highway 99E bridge. Auburn Ravine is an east-side tributary to the Sacramento River at Mile 19.6L via "Cross Canal", the main drain between Reclamation Districts 1000 and 1001. Drainage area is 34.6 square miles. Period of record 1947 to date.
* Estimated.

TABLE 73

FLOW OF RECLAMATION DISTRICT 1001 DRAIN AT HEAD OF CROSS CANAL - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16	Records not available at the time of publication of this report.											
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29		—										
30		—										
31		—		—		—			—		—	
Mean												
Runoff in Ac.Ft.												
	Water Year Total								Calendar Year Total			

Division of Water Resources station located approximately 5 miles northeast of Verona on Pacific Avenue Highway bridge. R.D. 1001 Drain is an east-side tributary to the Sacramento River at Mile 19.6L. Period of record December 1949 to date. Because of backwater conditions from the Sacramento River, a satisfactory rating of this station was not available at the time of publication of this report.

TABLE 74

FLOW OF RECLAMATION DISTRICT 1001 DRAIN INTO CROSS CANAL[(a)] - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	34	34	25	14	19						0	57
2	14	30	32	14	19						0	48
3	35	24	27	15	31						0	103
4	28	38	25	15	43						0	96
5	10	119	32	15	50						0	66
6	36	90	43	15	25						0	42
7	0	38	30	15	25						0	20
8	36	46	39	15	21						0	7.9
9	0	33	22	15	18						0	20
10	52	45	19	11	13						8.0	12
11	92	48	29	15	18						0	0
12	208	76	21	15	18	N	N	N	N	N	0	17
13	30	59	25	7.2	14	0	0	0	0	0	0	0
14	76	37	26	5.5	15						0	0
15	45	44	23	11	19						0	15
16	47	42	28	11	19						0	0
17	39	41	16	0	19	F	F	F	F	F	0	0
18	70	32	17	11	19	L	L	L	L	L	0	23
19	135	33	20	0	11	0	0	0	0	0	8.0	0
20	52	37	17	3.8	7.5	W	W	W	W	W	0	0
21	39	16	17	12	7.5						0	0
22	163	27	17	0	7.6						0	15
23	56	29	17	0	15						7.6	0
24	75	28	17	20	15						7.8	0
25	79	28	14	12	23						0	0
26	40	30	14	20	36						7.9	0
27	30	21	18	16	20						0	22
28	38	31	14	21	20						0	0
29	41	—	14	19	0						0	0
30	36	—	14	19	0						0	0
31	29	—	14	—	0	—			—		—	0
Mean	53.7	41.3	22.1	12.1	18.5	0	0	0	0	0	1.3	18.2
Runoff in Ac.Ft.	3302	2293	1361	719	1136	0	0	0	0	0	78	1118
	Water Year Total 18713								Calendar Year Total 10007			

This is drainage return to the Sacramento River via the cross canal by pumping and gravity. Period of record 1940 to date. Records for 1951 computed by Division of Water Resources.
(a) Cross Canal, the main drain between Reclamation Districts 1000 and 1001, joins the Sacramento River at Mile 19.6L.

TABLE 75

FLOW OF RECLAMATION DISTRICT 1000 DRAIN (#3 PLANT) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12	Records sufficient to compute only monthly flows.											
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29		—										
30		—										
31		—		—		—			—		—	
Mean	28.5	50.2	43.4	16.3	62.2	15.7	17.9	38.5	36.8	20.3	4.3	20.9
Runoff in Ac.Ft.	1753	2787	2668	971	3823	932	1099	2366	2190	1248	258	1284
	Water Year Total								Calendar Year Total 21379			

This is drainage from Reclamation District 1000 returned to Sacramento River by pumping and gravity at Mile 6.85L. Daily distribution of flows are not available since the plant operates automatically on float switch. Additional water returned to Sacramento River from same district at Mile 2.1L, (See Table 77). Water returned to the Sacramento River from the Pritchard Lake Plant at Mile 16.0L was negligible during 1951. Period of record 1940 to date. Records for 1951 computed by Division of Water Resources. A recomputation was made of the acre-feet pumped by this plant during 1950. For revised figures see the 1950 Table 2 revisions on Page of this report.

TABLE 76

FLOW OVER SACRAMENTO WEIR FROM SACRAMENTO RIVER TO YOLO BY-PASS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12	N	N	N	N	N	N	N	N	N	N	N	N
13	O	O	O	O	O	O	O	O	O	O	O	O
14												
15												
16												
17	F	F	F	F	F	F	F	F	F	F	F	F
18	L	L	L	L	L	L	L	L	L	L	L	L
19	O	O	O	O	O	O	O	O	O	O	O	O
20	W	W	W	W	W	W	W	W	W	W	W	W
21												
22												
23												
24												
25												
26												
27												
28												
29		—										
30		—										
31		—		—		—			—		—	
Mean	0	0	0	0	0	0	0	0	0	0	0	0
Runoff in Ac.Ft.	0	0	0	0	0	0	0	0	0	0	0	0
	Water Year Total 577700								Calendar Year Total 0			

Elevation--fixed crest 25.0 U.S.E.D.--Movable crest (top of needles) 31.0 U.S.E.D. Weir has 48 gates, each 38 feet in length. Weir is on right bank at Mile 4.2R above Sacramento. Period of record 1926 to date.

TABLE 77

FLOW OF RECLAMATION DISTRICT 1000 DRAIN (2ND BANNON SLOUGH) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	60			0			0	28	72	0	158
2	66	0			0			0	0	67	0	162
3	62	62			0			0	0	65	0	176
4	66	0			0			0	0	63	0	254
5	58	116			106			0	0	0	0	162
6	55	103			0			0	29	65	0	160
7	0	76			53			0	0	0	0	43
8	72	71			0			0	0	0	0	81
9	0	59			0			0	0	0	0	0
10	68	58			0			0	0	0	0	68
11	96	0			0			0	73	0	0	0
12	127	133	N	N	0	N	N	0	14	0	0	0
13	116	95	0	0	0	0	0	28	115	0	0	0
14	58	69			0			0	83	0	0	0
15	74	60			0			0	84	0	0	0
16	76	60			0			0	106	0	0	0
17	70	60	F	F	0	F	F	0	264	0	0	0
18	72	0	L	L	0	L	L	0	163	0	0	0
19	142	58	0	0	42	0	0	0	163	0	0	0
20	114	0	W	W	52	W	W	0	163	0	48	0
21	70	61			83			0	163	0	62	0
22	85	0			0			0	162	0	0	0
23	132	0			0			0	161	0	47	0
24	96	44			0			0	158	0	0	0
25	65	0			0			0	63	0	0	0
26	73	50			0			0	83	0	60	48
27	66	0			0			0	124	0	0	0
28	0	0			0			0	106	0	0	80
29	66	—			0			28	78	0	60	76
30	62	—			0			0	96	0	0	172
31	62	—		—	0	—		0	—	0	—	36
Mean	70.0	46.2	0	0	10.8	0	0	1.8	82.6	10.7	9.2	54.1
Runoff in Ac.Ft.	4302	2569	0	0	666	0	0	111	4917	658	549	3324
	Water Year Total 23930								Calendar Year Total 17096			

This is drainage from Reclamation District 1000 returned to the Sacramento River by pumping at Mile 2.1L. Additional water returned to Sacramento River at Mile 6.85L (See Table 75). Water returned to the Sacramento River from the Pritchard Lake Plant at Mile 16.0L was negligible during 1951. Period of record 1925 to date. Records for 1951 computed by Division of Water Resources.

TABLE 78

FLOW OF LINDA CREEK NEAR ROSEVILLE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	126	129	86	34	60	7.4	6.3	6.0	13	30	38	385
2	117	123	82	33	59	5.3	5.7	6.2	12	52	47	303
3	147	120	72	28	96	4.7	6.2	6.7	13	54	41	362
4	168	203	103	31	255	5.3	6.8	3.2	13	64	42	290
5	134	320	134	33	132	5.4	6.5	8.0	14	44	36	258
6	122	174	148	31	98	7.0	5.9	7.7	14	31	34	139
7	114	144	261	29	84	8.0	5.6	7.5	13	18	33	116
8	113	135	145	29	69	8.4	4.7	6.8	13	15	32	97
9	112	126	143	24	55	8.6	4.5	7.2	11	24	32	101
10	370	132	115	24	48	8.0	5.0	6.5	11	18	36	86
11	418	205	103	20	62	7.4	4.9	6.2	9.2	21	59	76
12	268	234	96	17	43	7.2	7.2	7.9	7.9	29	81	71
13	183	150	93	17	38	7.2	7.9	8.2	7.9	26	67	67
14	162	133	86	17	38	6.8	8.6	7.2	8.4	25	46	62
15	155	126	84	18	34	4.7	8.2	7.2	*8.4	27	38	58
16	295	117	83	18	25	4.7	8.2	6.8	*8.4	29	36	58
17	212	108	78	20	20	4.9	7.7	7.4	*8.6	22	30	55
18	549	114	69	18	19	6.8	6.5	7.0	*11	21	26	57
19	412	103	64	17	18	8.7	6.5	7.0	*12	18	56	77
20	228	97	64	16	20	8.7	6.0	7.4	*9.4	22	164	64
21	220	107	59	17	25	11	5.7	8.2	*9.4	23	170	57
22	692	108	55	15	12	12	6.0	9.1	10	22	115	56
23	313	101	52	14	12	11	6.3	10	12	23	73	52
24	228	90	48	12	15	8.9	5.7	10	14	70	58	54
25	209	85	47	11	13	11	6.8	11	16	163	48	67
26	188	85	45	14	11	9.1	6.0	9.4	17	87	44	96
27	171	115	38	14	9.1	9.1	6.0	9.6	17	58	52	90
28	159	96	37	38	7.4	8.6	6.2	9.6	20	49	54	612
29	155	—	42	80	8.9	7.2	5.9	13	22	48	42	600
30	153	—	46	72	7.9	7.0	6.3	12	23	39	38	431
31	134	—	39	—	7.7	—	6.0	12	—	37	—	218
Mean	228	135	86.0	25.4	45.2	7.7	6.3	8.3	12.6	39.0	55.6	165
Runoff in Ac.Ft.	14000	7498	5290	1509	2781	456	388	510	751	2398	3308	10150
	Water Year Total 65524								Calendar Year Total 49039			

Division of Water Resources station located at Antelope Road bridge 0.5 mile downstream from Highway 99E. Linda Creek is an east-side tributary to the Sacramento River at Mile 1.3L via the Back Borrow Pit of Reclamation District 1000. Recorder installed July 22, 1949. Period of record 1949 to date.
* Estimated.

TABLE 79

FLOW OF AMERICAN RIVER AT FAIR OAKS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4480	6880	4600	5610	5250	4060	1150	326	289	321	772	12400
2	4360	6360	4650	5480	4950	3690	1110	337	286	345	740	14200
3	4560	6020	4240	5530	5500	3380	1070	324	316	476	740	7920
4	5100	6570	4810	5500	11000	3200	993	316	286	663	764	9270
5	4700	13600	9640	6540	9090	3180	930	326	274	574	694	9900
6	4500	12500	9580	7110	8280	3160	870	316	267	438	764	5810
7	4360	10500	13800	7190	8000	3040	807	306	311	416	772	4130
8	4240	10800	10600	7400	7400	2890	756	304	286	410	772	3180
9	4160	9900	9170	7920	7870	2700	708	304	258	392	724	2760
10	4990	9250	8080	9170	8910	2610	700	311	253	404	663	2410
11	7560	10700	6830	9710	10800	2600	650	304	279	428	861	2310
12	7250	12900	6230	9090	9510	2610	638	304	244	428	2130	2430
13	5410	10500	5330	9060	7840	2610	650	296	249	472	3630	2310
14	4850	9140	6750	9430	6700	2740	605	291	251	435	2150	2080
15	4770	8230	6960	9040	6230	2900	578	286	249	459	2600	1920
16	5290	7500	7060	9010	6410	2960	560	286	244	525	2000	1790
17	5090	7010	6960	8700	7300	2900	537	284	251	578	1460	1780
18	17400	6350	6410	7820	7820	2720	501	277	246	610	1210	1760
19	18500	6310	6130	7040	7950	2430	486	277	249	560	1380	2130
20	9990	5920	6280	6750	8020	2340	476	274	246	555	3780	2080
21	8080	5970	6720	6800	7760	2260	505	269	249	517	4980	1780
22	39500	5610	6930	6540	7710	2080	486	277	237	560	2940	1720
23	30000	5400	6670	6410	7300	1880	462	281	244	509	2210	1720
24	18600	4980	6460	6230	7060	1740	431	289	258	798	1850	1760
25	14100	4810	6670	5710	6850	1670	425	289	260	3020	1660	1860
26	12100	4740	6830	5280	7560	1600	410	284	326	1860	1580	2270
27	10900	5080	6590	4810	7320	1420	395	272	313	1160	1990	3910
28	10000	4900	6310	5100	7500	1380	376	274	304	892	4580	11700
29	9040	—	6490	7370	6280	1300	367	279	313	861	3650	21000
30	8340	—	7170	5870	5480	1230	353	277	316	789	2980	17500
31	7450	—	6260	—	4700	—	342	274	—	825	—	10800
Mean	9667	7819	7039	7141	7431	2509	623	294	272	686	1900	5440
Runoff in Ac.Ft.	594400	434200	432800	424900	456900	149300	38330	18080	16170	42210	113100	334400
	Water Year Total 4667480								Calendar Year Total 3054790			

U. S. Geological Survey station located on right bank at Mile 19.2 above mouth. Drainage area is 1921 square miles. Period of record 1904 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 80

FLOW OF AMERICAN RIVER AT SACRAMENTO (H ST. BRIDGE) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4110	6460	5020	5580	5520	4200	1070	339	316	364	876	7160
2	3810	6230	4740	5310	5250	3680	1010	339	305	333	837	16100
3	3960	6470	4190	5410	5270	3340	968	333	339	504	837	6930
4	4960	6490	4130	5470	9740	3180	926	328	345	706	846	7610
5	4620	12300	3250	5960	9260	3130	885	322	272	761	817	8670
6	4150	12900	3530	6820	9180	3150	817	316	282	580	837	6160
7	3800	10000	12900	6970	8050	3040	734	316	293	497	876	4710
8	3530	10300	10700	7050	7520	2960	697	310	364	475	885	3770
9	3440	9600	8750	7410	7710	2720	646	305	266	441	866	3530
10	4110	8770	8270	8380	8470	2640	629	299	246	421	770	2700
11	7000	9900	7480	9100	9990	2500	604	299	282	468	837	2540
12	8610	12400	6580	8610	9870	2640	580	299	251	455	1270	2640
13	6020	10300	6450	8540	7990	2640	580	288	230	519	3700	2590
14	4840	8940	6620	8770	7040	2660	588	288	230	504	2620	2380
15	4340	8390	6320	8700	6450	2820	549	282	230	475	2320	2180
16	5200	7770	6890	8480	6450	2940	541	282	230	526	2360	2040
17	4740	7210	6300	8340	7140	2900	483	282	235	573	1720	2010
18	13100	7130	6360	7660	7760	2820	475	282	235	620	1440	1970
19	20600	6480	5980	6970	7780	2480	461	282	235	604	1400	2220
20	10800	5930	6040	6640	7900	2300	441	282	240	620	2590	2400
21	8140	5980	6360	6600	7780	2220	455	282	240	534	5210	2040
22	33200	5650	6540	6470	7710	2080	475	282	235	534	3410	1940
23	29900	5250	6490	6380	7320	1900	468	282	221	526	2450	1960
24	18500	4920	6250	6280	7160	1730	434	293	261	672	2030	1980
25	14200	4640	5360	5860	6980	1640	414	310	272	2480	1840	2120
26	11900	4600	6600	5460	7300	1580	401	299	358	2120	1700	2380
27	10700	4940	6380	5020	7340	1440	395	282	322	1340	1760	2940
28	9790	5160	6130	5290	7410	1300	376	282	339	1050	3850	8850
29	8930	—	6110	7720	6560	1270	358	282	310	979	3830	20000
30	8220	—	6890	6230	5740	1170	358	282	376	906	3060	16500
31	6970	—	6300	—	5040	—	351	282	—	916	—	12400
Mean	9234	7684	6872	6916	7409	2502	586	298	279	726	1928	5272
Runoff in Ac.Ft.	567700	426800	422500	411600	455600	148900	36040	18310	16580	44630	114700	324100
	Water Year Total 4279290								Calendar Year Total 2987460			

Station is maintained jointly by Division of Water Resources and the U. S. Geological Survey. Station is located at the "H" Street Bridge and is 6.0 miles above mouth of river. The American River flows into the Sacramento River at Mile 1.1L. Period of record 1921, 1926 to date. Record for 1951 computed by U. S. Geological Survey.

TABLE 81

FLOW OF CACHE CREEK NEAR CAPAY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	237	2490	464	231	315	573	537	561	398	50	9.4	2730
2	234	792	464	212	373	581	533	537	384	48	8.9	2630
3	226	557	387	218	414	593	501	509	384	41	8.4	2680
4	226	633	418	212	356	601	501	501	380	32	7.8	2640
5	217	3030	797	205	757	617	501	485	360	30	7.2	3040
6	202	3590	1470	198	485	633	533	482	366	25	7.2	1280
7	189	3400	3390	193	345	629	537	478	348	18	6.7	770
8	182	3070	3140	188	279	617	501	474	318	14	6.7	545
9	176	2890	2100	186	273	609	493	493	303	12	7.2	426
10	182	2750	962	183	440	605	478	501	303	11	7.8	342
11	319	3630	705	181	468	601	497	464	300	9.4	8.4	300
12	464	4740	625	169	489	601	525	432	279	8.9	8.9	258
13	350	3320	565	162	501	605	525	408	258	8.4	9.4	225
14	276	3000	529	171	493	605	521	415	231	7.2	8.9	208
15	248	2860	497	151	485	617	525	429	193	6.7	8.9	193
16	299	1310	471	160	474	637	497	440	171	6.7	9.4	176
17	547	797	446	155	561	649	482	440	167	6.2	9.4	162
18	2550	730	734	176	581	645	493	436	155	6.2	9.4	155
19	2520	641	820	234	589	641	509	436	138	5.6	12	158
20	1520	585	810	264	585	641	529	444	118	5.0	75	160
21	1980	589	792	345	609	637	521	444	97	4.5	282	144
22	7400	553	774	422	633	633	521	464	89	4.5	167	138
23	3420	529	400	493	653	621	517	446	81	4.5	106	131
24	3790	474	612	557	641	617	505	457	79	7.8	82	129
25	3370	440	717	597	625	609	513	457	72	13	67	129
26	3280	418	717	605	617	625	549	478	72	21	67	304
27	3110	404	414	641	585	601	557	474	69	20	210	4680
28	2920	394	300	677	569	581	561	457	67	16	200	5170
29	2790	—	264	545	565	561	565	436	56	13	270	4380
30	2660	—	249	370	561	541	561	422	52	12	212	3140
31	2570	—	237	—	553	—	561	422	—	10	—	1910
Mean	1564	1736	815	304	512	611	521	462	210	15.4	61.7	1269
Runoff in Ac.Ft.	96150	96430	50120	18070	31490	36350	32030	28410	12510	947	3670	78020
	Water Year Total 488500								Calendar Year Total 484197			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 3 miles northwest of Capay and 2 miles upstream from Clear Lake Water Company diversion dam. Cache Creek is a west-side tributary to Yolo By-Pass opposite Mile 7.0 north of Sacramento By-Pass. Drainage area is 1052 square miles. Period of record 1944 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 82

FLOW OF CACHE CREEK AT YOLO - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	270	2790	507	238								132
2	270	1680	489	226								3230
3	260	866	440	215								1310
4	250	810	408	208								3000
5	250	2580	640	201								2640
6	240	3710	1080	169								1530
7	220	3720	3100	137								1030
8	210	3440	3390	110								686
9	200	3250	2700	84								480
10	200	3110	1360	64								356
11	300	3070	803	44								275
12	500	6030	686	16	N	N	N	N	N	N	N	219
13	400	4150	620	0	0	0	0	0	0	0	0	171
14	350	3650	566	0								138
15	300	3440	530	0								110
16	270	2220	498	0								71
17	500	1300	476	0	F	F	F	F	F	F	F	32
18	1000	900	538	0	L	L	L	L	L	L	L	14
19	3000	750	755	0	0	0	0	0	0	0	0	3.9
20	2000	650	761	0	W	W	W	W	W	W	W	29
21	2000	650	749	0								16
22	7500	600	737	0								4.0
23	4140	580	561	0								0
24	3860	540	480	0								0
25	3400	510	660	0								0
26	3510	480	670	0								0
27	3390	440	552	0								2970
28	3200	430	345	0								4540
29	3070	—	298	0								4100
30	2950	—	270	0								3240
31	2860	—	254	—		—			—		—	2060
Mean	1647	2012	836	57.1	0	0	0	0	0	0	0	1045
Runoff in Ac.Ft.	101300	111800	51420	3400	0	0	0	0	0	0	0	64240
	Water Year Total 342195								Calendar Year Total 332160			

U. S. Geological Survey and Division of Water Resources cooperative station located 0.5 mile south of Yolo. Cache Creek is a west-side tributary to Yolo By-Pass opposite Mile 7.0 north of Sacramento By-Pass. Drainage area is 1150 square miles. Period of record 1903 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 83

FLOW OF YOLO BY-PASS NEAR WOODLAND - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	634	4660	952	412	78	50	52	58	100	25	17	50
2	600	4030	947	382	88	50	57	58	100	25	17	87
3	579	2490	924	340	96	49	56	58	100	25	17	1360
4	579	1530	893	275	109	49	55	58	100	25	17	2770
5	573	1500	857	250	120	50	55	60	100	25	15	4410
6	634	3790	1020	225	110	52	55	64	100	25	11	7750
7	676	11200	1890	193	118	53	55	70	100	25	11	6700
8	612	21300	3670	139	126	54	56	70	100	25	11	4650
9	558	20900	3920	115	126	59	56	68	100	25	11	3790
10	537	19400	3060	125	115	70	60	67	100	25	11	3250
11	658	17600	1750	101	118	76	66	68	100	25	11	2470
12	708	20500	1200	79	125	79	65	69	100	25	11	1450
13	938	24700	1010	67	121	82	64	69	100	25	11	785
14	1120	26100	911	56	108	80	67	70	100	25	11	513
15	1070	25600	834	49	84	74	69	73	100	25	11	364
16	960	23300	794	44	66	70	68	75	70	25	11	284
17	888	20000	728	40	66	69	65	78	70	25	11	197
18	888	17800	665	36	69	66	61	81	70	25	11	139
19	2810	15700	732	34	69	62	58	80	70	25	11	109
20	4890	14000	924	18	69	63	54	80	70	25	11	82
21	6110	12200	929	22	67	60	51	80	70	25	11	64
22	6480	10500	924	25	66	58	54	80	70	25	11	44
23	38600	7750	906	26	64	57	55	80	70	11	11	34
24	44400	5610	736	30	59	61	55	80	70	15	11	30
25	40400	3840	668	34	52	61	55	80	70	15	26	32
26	33300	1710	772	34	50	57	57	80	70	15	26	52
27	25700	1200	790	42	53	57	57	80	70	15	26	121
28	18400	978	672	47	50	54	58	80	70	15	26	2600
29	12200	—	531	57	50	51	59	80	70	15	26	4630
30	8350	—	453	67	47	51	59	80	70	15	26	23600
31	5690	—	412	—	50	—	58	80	—	19	—	42000
Mean	8405	12160	1144	112	83.5	60.8	58.5	72.7	85	22.1	14.9	3691
Runoff in Ac.Ft.	516800	675100	70360	6670	5140	3620	3590	4470	5060	1360	889	226900
	Water Year Total 3421518								Calendar Year Total 1519959			

This station, also known as Yolo By-Pass at Elkhorn, is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. The flow of this station is referred to the recorder at the end of the Sacramento By-Pass except during periods of high water when it is referred to the recorder at the Woodland-Elkhorn highway crossing. To get total flow through Yolo By-Pass below Sacramento, combine this flow with the flow in Tables 76 and 87. The flow in this table includes the flows of Cache Creek (Table 82), Knights Landing Ridge Cut (Table 50), and Fremont Weir (Table 53). Period of record 1930 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 84

FLOW OF SALT CREEK NEAR WINTERS (SCOTT'S RANCH) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1										(a)0	0	1.6
2										0	0	*20.
3										0	0	*164.
4										0	0	9.4
5										0	0	3.0
6										0	0	1.2
7										0	0	0.5
8										0	0	0
9										0	0	0
10										0	0	0
11										0	0	0
12										0	0	0
13										0	0	0
14										0	0	0
15										0	0	0
16										0	0	0
17										0	0	0
18										0	0	0
19										0	0.6	0.2
20										0	0.8	0
21										0	0.8	0
22										0	0	0
23										0	0	0
24										*0.2	0	0
25										0	0	0.1
26										0	1.2	8.1
27										0	0.2	4.5
28										0	0	22.
29		—								0	1.2	22.
30		—								0	*1.0	6.3
31		—		—		—			—	0	—	2.8
Mean										0	0.2	8.6
Runoff in Ac.Ft.										0	12	527
		Water Year Total							Calendar Year Total			

Division of Water Resources station located about six miles northwest of Winters and approximately 1.0 mile east of Scott Ranch. Flow of Salt Creek reaches the Yolo By-Pass via Willow Slough. Drainage area is 10.8 square miles.
(a) Beginning of record October 1, 1951.
* Estimated.

TABLE 85

FLOW OF PLEASANTS CREEK NEAR WINTERS (GONZALES RANCH) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												30
2												3.0
3												88
4												23
5												8.0
6												2.1
7												0.7
8											(a)0	.4
9											0	.2
10											0	.2
11											0	.2
12											0	.2
13											0	.2
14											0	.1
15											0	.1
16											0	0
17											0	0
18											0	0
19											0	0.2
20											0	1.1
21											0	1.0
22											0	0.7
23											0	.7
24											0	.7
25											0	.8
26											0	14
27											0	16
28											0	62
29		—									0	31
30		—									0	18
31		—		—		—			—		—	9.0
Mean												10.0
Runoff in Ac.Ft.												618
		Water Year Total							Calendar Year Total			

Division of Water Resources station located approximately 1 mile above the mouth. Pleasants Creek is a south-side tributary to Putah Creek. Drainage area is 16.2 square miles.
(a) Beginning of record November 8, 1951.

TABLE 86

FLOW OF PUTAH CREEK NEAR WINTERS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	309	609	606	228	144	38	6.3	*3	*2.5	1	2.6	7000
2	291	561	521	222	130	37	6.7	*3	*2.5	1	6.3	4090
3	347	527	432	219	151	36	8.0	*3	*2.5	1	8.5	6410
4	424	539	480	211	262	35	7.2	*3	*2.5	1	9.6	4040
5	338	2140	1180	206	700	32	6.7	*3	*2.5	1	11	3610
6	295	1380	1600	200	432	30	*6	*3	*2.5	1	15	1330
7	274	988	2650	193	293	27	*6	*3	*2.5	1	15	838
8	262	813	1530	188	233	27	*6	*3	*2.5	1	17	571
9	254	711	1380	179	195	28	*6	*3	*2.5	1	20	435
10	410	646	1170	174	171	25	*6	*3	*2.5	1	22	350
11	948	808	952	166	152	21	*6	*3	*2.5	1	45	294
12	1120	2870	825	155	141	22	*6	*3	*2.5	1	22	254
13	693	1340	745	151	136	18	*6	*3	*2.5	1	18	224
14	533	1020	675	148	130	14	*6	*3	*2.5	1	23	198
15	488	884	599	145	121	11	*6	*3	*2.5	1	15	180
16	609	768	548	140	111	9.4	*6	*3	*2.5	1	22	166
17	1360	686	509	137	105	8.8	*6	*3	*2.5	1	27	153
18	5510	671	460	141	101	9.6	*6	*3	*2.5	1	28	146
19	4490	596	424	137	94	10	*6	*3	*2.5	1	42	224
20	2230	542	404	133	95	9.6	*6	*3	*2.5	1	328	236
21	2280	577	383	127	85	9.9	*6	*3	*2.5	1	670	182
22	8420	575	362	124	75	9.1	*6	*3	*2.5	1	297	157
23	3140	542	342	117	73	8.5	*6	*3	*2.5	1	177	147
24	2090	494	323	115	71	6.7	*6	*3	*2.5	4.1	110	137
25	1560	452	309	118	68	2.7	*6	*3	*2.5	8.8	76	137
26	1280	421	293	122	64	1.7	*6	*3	*2.5	2.8	62	782
27	1090	407	280	117	58	6.2	*6	*3	*2.5	1.8	186	6860
28	952	394	262	134	54	8.2	*6	*3	*2.5	1.1	262	8920
29	842	—	258	217	50	7.4	*6	*3	*2.5	1.0	486	5920
30	748	—	246	182	47	7.0	*6	*3	*2.5	1.7	401	4040
31	660	—	238	—	44	—	*6	*3	—	2.1	—	2160
Mean	1427	819	677	162	148	17.2	6.16	3	2.5	1.50	114	1942
Runoff in Ac.Ft.	87760	45480	41630	9610	9100	1020	379	184	149	92	6790	119400
	Water Year Total 384642								Calendar Year Total 321594			

U. S. Geological Survey and Division of Water Resources cooperative station located 6 miles west of Winters. Putah Creek is a west-side tributary to Yolo By-Pass below Sacramento By-Pass. Drainage area is 614 square miles. Period of record 1930 to date. (Records 6 miles downstream available 1905 to 1931). Records for 1951 computed by U. S. Geological Survey.

TABLE 87

FLOW OF PUTAH CREEK NEAR DAVIS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	342	620	520	222	145	0	0				0	3760
2	324	570	545	210	121	0	8.7				0	5360
3	319	530	470	206	124	1.0	2.2				0	4640
4	430	520	430	198	187	7.2	0				0	4970
5	383	1640	963	191	510	6.1	0				0	4340
6	324	1470	1170	184	530	2.6	0				0	1600
7	297	959	2700	176	342	1.1	0				0	940
8	280	777	1630	172	255	.1	0				0	635
9	267	686	1350	162	206	0	0				0	484
10	324	614	1260	152	187	0	0				0	374
11	720	625	966	145	198	0	0				0	310
12	1160	2320	819	135	169	0	0	N	N	N	0	260
13	724	1390	730	126	142	0	0	0	0	0	0	218
14	560	1020	658	124	132	0	0				0	186
15	515	855	598	121	104	0	0				0	167
16	555	753	550	118	92	0	0				0	150
17	855	669	505	112	87	0	0	F	F	F	0	142
18	3910	636	475	112	80	0	0	L	L	L	0	129
19	3990	598	440	112	72	0	0	O	O	O	0	147
20	2440	545	415	110	69	0	0	W	W	W	0	228
21	1880	545	392	102	69	0	0				401	173
22	6840	540	379	99	58	0	0				369	144
23	3590	520	360	94	51	0	0				218	129
24	2370	500	333	90	31	0	0				139	121
25	1750	465	315	90	25	0	0				94	116
26	1370	435	297	92	12	0	0				74	159
27	1150	415	280	92	1.5	0	0				76	5590
28	978	402	267	97	.4	0	0				283	8130
29	868	—	255	155	.2	0	0				297	5580
30	765	—	242	187	0	0	0				520	3860
31	674	—	230	—	0	—	0		—		—	2000
Mean	1321	772	663	140	129	.60	.35	0	0	0	82.5	1776
Runoff in Ac.Ft.	81230	42880	40750	8300	7930	36	22	0	0	0	4910	109200
	Water Year Total 353438								Calendar Year Total 295258			

U. S. Geological Survey, U. S. Bureau of Reclamation and Division of Water Resources cooperative station located about 1 mile upstream from Highway 40. Putah Creek is a west-side tributary to Yolo By-Pass below Sacramento By-Pass. Period of record 1948 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 88

FLOW OF PUTAH CREEK AT LIBERTY ISLAND ROAD - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												*4810
2												*13400
3												*11900
4												*7130
5												*3730
6												2260
7												1540
8												1090
9												898
10												805
11												691
12												587
13												502
14												435
15											(a)0	390
16											0	342
17											0	332
18											0	318
19											0	332
20											0	534
21											0	400
22											0	332
23											0	304
24											0	240
25											0	245
26											*0	356
27											*410	*5890
28											*754	*7260
29		—									*940	*5660
30		—									*743	4230
31		—		—		—			—		—	2860
Mean												2574
Runoff in Ac.Ft.												158300
	Water Year Total								Calendar Year Total			

Division of Water Resources station located approximately 3 miles southeast of Davis at Solano-Yolo County line road. Putah Creek is a west-side tributary to Yolo By-Pass.
* Estimated.
(a) Beginning of record November 15, 1951.

TABLE 89

FLOW OF SWEENEY CREEK NEAR WINTERS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												33
2												*360
3												*388
4												47
5												8.8
6												3.2
7												1.5
8											(a) 0	1.0
9											0	0.9
10											0	*0.8
11											0	0.2
12											0	0.2
13											0	0.2
14											0	0.2
15											0	0.2
16											0	0.2
17											0	0.1
18											0	3.6
19											0	*1.2
20											0	0.1
21											0	0
22											0	0
23											0	0
24											0	0.1
25											0	0.2
26											0	42
27											0	3.1
28											0	33
29		—									0	20
30		—									0	11
31		—		—		—			—		—	4.1
Mean												31.2
Runoff in Ac.Ft.												1922
	Water Year Total								Calendar Year Total			

Division of Water Resources station located approximately 5 miles north of Vacaville. Sweeney Creek is a tributary to Ulatis Creek. Drainage area is 8.4 square miles.
* Estimated.
(a) Beginning of record November 8, 1951.

TABLE 90

FLOW OF ULATIS CREEK NEAR VACAVILLE (CAMPOS RANCH) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												34
2												5.2
3												37
4												11
5												4.4
6												1.7
7												1.0
8											(a) 0	0.9
9											0	.8
10											0	*.7
11											0	*.7
12											0	.7
13											0	.6
14											0	.6
15											0	.5
16											0	.5
17											0	.4
18											0	.9
19											0	.7
20											0	.6
21											0	.6
22											0	.6
23											*0	.6
24											*0	.5
25											*0	.7
26											*0	20
27											0	9.4
28											0	25
29		—									0	18
30		—									0	12
31		—		—		—			—		—	7.5
Mean												6.4
Runoff in Ac.Ft.												392
		Water Year Total							Calendar Year Total			

Division of Water Resources station located approximately 5 miles northwest of Vacaville. Ulatis Creek is a west-side tributary to Cache Slough. Drainage area is 4.3 square miles.
* Estimated.
(a) Beginning of record November 8, 1951.

TABLE 91

FLOW OF COSUMNES RIVER AT MICHIGAN BAR - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	635	1390	1070	1020	650	326	103	40	24	23	62	2040
2	590	1270	1140	962	605	308	99	39	24	27	62	2220
3	682	1190	1020	930	612	290	96	38	24	55	60	1170
4	880	1200	1090	900	1490	283	94	34	25	68	56	1430
5	716	2420	3350	900	1520	272	96	35	24	52	55	1370
6	650	2170	2930	890	1230	262	94	36	23	45	55	831
7	612	1880	3260	880	1150	255	92	35	22	39	55	562
8	583	1830	2510	890	1070	248	86	34	22	36	55	425
9	569	1720	2260	850	1030	241	86	34	21	35	54	360
10	1190	1660	2010	880	1020	232	83	33	21	33	55	312
11	2460	2080	1650	890	1080	222	80	32	20	34	75	297
12	1830	3150	1470	890	1070	212	78	32	19	33	163	286
13	1180	2340	1380	870	973	203	78	30	18	34	197	276
14	951	1970	1350	860	890	197	75	29	18	33	168	258
15	973	1760	1340	850	813	188	72	27	18	33	126	241
16	1310	1550	1370	822	750	176	70	27	17	33	109	235
17	1060	1420	1400	804	716	171	68	26	17	33	92	225
18	6800	1420	1370	759	682	168	64	25	17	34	88	222
19	4960	1290	1330	716	665	160	60	25	19	35	94	245
20	2630	1180	1310	674	635	155	56	24	18	35	294	258
21	2070	1200	1290	650	605	153	54	23	18	35	795	212
22	8640	1200	1320	620	576	153	52	23	19	35	555	209
23	7300	1120	1310	590	555	148	52	25	17	35	290	206
24	3700	1030	1270	569	514	143	51	24	19	190	216	209
25	2870	973	1260	555	481	136	51	24	20	443	173	219
26	2540	962	1240	548	455	131	50	24	22	209	155	228
27	2230	1090	1200	520	437	126	47	24	22	124	158	269
28	2020	1100	1150	628	413	122	46	23	20	96	203	3170
29	1880	—	1130	1040	395	116	45	22	20	72	206	4580
30	1740	—	1150	795	365	109	43	22	22	68	188	4820
31	1530	—	1080	—	345	—	47	22	—	73	—	2310
Mean	2186	1556	1549	792	767	197	69.9	28.7	20.3	68.7	164	958
Runoff in Ac.Ft.	134400	86410	95230	47110	47190	11710	4300	1767	1210	4220	9750	58900
			Water Year Total	762387						Calendar Year Total	502197	

U. S. Geological Survey and Division of Water Resources cooperative station located at the highway bridge at Michigan Bar. Drainage area is 537 square miles. Period of record 1907 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 92

FLOW OF COSUMNES RIVER AT McCONNELL - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	616	1510	1160	1070	690	330	90	14	1	0	62	552
2	544	1380	1320	1020	642	301	92	11	2	0	59	3680
3	544	1280	1120	990	612	285	93	11	2	.1	55	1500
4	808	1230	1050	960	1360	274	92	11	3	33	53	2120
5	710	2550	3330	950	1990	256	87	9	3	42	48	1890
6	601	3040	4300	935	1450	245	83	7	4	28	45	1210
7	544	2180	4160	930	1330	241	74	4	4	20	43	696
8	514	2000	3910	915	1210	222	65	1	5	18	44	512
9	495	1900	2750	895	1150	224	65	.1	5	14	44	431
10	877	1790	2510	915	1130	212	57	.1	6	13	44	370
11	2680	2150	1960	950	1160	192	55	.1	6	12	45	342
12	3510	3540	1720	940	1240	179	52	.1	7	11	92	320
13	1600	2920	1600	935	1100	180	44	17	7.7	13	143	303
14	1110	2260	1570	905	995	180	41	70	7.9	20	183	282
15	945	1960	1540	876	890	168	37	15	7.9	22	135	264
16	1800	1740	1550	849	818	159	31	12	7.1	22	112	249
17	1320	1570	1560	826	759	152	30	9	7.1	22	103	241
18	2270	1580	1530	782	734	149	30	6	6.8	22	92	233
19	8880	1420	1460	726	702	141	31	5	5.0	22	89	233
20	5410	1280	1430	686	670	133	33	4	4.2	22	128	266
21	2680	1290	1430	650	630	124	33	3	5.7	22	631	239
22	5060	1320	1450	612	601	128	33	2	4.8	22	686	219
23	9900	1210	1430	587	565	119	35	1	.9	22	350	216
24	5540	1100	1380	565	534	114	34	.9	0	25	231	210
25	3750	1010	1350	541	508	112	34	.9	2.1	230	190	221
26	2980	995	1330	534	479	106	29	.9	9.6	330	170	227
27	2560	1210	1290	518	457	103	24	.9	11	164	160	253
28	2280	1340	1230	524	433	106	18	.9	6.0	114	170	1270
29	2050	—	1190	1090	403	101	18	.9	1.2	92	192	6830
30	1920	—	1220	880	372	94	21	.9	0	78	173	6930
31	1680	—	1180	—	351	—	17	.9	—	66	—	5870
Mean	2457	1741	1807	819	838	178	47.7	7.08	4.77	49.1	152	1232
Runoff in Ac.Ft.	151100	96700	111100	48710	51500	10570	2930	436	284	3020	9070	75730
	Water Year Total 845220								Calendar Year Total 561150			

U. S. Geological Survey, U. S. Bureau of Reclamation and Division of Water Resources cooperative station located on Highway 99 bridge. When flow in main channel reaches 4600 c.f.s. water starts to by-pass station. Figures here given include all overflow. Drainage area is 730 square miles. Period of record 1942 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 93

FLOW OF DRY CREEK NEAR GALT - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	162	338	359	126	125	13					0	1660
2	141	316	515	122	110	13					0	800
3	160	300	362	118	107	7.2					0	427
4	260	334	350	114	244	2.4					0	562
5	185	732	2030	114	222	.7					0	572
6	154	738	2040	112	138	2.0					0	336
7	140	544	1440	104	110	4.6					0	178
8	132	414	1240	102	95	4.8					0	173
9	122	362	870	96	85	4.6					0	140
10	366	334	735	93	77	4.0					0	65
11	1520	480	565	87	70	4.6					0	70
12	2570	1360	443	82	70	2.5	N	N	N	N	0	48
13	810	1010	392	80	67	1.4	0	0	0	0	0	39
14	524	695	377	79	65	.4					0	29
15	414	550	336	77	61	.2					0	22
16	722	423	314	75	53	0					0	18
17	527	372	298	74	48	0	F	F	F	F	0	14
18	1980	366	284	73	45	0	L	L	L	L	0	13
19	7510	337	269	71	39	0	0	0	0	0	0	20
20	1980	306	250	69	36	0	W	W	W	W	0	32
21	1040	310	231	65	35	0					79	19
22	2280	356	213	63	30	0					328	12
23	2580	327	199	63	27	0					112	10
24	1150	279	187	62	27	0					52	8.2
25	849	253	176	62	23	0					24	8.2
26	710	249	166	63	19	0					8.9	11
27	573	432	154	61	21	0					4.0	18
28	470	398	146	68	17	0					7.0	349
29	418	—	139	204	17	0					1.0	3500
30	404	—	138	154	15	0					0	3310
31	362	—	133	—	13	—			—		—	2370
Mean	1007	461	495	91.1	68.1	2.18	0	0	0	0	20.5	430
Runoff in Ac.Ft.	61910	25620	30450	5420	4190	130	0	0	0	0	1220	26460
	Water Year Total 237890								Calendar Year Total 155400			

U. S. Geological Survey, U. S. Bureau of Reclamation and Division of Water Resources cooperative station also known as Dry Creek at Dustin Road, is located at Dustin Road Bridge. Drainage area is 325 square miles. Period of record 1926 to 1933; 1944 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 94

FLOW OF MOKELUMNE RIVER AT LANCHA PLANA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1040	2940	987	1460	1190	1180	270	355	358	507	512	724
2	1060	2970	892	911	1230	812	312	355	355	533	658	502
3	1100	2280	1020	647	1400	1400	352	355	355	642	551	667
4	1090	1570	1140	669	2030	678	349	355	355	590	599	1260
5	1060	1560	1550	669	2180	589	352	355	352	642	556	1260
6	1060	1570	1570	647	1930	1090	355	355	352	642	636	1250
7	1060	1800	1560	636	1550	1130	355	355	352	324	547	1250
8	1050	2250	1540	139	1410	1060	355	355	358	448	664	1250
9	1050	2540	1550	392	1490	1620	355	355	399	642	664	1210
10	1070	2540	1760	583	2150	1150	355	355	563	647	653	1200
11	1110	2530	1980	647	2370	588	355	355	636	647	459	1190
12	1110	2570	1980	957	2230	639	355	355	636	647	479	1190
13	1080	2300	1720	1370	1770	654	343	355	636	647	680	1180
14	1090	2490	1100	1360	1260	761	355	355	630	220	680	1180
15	1120	2550	1210	1370	1060	950	358	358	289	455	680	1190
16	1110	2200	1530	1230	958	1150	358	358	194	561	651	1210
17	1090	1990	1670	1490	1190	1580	358	362	476	652	213	920
18	1740	1940	1810	1720	1450	884	349	362	636	652	193	690
19	2280	1510	1720	1500	1840	587	355	362	636	652	497	620
20	2360	1310	1640	1470	2610	485	349	358	636	195	556	690
21	2250	1220	1640	1380	1620	613	349	358	636	244	691	690
22	2390	1540	1640	1110	1550	646	355	355	535	495	564	670
23	2590	1230	1680	1250	1590	497	352	355	488	652	686	240
24	3080	1280	1820	1580	2240	284	352	355	642	642	549	520
25	3030	994	1950	1380	1540	300	352	355	642	598	155	560
26	2060	944	1280	1310	2050	300	355	355	642	658	498	540
27	2110	920	1620	1090	2640	300	355	358	516	474	680	570
28	2970	921	1590	1380	1940	300	355	355	559	138	680	690
29	2150	—	1380	1930	2050	300	362	355	537	533	680	920
30	2970	—	1120	1200	2630	289	358	355	379	658	680	1650
31	2350	—	950	—	1930	—	358	349	—	518	—	1930
Mean	1717	1874	1503	1123	1790	761	350	356	493	534	566	955
Runoff in Ac.Ft.	105600	104100	92430	66800	110100	45250	21520	21890	29320	32840	33700	58740
	Water Year Total 1065430								Calendar Year Total 722290			

U. S. Geological Survey and Division of Water Resources cooperative station located 3 miles downstream from Pardee Dam. Drainage area is 584 square miles. Period of record 1926 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 95

FLOW OF MOKELUMNE RIVER NEAR CLEMENTS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1100	3000	1080	1450	1150	1560	323	351	357	535	568	726
2	1060	3010	1000	1130	1260	804	329	357	367	610	722	784
3	1140	2710	1080	682	1340	1280	387	361	361	726	614	576
4	1120	1630	1120	691	1910	919	377	364	357	674	665	900
5	1080	1720	1700	696	2150	460	348	364	361	726	*660	1340
6	1060	1640	1660	678	2000	884	350	357	361	713	*650	1310
7	1060	1730	1640	664	1610	1200	350	354	361	506	648	1300
8	1050	2130	1590	335	1290	1060	350	354	357	351	*670	1290
9	1030	2560	1610	348	1470	1570	350	354	374	713	*690	1280
10	1170	2570	1710	602	1950	1360	350	354	516	515	*710	1250
11	1410	2610	2010	651	2350	587	350	361	615	735	731	1240
12	1180	2750	2020	678	2280	662	350	357	619	731	439	1240
13	1110	2590	1860	1320	1920	658	340	357	619	731	713	1240
14	1100	2570	1180	1470	1290	728	354	351	611	412	713	1220
15	1160	2590	1140	1530	1160	825	357	354	352	359	*685	1220
16	1220	2350	1430	1130	923	1130	354	354	298	627	*655	1260
17	1100	2030	1690	1420	1050	1520	357	357	381	731	*630	1260
18	2450	2020	1820	1570	1280	994	361	361	611	722	*600	933
19	2600	1590	1760	1790	1710	795	354	367	611	722	*570	726
20	2390	1350	1670	1430	2520	452	357	361	615	432	543	648
21	2340	1280	1680	1450	1650	616	357	354	615	68	704	713
22	2480	1560	1660	1150	1480	634	367	351	530	420	656	713
23	2540	1280	1700	1180	1480	666	357	351	494	718	704	704
24	3170	1430	1800	1530	2140	332	354	351	623	722	635	261
25	3170	1060	2160	1400	1910	323	357	354	627	691	510	490
26	2210	1000	1150	1290	1990	329	357	361	623	731	151	293
27	2200	1030	1680	1220	2550	326	361	367	512	660	652	510
28	2980	1000	1590	1240	1920	335	361	364	548	393	713	576
29	2240	—	1580	1390	1930	335	367	357	523	293	718	1020
30	2960	—	1150	1420	2580	323	357	357	456	722	718	1180
31	3010	—	1030	—	1960	—	354	364	—	576	—	1940
Mean	1803	1957	1545	1133	1748	789	355	357	488	589	634	972
Runoff in Ac.Ft.	110900	108700	95030	67410	107500	46940	21810	21980	29070	36240	37760	59790
	Water Year Total 1106610								Calendar Year Total 743130			

This station was a U. S. Geological Survey and Division of Water Resources cooperative station until October 1, 1951. Since that time, it has been operated by the Division of Water Resources. It is located 1 mile north of Clements, 700 feet upstream from the highway bridge. Drainage area is 630 square miles. Period of record 1904 to date. Records for 1951 computed by U. S. Geological Survey.
* Estimated.

TABLE 96

FLOW OF MOKELUMNE RIVER AT WOODBRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1170	2820	999	1060	909	1370	23	24	26	200	373	692
2	1160	2840	1090	1410	999	596	22	24	27	236	417	712
3	1180	2870	1040	514	1040	606	21	24	28	344	480	559
4	1200	2350	1150	345	1250	955	18	24	29	407	429	843
5	1170	1790	1400	482	1650	234	18	24	29	365	444	1170
6	1120	1730	1670	476	1730	198	19	24	30	392	453	1170
7	1100	1650	1670	476	1560	739	19	24	32	387	437	1160
8	1090	1840	1660	473	1210	674	19	24	33	154	429	1160
9	1080	2160	1630	87	1220	774	20	24	34	201	518	1160
10	1110	2390	1610	105	1170	1080	21	23	56	344	536	1150
11	1220	2460	1300	240	1740	494	21	23	219	363	509	1150
12	1310	2560	1940	282	1860	163	21	23	270	390	365	1150
13	1160	2610	1980	793	1780	177	22	23	286	416	405	1140
14	1120	2540	1780	854	1250	200	22	23	327	382	536	1140
15	1110	2530	1310	858	356	228	23	23	284	121	541	1150
16	1210	2520	1370	1020	690	471	24	23	57	210	572	1170
17	1160	2220	1560	888	700	594	25	23	18	336	492	1170
18	1210	2010	1660	1070	910	745	25	23	137	405	220	834
19	2150	1860	1770	1200	1080	287	25	23	300	404	166	638
20	2260	1600	1730	895	1420	83	25	24	331	361	352	668
21	2180	1370	1680	1020	1810	106	24	24	319	89	1010	636
22	2170	1300	1670	898	1110	267	24	24	301	33	661	684
23	2240	1450	1680	772	1100	231	24	24	255	265	653	606
24	2410	1260	1710	946	1220	52	24	23	304	455	616	336
25	2810	1200	1830	1090	1600	30	24	23	385	417	516	500
26	2380	1060	1330	970	1450	27	24	23	375	431	201	333
27	2210	1020	1520	913	1540	25	24	24	335	449	504	525
28	2150	972	1610	576	1390	24	24	24	296	325	647	640
29	2670	—	1650	1270	1450	24	23	25	238	131	648	977
30	2130	—	1660	1430	1620	23	24	25	296	375	650	1230
31	2680	—	1230	—	1390	—	24	26	—	460	—	1790
Mean	1672	1964	1577	790	1347	388	22.5	23.7	190	319	456	916
Runoff in Ac.Ft.	102800	109100	96970	47030	82300	23070	1380	1460	11310	19600	29530	56320
	Water Year Total 902540								Calendar Year Total 581370			

U. S. Geological Survey and Division of Water Resources cooperative station located 0.4 mile below diversion dam of Woodbridge Irrigation District. Drainage area is 644 square miles. Period of record 1924 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 97

FLOW OF BEAR CREEK NEAR LOCKEFORD - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.3	14	23	.6	.2	.01	.01					60
2	4.8	12	44	.8	.4	.01	.01					16
3	5.7	9.1	21	1.0	.2	.01	.01					17
4	13	9.1	15	1.2	.4	.01	.01					16
5	9.6	104	128	.6	.6	.01	.01					15
6	7.2	51	68	.6	.7	.01	.01					4.5
7	6.0	27	47	.6	.6	.01	.01					2.5
8	5.4	21	35	.7	.3	.01	.01					.9
9	5.1	18	22	.6	.2	.01	.01					.4
10	44	18	16	.6	.2	.01	.01					.2
11	339	33	11	.3	.2	.01	.01					.1
12	119	121	9.1	.1	.2	.01	.01	N	N	N	N	.1
13	58	35	8.6	.1	.1	.01	.01	0	0	0	0	.1
14	38	22	7.1	.1	.1	.01	.01					0
15	36	17	6.6	.1	.1	.01	.01					0
16	108	14	5.7	.1	.1	.01	.01					0
17	44	8.6	4.2	.2	.1	.01	.01	F	F	F	F	0
18	571	8.1	3.3	.2	.1	.01	.01	L	L	L	L	0
19	586	7.1	2.7	.2	0	.01	.01	0	0	0	0	0
20	84	5.3	2.7	.2	0	.01	.01	W	W	W	W	0
21	66	5.3	2.7	.1	.1	.01	.01					0
22	68	7.6	2.2	.1	.1	.01	.01					0
23	67	7.1	2.0	.1	.1	.01	.01					0
24	50	4.9	2.0	.1	.1	.01	.01					0
25	41	4.2	2.0	.1	.1	.01	.01					0
26	36	4.5	2.0	.1	0	.01	.01					0
27	32	19	1.8	.1	0	.01	.01					0
28	27	21	.5	.1	0	.01	.01					187
29	24	—	.4	.1	0	.01	.01					562
30	24	—	.2	.1	0	.01	.01					408
31	18	—	.5	—	0	—	.01		—		—	97
Mean	82.0	22.4	16.0	.33	.17	.01	.01	0	0	0	0	45.4
Runoff in Ac.Ft.	5040	1250	984	20	1	.6	.6	0	0	0	0	2790
	Water Year Total 14176								Calendar Year Total 10096			

U. S. Geological Survey station located at County Road bridge 0.8 mile southeast of Lockeford. Drainage area is 48.4 square miles. Period of record 1930 to 1933; 1943 to date. (Prior records available at a site 3 miles downstream.) Records for 1951 computed by U. S. Geological Survey.

TABLE 98

FLOW OF CALAVERAS RIVER AT JENNY LIND - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	248	445	461	9.2	28	92	103	0		0	4.2	336
2	216	398	569	8.6	62	92	103	0		0	0	720
3	325	382	435	9.2	114	94	101	0		0	0	820
4	525	371	574	9.2	90	96	101	44		0	0	792
5	386	1030	2630	8.6	61	94	103	50		0	0	810
6	302	1220	2810	8.6	59	94	103	49		0	11	769
7	265	764	2340	9.2	64	105	101	55		0	9.6	715
8	245	609	1740	9.2	79	121	96	44		0	.8	625
9	132	537	1240	9.2	79	121	112	10		0	0	339
10	326	489	1040	9.2	75	145	156	0.7		0	0	32
11	1550	645	815	9.2	75	194	156	0		0	0	30
12	2440	1230	692	9.2	73	191	150	0	N	0	0	117
13	1500	955	625	10	73	191	148	0	0	0	0	505
14	769	697	585	10	72	191	145	0		0	14	336
15	609	589	541	9.2	72	188	140	0		0	20	211
16	792	525	509	8.6	72	188	140	0		0	21	135
17	702	473	485	9.2	72	186	138	0	F	0	20	98
18	1760	465	457	47	70	183	133	0	L	0	19	79
19	2890	469	425	90	69	183	128	0	O	0	20	69
20	2470	413	406	94	67	180	118	0	W	0	44	67
21	1660	409	394	92	65	180	123	0		0	362	67
22	1720	433	386	90	65	177	118	0		0	394	67
23	2120	417	371	84	65	174	114	12		0	180	62
24	1560	378	359	124	64	172	107	8.5		3.2	90	58
25	1050	352	352	124	64	166	82	.1		54	56	55
26	855	344	337	121	65	109	8.8	0		40	44	52
27	728	449	268	116	65	107	1.8	0		3.8	40	52
28	634	473	133	168	75	107	0	0		0	36	525
29	577	—	9.2	119	75	105	0	0		1.9	34	3130
30	557	—	9.2	21	81	105	0	0		43	33	3670
31	493	—	9.2	—	92	—	0	0	—	34	—	3330
Mean	981	570	712	48.2	71	144	97.7	8.82	0	5.80	48.4	602
Runoff in Ac.Ft.	60310	31660	43750	2870	4370	8590	6010	542	0	357	2880	37040
	Water Year Total 306487								Calendar Year Total 198379			

U. S. Geological Survey and Division of Water Resources cooperative station located 0.2 mile south of Jenny Lind at Milton Road bridge. Drainage area is 395 square miles. Period of record 1907 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 99

FLOW OF CALAVERAS RIVER AT BELLOTA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	*.1	.4	97	.1	25	63	78	0		NR	0	*1.0
2	*.1	.3	104	.1	25	65	85	0		NR	0	*1.3
3	.2	.3	97	1.4	39	59	82	0		NR	0	.3
4	.3	.2	92	3.4	59	59	78	0		NR	0	6.4
5	.4	4.4	131	1.1	55	62	74	0		NR	0	60
6	.3	3.9	95	0	53	69	75	0		NR	0	55
7	.2	1.7	132	0	52	60	78	NR		NR	0	54
8	.2	1.1	163	0	50	73	73	NR		NR	0	52
9	.3	.8	137	0	52	77	70	NR		NR	0	48
10	2.0	.6	126	0	53	80	85	NR		NR	0	34
11	21	.7	113	0	52	89	92	NR		NR	0	32
12	27	3.2	105	0	53	84	94	NR	N	NR	0	31
13	27	1.3	99	0	53	82	98	NR	O	NR	0	44
14	*38	*29	97	0	52	86	104	0		NR	0	45
15	NR	*89	96	0	52	87	106	0		NR	0	40
16	NR	87	92	0	50	90	100	0		0	0	37
17	*2.7	86	91	0	49	94	96	0	R	0	0	35
18	48	85	90	0	49	141	94	0	E	0	0	34
19	29	84	87	0	49	97	87	0	C	0	0	33
20	3.4	82	85	0	49	97	84	0	O	0	0	33
21	1.1	79	84	0	50	98	86	0	R	0	22	33
22	1.0	81	82	0	49	100	87	0	D	0	53	33
23	1.4	81	81	0	49	100	84	0		0	45	33
24	.5	79	79	0	47	102	79	0		0	39	33
25	1.3	77	78	26	45	101	78	0		0	35	33
26	1.0	76	78	46	45	87	33	0		0	32	33
27	.8	80	74	46	46	81	.4	0		0	*37	32
28	.7	90	66	57	47	82	0	0		0	40	44
29	.7	—	16	64	49	76	0	NR		0	36	*37
30	.8	—	.2	43	52	73	0	NR		0	26	*40
31	.4	—	.1	—	59	—	0	NR	—	0	—	112
Mean		43	89.3	9.6	48.7	83.8	70.3				12.2	36.9
Runoff in Ac.Ft.		2388	5489	571	2993	4984	4325				724	2267
	Water Year Total								Calendar Year Total			

Division of Water Resources station located just above the highway bridge at Bellota. Flows in the Calaveras River and in Mormon Slough are regulated by headgates near Bellota. For 10 years prior to December 1948, all except flood flows passed through Mormon Slough. Period of record 1948 to date.

* Estimated.

NR No record.

TABLE 100

FLOW OF CALAVERAS RIVER NEAR STOCKTON - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	94	0	31	1.0	10	0			0	16
2	0	0	130	0	*18	2.9	20	0			0	2.5
3	0	0	122	0	5.7	1.7	8.6	0			0	*1.6
4	0	0	95	0	11	3.7	4.0	0			0	* .8
5	0	0	125	0	52	2.5	2.3	0			0	0
6	0	0	163	0	44	2.0	.2	0			0	33
7	0	1.6	106	0	44	.6	3.1	0			0	42
8	0	.5	167	0	48	0	3.4	NR			0	37
9	0	.1	139	0	31	0	3.3	NR			0	40
10	0	0	118	0	*20	1.4	0	NR			0	35
11	0	0	103	0	*18	2.9	0	NR			0	21
12	121	0	85	0	*17	4.5	2.2	NR	N	N	0	20
13	34	3.5	75	0	*16	2.4	1.5	NR	0	0	0	19
14	6.5	1.0	68	0	*15	4.5	11	NR			0	34
15	2.5	50	64	0	*14	1.6	26	0			0	33
16	2.6	70	59	0	*14	5.4	30	0	R	R	0	28
17	13	76	56	0	9.8	5.5	18	0	E	E	0	25
18	6.4	76	53	0	4.9	.8	19	0	C	C	0	24
19	285	74	51	0	4.6	.6	13	0	O	O	0	23
20	59	74	48	0	11	1.9	5.4	0	R	R	0	21
21	14	72	56	0	1.7	6.6	1.6	0	D	D	0	15
22	5.4	71	56	0	.8	12	2.3	0			0	18
23	2.9	72	52	0	7.5	16	9.6	0			0	20
24	2.2	71	60	0	13	29	1.1	0		0	10	20
25	1.5	68	43	0	6.0	28	.2	0		0	36	20
26	1.1	65	35	0	4.5	21	0	0		0	37	20
27	.9	66	50	0	2.7	13	0	0		0	36	24
28	.9	79	56	0	4.5	8.4	0	0		0	30	23
29	.6	—	39	24	3.2	3.3	0	NR		0	25	118
30	.1	—	14	31	1.9	4.6	0	NR		0	24	147
31	0	—	.3	—	2.3	—	0	NR	—	0	—	162
Mean	18.0	35.4	76.8	1.8	15.4	6.3	6.3				6.6	34.6
Runoff in Ac.Ft.	1110	1965	4725	109	946	372	388				393	2128
	Water Year Total								Calendar Year Total			

Division of Water Resources station located upstream from Solari Road bridge 3.5 miles above the mouth of Stockton Diverting Canal. Flows in the Calaveras River are regulated by headgates near Bellota. For 10 years prior to December 1948, all but flood flows of the Calaveras River by-passed this station via Mormon Slough and the Stockton Diverting Canal. Period of record 1948 to date.
* Estimated.
NR No record.

TABLE 101

FLOW OF MORMON SLOUGH AT BELLOTA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	258	446	421	36	1.0	32	28	0			0	50
2	232	403	534	29	*1.0	31	19	0			0	790
3	*271	368	430	24	*8.9	36	20	0			0	987
4	551	356	394	20	*25	32	25	0			0	987
5	424	730	2250	19	20	26	25	*15			0	980
6	336	1510	3130	18	15	23	23	28			0	691
7	293	987	2560	17	15	15	20	35			0	632
8	271	783	1860	15	16	21	21	41			0	564
9	253	670	1240	15	17	21	22	*15			0	452
10	362	601	999	13	15	29	47	*8.9			0	*56
11	1670	747	776	13	20	54	49	*4.2			0	22
12	2900	1410	628	9.5	20	62	49	*1.2	N	N	0	11
13	1890	1200	548	7.5	18	65	45	*0.6	0	0	0	310
14	934	820	480	6.6	18	58	45	*0			0	293
15	747	635	427	4.7	15	51	50	*0			0	182
16	926	548	376	3.9	12	49	43	*0			0	112
17	794	471	353	3.0	13	55	43	*0	F	F	0	74
18	2290	437	324	2.4	13	47	44	*0	L	L	0	59
19	3440	437	296	3.9	12	50	45	*0	O	O	0	45
20	2900	406	271	11	12	49	41	*0	W	W	0	41
21	2000	373	255	8.9	13	55	44	*0			44	40
22	1740	391	242	7.0	12	58	48	*0			202	39
23	2410	385	225	4.7	13	59	42	*0			75	40
24	1810	344	215	6.6	7.0	62	35	*0			18	35
25	1220	310	200	8.0	7.5	58	42	*0			1.0	32
26	983	288	188	7.5	8.4	32	*20	*0			0	32
27	828	342	155	6.1	11	21	*11	*0			0	27
28	716	397	69	11	17	20	*4.2	*0			0	433
29	649	—	45	19	16	25	*.8	*0			0	3580
30	608	—	55	4.7	26	30	*0	*0			0	4300
31	499	—	45	—	33	—	0	*0	—		—	3490
Mean	1136	600	645	11.8	14.5	40.9	30.7	4.8	0	0	11.3	625
Runoff in Ac.Ft.	69830	33310	39640	705	894	2432	1886	295	0	0	674	38450
	Water Year Total 302632								Calendar Year Total 188116			

Division of Water Resources station located just below the Bellota-Escalon Road bridge. Flows in Mormon Slough and Calaveras River are regulated by headgates near Bellota. For 10 years prior to December 1948, all except flood flows of the Calaveras River passed through Mormon Slough. Period of record 1948 to date.
* Estimated.

TABLE 102

FLOW OF STOCKTON DIVERTING CANAL AT STOCKTON - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	195	464	395	18	1.7	0	0				0	0
2	172	400	690	15	0	0	0				0	830
3	161	369	440	12	0	0	0				0	950
4	385	355	318	6.3	0	0	0				0	1140
5	369	804	1980	2.3	0	0	0				0	1250
6	262	1530	3320	1.6	0	0	0				0	784
7	217	950	2600	.4	0	0	0				0	680
8	192	703	1990	.1	0	0	0				0	605
9	177	544	1350	.1	0	0	0				0	523
10	217	452	1050	0	0	0	0				0	148
11	1400	470	838	0	0	0	0				0	24
12	3660	1160	650	0	0	0	2.2	N	N	N	0	6.8
13	2170	1140	524	0	0	9.0	10	0	0	0	0	189
14	1040	792	452	0	0	20	7.3				0	362
15	709	517	390	0	0	7.8	28				0	231
16	970	411	341	0	0	6.5	14				0	138
17	870	341	310	0	0	6.6	3.5	F	F	F	0	87
18	1550	306	281	0	0	21	3.2	L	L	L	0	57
19	3640	302	255	0	0	2.4	3.0	0	0	0	0	38
20	2900	306	227	0	0	4.9	3	W	W	W	0	27
21	2040	258	214	0	0	1.9	3				0	25
22	1460	273	198	0	0	0	3.2				172	23
23	2190	285	186	0	0	4.4	3.4				217	22
24	1770	251	172	0	0	10	3				77	17
25	1200	224	161	0	0	13	2				24	13
26	950	204	148	0	0	8.0	2				3.7	10
27	815	233	128	0	0	1.5	1				0	7.0
28	709	323	74	0	0	0	0				0	111
29	636	—	27	0	0	0	0				0	3260
30	602	—	24	7.6	0	0	0				0	4340
31	537	—	25	—	0	—	0		—		—	3560
Mean	1102	513	637	2.11	.05	3.90	2.96	0	0	0	16.5	629
Runoff in Ac.Ft.	67770	28500	39190	126	3	232	182	0	0	0	979	38690
	Water Year Total 307003								Calendar Year Total 175672			

U. S. Geological Survey, U. S. Bureau of Reclamation and Division of Water Resources cooperative station located at Sanguinetti Lane bridge near the mouth of the canal. For 10 years prior to December 1948, flows of Calaveras River were diverted to the Stockton Canal via Mormon Slough. Period of record 1944 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 103

FLOW OF DUCK CREEK AT FARMINGTON - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.3	2.9	17									14
2	2.9	2.4	24									35
3	3.3	2.1	8.1									NR
4	9.1	1.9	4.6									NR
5	7.9	106	162									NR
6	6.5	15	20									16
7	5.5	8.2	10									6.3
8	4.9	5.3	7.7									3.9
9	4.5	4.0	4.6									2.6
10	9.6	3.3	3.3									1.7
11	272	3.4	2.3									.9
12	62	11	1.6	N	N	N	N	N	N	N	N	.2
13	12	7.3	1.2	0	0	0	0	0	0	0	0	0
14	8.4	4.4	.5									0
15	6.9	3.3	0									0
16	64	2.5	0									0
17	13	1.8	0	F	F	F	F	F	F	F	F	0
18	23	1.4	0	L	L	L	L	L	L	L	L	0
19	65	.7	0	0	0	0	0	0	0	0	0	1.7
20	16	.2	0	W	W	W	W	W	W	W	W	1.4
21	9.3	0	0									.6
22	7.4	0	0									0
23	7.7	0	0									0
24	7.1	0	0									0
25	6.1	0	0									0
26	5.3	0	0									0
27	4.7	0	0									0
28	4.1	2.5	0									NR
29	3.8	—	0									NR
30	3.8	—	0									NR
31	3.3	—	0	—		—			—		—	NR
Mean	21.4	6.8	8.6	0	0	0	0	0	0	0	0	
Runoff in Ac.Ft.	1316	376	529	0	0	0	0	0	0	0	0	
	Water Year Total								Calendar Year Total			

Division of Water Resources station located 1/2 mile northwest of Farmington, 300 feet west of Bellota-Escalon Road. Duck Creek is an east-side tributary to the San Joaquin River at Mile 46.1R, via French Camp Slough. Period of record 1950 to date.
NR No record.

TABLE 104

FLOW OF DUCK CREEK NEAR STOCKTON (MARIPOSA ROAD) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0							0	4.5
2	0	0	11	0							0	35
3	0	0	6.2	0							0	72
4	0	0	1.5	0							0	140
5	0	0	15	0							0	168
6	0	23	72	0							0	100
7	0	6.0	18	0							0	44
8	0	1.9	4.9	0							0	21
9	0	.4	2.0	0							0	11
10	0	0	.4	0							0	6.0
11	12	0	0	0							0	3.8
12	178	.1	0	0							0	.7
13	83	3.9	0	0							0	.1
14	9.0	1.3	0								0	0
15	3.1	.1	0								0	0
16	9.8	0	0							0	0	0
17	14	0	0							0	0	0
18	6.7	0	0							0	0	0
19	26	0	0							0	0	0
20	25	0	0							0	0	0
21	7.9	0	0							0	0	0
22	3.1	0	0							0	0	0
23	1.5	0	0							0	0	0
24	1.4	0	0							0	0	0
25	.9	0	0							0	.1	0
26	.4	0	0							0	0	0
27	0	0	0							0	0	0
28	0	0	0							0	0	.8
29	0	—	0							0	0	143
30	0	—	0							0	0	196
31	0	—	0	—	—			—		0	—	147
Mean	12.3	1.3	4.2								0.1	36.2
Runoff in Ac.Ft.	757	73	260								0	2166
	Water Year Total								Calendar Year Total			

Division of Water Resources station located 1/4 mile east of Highway 99, 150 feet downstream from Mariposa Road bridge. Duck Creek is an east-side tributary to the San Joaquin River at Mile 46.1R. Recorder was removed April 14, reinstalled October 16. During high-flow periods Duck Creek water enters Mormon Slough at a point approximately 2 miles east of the head of the Stockton Diverting Canal. Period of record 1950 to date.

TABLE 105

FLOW OF LONE TREE CREEK NEAR VALLEY HOME - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.6	*2.1	4.1	7.7	3.9	25	80	56	62	74	6.3	30
2	1.7	*2.2	4.2	5.8	3.0	34	65	69	65	78	16	211
3	1.7	*2.6	1.4	5.4	5.1	45	54	78	64	67	33	127
4	11	*2.8	1.0	7.4	14	58	63	70	69	63	51	180
5	4.3	*3.1	15	7.2	13	42	74	73	70	45	49	201
6	2.1	*3.3	7.7	6.4	12	41	51	*80	87	46	57	*118
7	1.7	*3.0	2.7	13	9.9	47	53	79	84	23	53	*77
8	1.7	*2.4	1.8	8.7	15	35	55	59	87	53	54	*41
9	1.7	*2.3	.9	11	16	43	41	86	84	53	53	*20
10	3.4	*2.5	.4	9.0	17	52	60	78	78	49	57	*5.9
11	23	*2.7	.2	14	13	50	66	75	114	34	44	5.6
12	*214	*3.0	.1	14	14	56	50	63	96	37	45	4.9
13	*160	*3.3	0	12	22	62	49	93	104	49	34	4.5
14	*69	*3.2	0	18	29	72	56	95	96	*59	26	4.2
15	*24	*2.4	0	18	20	84	74	78	108	*71	17	3.8
16	*12	*2.0	0	13	14	.54	65	68	117	*76	12	3.6
17	*7.0	*1.5	0	11	19	52	62	46	81	68	11	3.4
18	*6.1	*1.2	0	11	22	62	68	53	63	65	9.4	3.6
19	*5.2	*0.8	0	12	22	42	62	53	65	61	7.9	3.4
20	*4.2	*.6	0	8.3	22	65	60	69	84	57	32	3.4
21	*3.5	*.3	0	12	21	76	50	71	67	48	84	3.5
22	*3.1	*.4	0	13	26	82	56	46	53	61	67	3.2
23	*2.4	*.4	0	10	29	74	68	68	31	59	37	3.0
24	2.1	*.5	0	13	24	73	68	80	12	68	22	2.6
25	2.0	*.6	0	26	32	67	61	96	17	116	14	2.5
26	2.0	*.6	0	17	22	55	64	84	48	74	11	2.6
27	2.0	*.7	0	26	31	42	65	68	39	34	11	3.6
28	2.0	*.9	0	31	35	53	79	76	20	19	10	20
29	1.9	—	.9	30	32	44	63	68	30	13	9.0	*154
30	1.8	—	2.5	8.1	48	52	56	55	45	9.0	8.1	*109
31	2.0	—	4.3	—	40	—	43	57	—	7.7	—	*68
Mean	18.7	1.8	1.5	13.3	20.8	54.6	60.7	70.6	68.0	52.8	31.4	45.9
Runoff in Ac.Ft.	1151	102	94.0	791	1281	3251	3731	4344	4046	3246	1866	2823
	Water Year Total								Calendar Year Total		26726	

Division of Water Resources station located 1.5 miles west of Valley Home 300 feet north of Lone Tree Road. Lone Tree Creek is an east-side tributary to the San Joaquin River at Mile 46.1R, via French Camp Slough. Period of record 1950 to date.
* Estimated.

TABLE 106

FLOW OF LONE TREE CREEK NEAR MANTECA (AUSTIN ROAD) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.9	3.3	5.3	*16	69	*16	13	2.6	7.0	8.1	2.1	2.3
2	3.7	3.2	33	*20	57	*17	6.1	5.9	10	7.5	2.0	70
3	3.4	3.2	51	*24	41	*19	8.4	7.3	18	5.8	1.6	95
4	2.4	3.1	26	*27	31	*20	10	4.1	*18	6.5	1.0	104
5	4.0	3.6	20	*30	*35	21	16	2.6	*15	4.7	.5	106
6	9.1	9.9	74	*33	*40	23	16	3.1	*13	5.8	.3	125
7	8.3	44	78	36	*42	18	8.8	5.8	14	4.3	.3	134
8	8.6	25	41	50	*45	19	9.2	5.5	7.0	6.3	.9	97
9	6.9	14	20	*56	*43	21	14	3.4	8.9	6.3	1.4	68
10	7.5	7.8	10	*51	20	20	13	2.3	5.1	2.0	2.0	42
11	10	5.5	7.5	44	21	11	8.9	5.4	4.3	1.8	2.3	23
12	111	4.9	6.0	47	*19	13	5.9	6.9	8.4	6.9	2.6	12
13	180	32	4.8	45	*16	7.7	4.5	7.3	6.9	8.4	2.6	7.2
14	97	51	3.5	26	*14	11	9.9	6.9	5.5	6.1	1.1	4.6
15	62	32	3.4	40	*11	12	7.0	12	5.4	7.4	1.6	2.6
16	40	19	2.9	*44	7.9	18	7.1	11	9.3	7.2	1.5	1.0
17	37	9.2	2.8	*48	11	21	4.9	5.2	8.1	4.6	1.1	.4
18	37	5.6	2.8	50	11	13	4.9	5.0	11	5.2	.8	.3
19	26	4.2	2.7	48	15	4.9	9.2	5.1	12	9.5	.7	.2
20	24	3.7	2.7	40	18	15	8.0	3.6	7.4	7.9	.8	.1
21	21	3.5	2.4	40	17	13	6.3	5.2	4.2	6.9	1.2	.2
22	14	3.1	2.5	31	14	7.0	5.1	4.3	4.7	5.8	2.9	.2
23	9.1	2.9	2.6	32	16	12	5.9	7.3	7.7	6.3	6.8	.1
24	7.9	2.9	2.6	41	16	13	4.9	7.8	3.8	6.2	12	.1
25	6.5	2.8	7.1	38	10	13	5.0	7.1	3.0	8.4	8.0	.2
26	5.9	2.9	6.9	43	7.4	16	3.3	3.8	3.4	23	5.1	.2
27	5.2	2.9	7.7	44	15	20	2.1	4.2	2.6	32	2.9	4.5
28	4.7	2.9	5.1	50	19	9.9	3.2	4.7	2.0	27	2.6	7.1
29	4.1	—	*6.5	81	14	19	2.6	1.6	1.2	15	2.0	73
30	3.9	—	*9.3	89	*13	18	1.9	1.4	3.5	7.1	1.5	186
31	3.5	—	*12	—	*14	—	1.0	3.8	—	4.1	—	191
Mean	24.8	11	14.9	42.1	23.3	15.4	7.3	5.2	7.7	8.5	2.4	43.8
Runoff in Ac.Ft.	1522	611	916	2507	1433	915	448	322	457	524	143	2692
	Water Year Total								Calendar Year Total 12490			

Division of Water Resources station located 4 miles north and 2 miles east of Manteca at Austin Road bridge. Lone Tree Creek is an east-side tributary to the San Joaquin River, via French Camp Slough, at Mile 46.1R. Period of record 1950 to date.
* Estimated.

TABLE 107

FLOW OF TEMPO CREEK NEAR MANTECA (JACK TONE ROAD) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	*2.3	1.7	2.2	3.5	48					NR	1.7	5.2
2	*2.0	1.7	25	4.4	34					NR	0.5	56
3	*1.5	1.9	*50	4.9	19					NR	*0.4	66
4	*1.6	1.7	*28	9.4	19					NR	*0.2	68
5	*3.7	1.9	*24	8.7	25					NR	0	68
6	*12	2.9	*60	11	22					NR	0	74
7	*8.2	24	*52	9.9	18					NR	0	79
8	*7.6	18	31	9.2	13					NR	0	75
9	*6.5	12	15	13	9.2					4.2	0	52
10	*8.5	7.8	8.0	14	9.6					*0.4	0	28
11	18	5.7	5.5	18	4.4					*0.2	0	12
12	115	4.7	4.0	16	4.4	N	N	N	N	*4.3	0	4.5
13	88	6.3	2.9	22	12	0	0	0	0	*5.0	0	2.4
14	63	*30	*1.6	29	6.1					*4.1	0	1.7
15	42	29	*1.2	34	0.1					*4.8	0	0.8
16	32	20	*0.9	34	0			R	R	6.5	0	0.1
17	26	13	*0.8	29	0	F	F	E	E	*2.8	0	0.2
18	21	7.4	*0.6	22	0	L	L	C	C	*3.3	0	0.2
19	18	4.7	*0.5	33	0	0	0	O	O	*6.0	0	0.1
20	15	3.3	*0.3	35	0	W	W	R D	R D	*4.9	0	0.1
21	13	2.3	0.3	33	0					*4.4	0	0.1
22	9.9	2.0	0.4	28	0					*4.0	0.1	0.1
23	8.0	1.6	0.3	30	0					5.1	2.3	0.1
24	6.3	1.4	0.4	36	0					*6.0	2.3	0.2
25	5.7	1.3	0.3	25	0					*7.0	1.3	0.3
26	4.9	0.9	0.3	21	0					*8.0	1.3	0.4
27	4.0	0.7	0.3	22	0					*9.5	1.3	5.7
28	3.7	0.6	0.3	28	0					*7.0	1.3	14
29	3.5	—	0.2	48	0					*5.0	.8	82
30	3.3	—	3.7	60	0					3.7	.8	127
31	2.9	—	3.0	—	*0	—			—	1.7	—	124
Mean	18.0	7.4	10.4	23.0	7.9	0	0				0.5	30.6
Runoff in Ac.Ft.	1105	414	641	1370	484	0	0				28	1879
	Water Year Total								Calendar Year Total			

Division of Water Resources station located 5.5 miles northeast of Manteca at Jack Tone Road bridge. Tempo Creek is an east-side tributary to the San Joaquin River via French Camp Slough at Mile 46.1R. Period of record October 1950 to date.
* Estimated.
NR No record.

TABLE 108

FLOW OF FRENCH CAMP SLOUGH NEAR FRENCH CAMP (SHARPS LANE) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	33	66	64	26	66	*6.4	8.7	.8	0	3.1	3.2	3.9
2	30	57	168	35	61	*7.6	15	3.4	0	6.9	3.0	1060
3	30	49	219	46	50	*8.7	16	NR	.4	5.3	2.6	596
4	40	44	135	47	39	*10	16	NR	16	3.7	1.6	759
5	104	50	240	42	34	*10	15	NR	9.6	4.4	.8	1130
6	89	646	1090	47	38	21	16	NR	4.6	3.1	.4	846
7	80	540	867	49	46	23	9.8	NR	7.6	4.3	.2	651
8	72	285	616	64	35	25	3.7	12	12	5.4	0	362
9	61	186	359	72	36	25	5.0	1.7	16	2.8	.4	228
10	59	142	282	74	31	17	13	0	9.6	3.5	1.2	135
11	101	111	206	52	20	15	13	.7	8.7	4.3	1.8	90
12	1050	155	159	64	16	18	16	4.4	6.4	2.0	2.6	59
13	1270	642	*127	58	16	8.7	12	0	11	5.6	3.2	41
14	910	332	*107	42	12	8.7	10	0	9.1	6.5	3.2	31
15	462	210	87	45	17	13	9.2	.5	6.4	4.9	1.6	21
16	448	151	70	64	14	14	5.2	1.7	11	4.2	1.7	15
17	*525	111	57	65	12	14	6.8	14	12	9.6	1.6	12
18	*483	89	31	48	2.5	13	.5	3.9	7.6	7.8	1.0	10
19	*451	70	41	47	13	15	.7	.2	5.3	8.9	.6	10
20	*420	60	36	45	16	18	.8	.4	4.0	11	1.1	10
21	*387	52	32	42	14	18	1.5	0	6.7	10	2.6	10
22	*359	47	29	35	*15	11	7.4	0	2.6	9.1	2.9	10
23	*335	41	25	22	*13	14	12	0	5.2	7.2	4.0	8
24	298	34	27	27	13	16	9.4	0	8.9	6.0	9.8	8
25	242	29	21	29	7.8	16	7.8	0	4.9	12	8.9	7
26	186	26	19	27	.8	14	6.2	2.0	2.0	20	5.4	6
27	155	27	23	30	8.3	12	1.2	9.8	1.9	16	4.0	7
28	125	59	24	32	*8.7	1.2	.8	1.4	4.6	30	4.4	8
29	104	—	22	55	*5.9	3.2	.4	4.7	4.9	22	4.3	387
30	91	—	24	76	*4.3	11	0	1.6	4.4	12	3.1	1000
31	79	—	30	—	*5.4	—	0	0	—	6.7	—	1070
Mean	293	154	169	46.9	21.6	13.6	7.7		6.8	8.3	2.7	277
Runoff in Ac.Ft.	18010	8551	10390	2791	1330	808	474		403	512	161	17040
	Water Year Total								Calendar Year Total			

Division of Water Resources station, sometimes referred to as Littlejohns Creek near French Camp, located 1.5 miles southeast of French Camp at Sharps Lane Bridge. French Camp Slough is an east-side tributary to the San Joaquin River at Mile 46.1R.
Period of record 1950 to date.
* Estimated.
NR No record.

TABLE 109

INFLOW TO MILLERTON LAKE AT FRIANT - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1867	2062	1609	2040	2275	3130	3513	2971	1102	797	758	1180
2	1621	2312	2063	2180	2446	2727	3662	2828	807	838	701	1116
3	2277	2127	1816	2475	2485	2603	2853	2200	1110	748	731	1180
4	1884	2053	1814	2367	2673	2443	2828	1635	1092	801	499	1352
5	2153	2394	2843	2489	3105	2576	2625	1176	1129	1052	808	2318
6	1836	2637	2262	3049	2857	2584	2170	1383	1113	972	868	1577
7	1759	2434	2231	3257	2340	2787	2276	1656	1085	1041	858	1161
8	1630	2677	2162	2492	2969	2973	2162	1867	977	731	835	1312
9	1579	2429	2187	2707	2692	2808	1900	1488	792	744	831	347
10	2153	2766	2143	3301	3227	2743	1927	1436	1119	852	595	968
11	2212	3104	1983	3312	3158	2244	2140	1465	1082	758	598	1353
12	2198	3099	1661	3790	3026	3218	2063	1497	1093	827	622	1556
13	1960	2833	2076	3566	2371	2732	2136	1377	1033	520	841	1532
14	1912	2574	2306	3681	2704	3397	1994	1580	1055	437	750	1517
15	1967	2577	2056	3264	2280	4188	1990	1526	973	699	600	949
16	2579	2300	2115	3244	2476	5091	1764	1590	794	777	534	1328
17	2517	2493	2122	3634	2441	4813	2017	1507	1025	816	330	1273
18	2868	2063	2196	3072	3498	4482	1989	1481	1203	782	365	1443
19	3494	2149	2096	3014	3375	4362	2185	872	1022	735	949	1243
20	3607	1864	2055	2963	3707	5031	2780	1341	1107	672	1053	1432
21	2361	2005	1983	2934	4032	4808	2232	1448	862	594	1124	1331
22	2365	2002	2393	2755	3847	3959	1712	1492	1027	795	520	989
23	2686	1941	2090	2720	3809	4106	1586	1330	870	781	700	907
24	2301	1999	2058	2516	4248	3450	1643	1054	1108	820	793	1253
25	2455	2294	2160	2570	4905	3589	1778	985	1052	840	596	819
26	2245	1933	2221	2255	5868	3683	1787	860	987	920	830	1152
27	2579	1713	2150	2236	5969	3797	1805	1100	944	863	790	1292
28	2339	1669	2100	2480	6254	3708	1740	1183	642	576	1065	1261
29	2153	—	2151	3145	5353	3780	1676	1096	643	780	960	9728
30	2118	—	2165	2354	4372	3920	1652	1170	442	966	914	5536
31	2181	—	2140	—	3858	—	2278	967	—	903	—	2827
Mean	2253	2304	2110	2862	3504	3524	2157	1470	976	788	747	1717
Runoff in Ac.Ft.	138560	127940	129730	170300	215440	209720	132620	90370	58100	48470	44470	105580
	Water Year Total 1814270								Calendar Year Total 1471300			

This is the total mean second-feet flow inflowing to Friant Reservoir as computed by the U. S. Bureau of Reclamation, taking into account change in storage, release, spill and evaporation; and represents the natural flow passing the dam site if the dam had not been constructed. Flows shown also include Cottonwood Creek (Table 120). Drainage area is 1671 square miles.

TABLE 110

DAILY CONTENT OF FRIANT RESERVOIR (MILLERTON LAKE) IN ACRE-FEET - 1951

Date	Figure given is amount in storage at end of day in thousands of acre-feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	395.2	374.9	344.4	357.8	365.3	450.5	434.8	235.5	155.8	146.1	141.1	150.4
2	397.0	371.8	346.5	355.8	367.3	450.6	432.5	281.6	153.1	146.7	141.1	151.5
3	400.9	368.3	348.1	354.4	369.4	450.3	428.6	276.6	151.2	147.2	141.4	153.0
4	404.0	364.6	349.8	353.2	371.9	449.8	424.6	270.5	149.8	147.8	141.5	155.3
5	407.7	361.7	353.5	352.4	375.1	449.2	420.2	263.8	148.8	148.9	142.2	159.4
6	410.7	359.2	356.0	352.7	378.0	448.3	414.8	257.6	147.9	149.8	143.0	162.2
7	413.6	356.4	358.4	353.4	379.7	447.6	409.7	251.9	147.2	150.7	143.7	164.1
8	416.3	354.0	360.9	352.5	382.7	447.2	404.4	246.5	146.4	150.4	144.5	166.3
9	418.9	351.2	363.9	351.9	385.2	446.4	398.6	240.3	145.2	150.2	145.0	166.5
10	420.5	349.0	366.8	352.3	388.4	445.6	392.4	233.9	144.3	150.2	145.0	168.0
11	420.9	347.6	369.4	352.7	391.1	443.7	386.5	228.0	144.4	150.0	144.9	170.3
12	421.2	347.5	370.7	354.2	393.4	443.7	380.2	222.8	143.7	149.9	144.9	173.0
13	421.1	348.3	372.2	355.4	394.4	442.5	375.6	218.1	142.9	149.2	145.3	175.8
14	420.9	348.5	373.9	356.9	396.0	441.6	371.6	213.9	142.2	148.4	145.4	178.5
15	420.5	348.7	374.7	357.7	396.3	442.0	367.9	209.7	141.3	148.1	145.2	180.1
16	419.2	348.4	375.5	358.4	396.9	444.2	363.7	205.9	140.3	147.7	145.0	182.5
17	417.2	348.5	375.9	360.0	397.3	445.8	359.5	202.0	140.0	147.2	144.3	184.8
18	415.4	347.7	376.1	360.7	399.5	446.8	355.3	198.1	140.2	146.7	143.7	187.5
19	414.5	347.1	376.0	361.3	401.3	447.4	351.2	193.0	140.1	146.1	144.1	189.7
20	413.7	345.9	375.6	361.9	403.8	449.3	348.2	189.1	140.6	145.3	144.6	192.3
21	410.5	345.0	374.9	362.4	406.8	450.6	344.1	185.5	141.0	144.4	145.3	194.7
22	407.3	344.1	374.9	362.5	409.2	450.0	339.1	182.4	141.8	143.9	145.1	196.5
23	404.7	343.1	374.0	362.5	411.5	449.5	333.6	179.7	142.2	143.4	145.2	198.1
24	401.4	342.2	372.2	362.2	414.6	447.6	328.1	176.8	143.2	143.0	145.7	200.3
25	398.4	341.9	370.6	362.1	419.1	445.8	322.8	173.8	144.1	142.7	145.7	201.8
26	395.0	341.7	369.2	361.6	425.5	444.3	317.3	170.5	144.8	142.5	146.3	203.8
27	392.3	342.2	367.6	361.1	432.0	442.9	311.6	167.7	145.5	142.3	146.7	206.2
28	389.2	343.1	365.8	361.1	438.4	441.2	305.8	165.2	145.6	141.5	147.7	208.4
29	385.6	—	363.9	363.1	443.3	439.3	299.9	162.5	145.8	141.1	148.5	227.5
30	382.0	—	362.0	363.9	446.9	437.5	293.8	160.2	145.5	141.0	149.2	238.3
31	378.6	—	360.0	—	449.4	—	289.0	157.8	—	141.0	—	243.6
Monthly Change	-14.8	-35.5	+16.9	+ 3.9	+85.5	-11.9	-148.5	-131.2	-12.3	- 4.5	+ 8.2	+94.4

Annual Gain or Loss in Storage: Calendar Year -149800; Water Year +68000 Acre-Feet
Difference in Storage 1950 to 1951: Maximums +14300; Minimums +72600 Acre-Feet.

Reservoir water level recorder maintained by U. S. Bureau of Reclamation and U. S. Geological Survey. Period of record 1941 to date. Records for 1951 computed by U. S. Bureau of Reclamation.

TABLE 111

FLOW OF SAN JOAQUIN RIVER BELOW FRIANT - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	926	3900	1000	2040	1550	1920	2560	1930	690	199	375	544
2	683	3890	1000	2040	1360	1920	2570	1910	690	199	375	544
3	230	3880	992	2040	1350	1920	2560	1900	690	199	332	433
4	277	3360	1000	2040	1360	1920	2550	1920	622	197	233	197
5	277	3890	1020	2040	1350	1910	2540	1770	586	197	233	197
6	277	3860	1000	2040	1340	1910	2520	1760	534	197	230	179
7	277	3850	1000	2040	1350	1910	2470	1750	480	294	230	165
8	252	3850	913	2040	1340	1950	2470	1750	480	574	230	228
9	233	3850	690	2030	1330	1990	2470	1740	475	574	244	228
10	1290	3840	690	2030	1430	1990	2520	1730	409	574	308	220
11	2020	3880	690	2030	1570	1990	2610	1710	361	568	308	192
12	2020	3260	968	2040	1610	1980	2610	1690	361	568	304	164
13	2000	2480	1300	2040	1600	2120	1910	1680	311	568	330	152
14	2000	2470	1430	2040	1700	2300	1410	1670	258	568	404	152
15	2150	2470	1650	2050	1820	2300	1310	1610	268	568	404	141
16	3200	2470	1600	2050	1830	2300	1370	1520	268	676	409	101
17	3480	2470	1490	2000	1860	2300	1490	1510	264	787	409	101
18	3750	2460	1490	1960	1930	2300	1490	1440	268	787	409	101
19	4010	2460	1490	1960	1950	2310	1530	1460	249	787	544	103
20	3980	2460	1490	1960	1950	2310	1730	1410	228	780	634	104
21	3980	2460	1490	1960	1950	2310	1730	1300	223	780	634	104
22	3970	2450	1490	1960	1960	2310	1720	1210	228	780	634	104
23	3970	2450	1660	1960	1960	2310	1650	1120	225	780	598	106
24	3960	2450	2060	1960	1960	2310	1710	1020	213	780	522	106
25	3960	2450	2060	1960	1970	2300	1780	955	192	780	522	108
26	3940	2090	2050	1960	1970	2300	1930	985	192	774	528	110
27	3940	1480	2050	1960	1980	2300	1920	978	192	774	528	91
28	3930	1250	2050	1970	2000	2350	1910	978	194	774	528	104
29	3920	—	2040	1970	1950	2470	1910	955	197	774	534	106
30	3920	—	2040	1830	1910	2560	1920	856	199	774	539	115
31	3900	—	2040	—	1920	—	1930	774	—	676	—	122
Mean	2477	2951	1417	2000	1713	2169	2026	1451	352	591	417	175
Runoff in Ac.Ft.	152300	163900	87140	119000	105300	129100	124600	89240	20950	36310	24820	10750

Water Year Total 1215890 — Calendar Year Total 1063410

U. S. Geological Survey station located at Mile 268.13L and 1.5 miles downstream from Cottonwood Creek. Daily mean release from Friant Reservoir into San Joaquin River is obtainable from this table by subtracting flows of Cottonwood Creek (Table 120). Drainage area is 1675 square miles. Period of record 1938 to date. (Prior records available at sites 2.5 and 4.5 miles upstream.) Records for 1951 computed by U. S. Geological Survey.

TABLE 112

FLOW OF SAN JOAQUIN RIVER AT WHITEHOUSE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1110	3760	1380	1930	1940	1840	2390	1670	638	*149	*715	*457
2	1050	3760	1180	1930	1690	1840	2420	1640	554	*149	*533	*515
3	978	3740	1080	1920	1450	1850	2400	1620	522	*149	*504	*532
4	593	3740	1020	1910	1410	1350	2400	1620	505	*147	*433	*534
5	1120	3780	1030	1920	1360	1840	2390	1650	475	*147	*316	*388
6	1060	3780	1060	1910	1340	1830	2380	1560	455	*147	*267	*285
7	1010	3760	1030	1890	1340	1840	2370	1510	380	*147	*243	*251
8	978	3740	1020	1890	1330	1840	2330	1500	314	*244	*227	*224
9	950	3690	983	1910	1330	1850	2320	1520	322	*474	*220	*224
10	903	3700	784	1890	1330	1910	2300	1520	393	*474	*211	*241
11	723	3720	732	1910	1360	1910	2320	1500	380	*474	*232	*240
12	1940	3900	706	1910	1520	1890	2430	1500	317	*468	*257	*232
13	2070	3350	776	1910	1600	1890	2420	1510	286	*468	*260	*221
14	2020	2640	1210	1910	1640	1930	2010	1480	268	*468	*261	*200
15	2010	2540	1330	1900	1680	2130	1410	1460	212	*468	*257	*183
16	2110	2480	1580	1910	1820	2150	1260	1440	179	*468	*334	*175
17	2960	2440	1580	1900	1830	2140	1220	1320	165	*526	*334	*166
18	3370	2410	1470	1870	1850	2150	1320	1290	*214	*637	*335	*148
19	3600	2400	1470	1830	1910	2140	1320	1220	*218	*637	*342	*137
20	3900	2390	1470	1830	1930	2160	1300	1220	*199	*637	*375	*131
21	3870	2380	1460	1830	1950	2160	1380	1190	*178	*630	*483	*128
22	3860	2370	1460	1840	1950	2170	1410	1100	*178	*630	*533	*125
23	3850	2350	1460	1840	1930	2170	1420	1030	*178	*630	*542	*122
24	3850	2350	1520	1830	1920	2180	1420	964	*175	*630	*546	*119
25	3840	2340	1890	1850	1920	2180	1490	920	*163	*630	*491	*119
26	3820	2330	1930	1850	1930	2170	1520	859	*142	*630	*461	*118
27	3810	2050	1930	1850	1930	2180	1650	880	*142	*624	*457	*116
28	3810	1540	1920	1890	1930	2170	1650	859	*142	*624	*455	*116
29	3810	—	1930	1980	1940	2180	1660	838	*144	*624	*454	*122
30	3790	—	1920	1990	1910	2280	1660	824	*147	*624	*452	*123
31	3770	—	1920	—	1850	—	1650	745	—	*624	—	*122
Mean	2470	2980	1360	1890	1700	2030	1860	1290	286	464	386	220
Runoff in Ac.Ft.	151835	165481	83764	112522	104767	120635	114288	79258	17028	28518	22949	13515
	Water Year Total 1168930								Calendar Year Total 1014560			

San Joaquin Canal Company station located at Mile 219.33R, below the head of Gravelly Ford Canal. Period of Record 1901 to date. Records for 1951 computed by San Joaquin Canal Company.
* Estimated.

TABLE 113

FLOW OF SAN JOAQUIN RIVER NEAR MENDOTA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	928	3520	1040	300	202	235	378	381	265	158	87	128
2	824	3520	978	294	188	252	381	390	258	156	87	124
3	789	3520	907	270	188	252	384	387	235	158	89	117
4	624	3520	847	268	168	252	387	384	220	158	87	102
5	441	3540	751	306	160	255	387	384	208	154	86	102
6	369	3560	638	312	158	262	390	381	188	152	92	102
7	328	3540	534	312	158	258	390	381	168	150	95	103
8	300	3540	480	309	158	252	390	381	170	146	95	103
9	281	3480	325	306	153	252	393	396	175	143	94	103
10	257	3440	180	303	170	258	390	414	170	141	92	100
11	228	3440	195	288	185	260	384	414	165	137	92	87
12	1050	3540	182	276	195	268	387	441	168	131	90	70
13	1680	3560	168	276	212	291	393	438	170	144	95	65
14	1790	2720	160	276	210	300	396	420	170	158	108	43
15	1760	2380	168	273	208	285	378	411	168	150	100	26
16	1780	2370	175	258	195	276	378	402	165	148	92	24
17	2100	1920	182	238	182	276	375	399	160	144	86	23
18	2770	1820	190	228	195	270	381	387	156	130	78	22
19	3000	2090	218	205	212	270	390	390	146	115	63	21
20	3300	2120	252	205	212	270	402	384	141	117	59	22
21	3460	2120	222	205	215	291	417	387	144	117	58	23
22	3570	2120	156	205	200	291	420	384	170	114	58	23
23	3450	2110	121	215	215	309	414	372	168	120	74	23
24	3440	2080	123	220	228	327	411	342	168	174	95	23
25	3480	2070	130	218	230	327	408	342	168	174	100	24
26	3440	2060	198	210	228	324	399	342	172	141	112	22
27	3440	1360	285	210	228	330	396	330	170	141	130	128
28	3450	1010	288	215	230	363	396	300	160	139	131	352
29	3480	—	285	225	235	381	396	300	160	128	131	383
30	3490	—	291	220	235	378	396	288	160	89	130	264
31	3550	—	300	—	232	—	378	270	—	87	—	115
Mean	2027	2717	354	255	200	287	392	377	177	139	92.9	92.5
Runoff in Ac.Ft.	124700	150900	21760	15170	12270	17090	24130	23170	10520	8557	5526	5687
	Water Year Total 599730								Calendar Year Total 419480			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 2.5 miles below Mendota Dam at Mile 206.2L. Drainage area is 4310 square miles. Period of record 1939 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 114

FLOW OF SAN JOAQUIN RIVER NEAR DOS PALOS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1160	3470	1020	2.8	3.8	2.8	3.5	4.0	.8	.5	.4	1.1
2	972	3450	995	2.8	3.5	2.6	3.8	4.4	.8	.5	.3	1.0
3	886	3450	936	2.8	3.1	2.6	3.8	4.4	.8	.5	.3	1.1
4	819	3440	873	2.8	2.8	2.6	3.8	4.7	.5	.6	.3	1.4
5	595	3470	819	3.1	2.4	2.2	4.4	4.7	.4	.6	.3	1.3
6	448	3470	708	3.5	2.6	1.6	4.0	5.0	.5	.7	.3	1.0
7	377	3470	607	3.8	2.4	1.7	4.4	5.4	.5	.7	.3	.8
8	329	3460	497	3.8	2.6	1.6	4.7	5.4	.5	.7	.3	.6
9	288	3430	394	12	2.8	1.4	4.4	5.4	.5	.7	.3	.5
10	266	3390	217	5.4	3.1	1.3	4.7	5.0	.5	.7	.3	.4
11	233	3370	162	4.7	3.1	1.2	4.7	3.5	.7	.7	.3	.3
12	300	3410	132	4.7	3.3	1.0	5.0	2.6	.7	.7	.3	.3
13	1120	3510	84	4.4	3.3	1.2	5.4	1.9	.7	.6	.3	.3
14	1600	3140	73	4.0	3.5	1.2	4.0	1.7	.7	.6	.3	.2
15	1690	2480	66	4.0	3.3	1.3	1.9	1.4	.5	.7	.3	12
16	1710	2250	65	3.8	3.5	1.2	1.6	1.3	.5	.7	.4	42
17	1790	2180	61	3.5	3.5	1.3	1.6	1.2	.5	.7	.3	41
18	2330	1650	53	3.3	4.0	1.2	1.6	1.0	.5	.7	.3	38
19	2800	1900	27	3.3	3.5	1.2	1.7	1.0	.5	.7	.3	78
20	3040	2040	5.8	3.1	3.1	1.2	1.9	1.0	.5	.7	.4	54
21	3320	2060	3.1	3.1	3.1	1.2	2.4	1.0	.4	.5	.3	44
22	3500	2070	2.6	2.8	3.3	1.6	3.1	1.0	.4	.4	.2	41
23	3510	2050	2.4	3.1	2.6	1.6	3.5	1.0	.5	.4	.1	38
24	3450	2040	1.7	3.3	1.7	2.2	3.3	1.0	.7	.4	.1	36
25	3470	2040	1.7	3.3	1.7	3.5	3.5	.9	.7	.7	.1	40
26	3470	2030	1.7	3.3	1.9	4.4	3.5	.9	.7	.8	.3	41
27	3420	1890	1.9	3.3	2.2	4.7	3.8	.9	.7	.9	.4	40
28	3420	995	2.4	3.5	2.2	5.8	3.8	1.0	.7	.7	.8	105
29	3430	—	2.6	3.5	2.4	17	4.0	.9	.7	.7	.9	294
30	3430	—	2.6	3.8	2.6	6.1	3.8	.9	.5	.7	1.0	376
31	3470	—	2.6	—	2.6	—	4.0	.8	—	.6	—	280
Mean	1956	2700	252	3.82	2.89	2.68	3.54	2.43	.59	.64	.35	51.9
Runoff in Ac.Ft.	120300	150000	15510	227	178	160	217	149	35	39	21	3190
	Water Year Total 454131								Calendar Year Total 290026			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 800 feet downstream from the head of Temple Slough at Mile 186.0L. Drainage area is 5630 square miles. Period of record 1940 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 115

FLOW OF SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2230	2970	1960	253	586	177	139	96	162	125	55	87
2	1880	2960	1620	251	620	168	133	92	170	129	54	92
3	1570	2940	1510	243	633	152	129	87	168	130	52	93
4	1350	2920	1460	239	622	152	129	93	160	126	50	106
5	1210	2930	1390	261	574	150	129	100	172	144	51	137
6	1140	2940	1320	269	528	164	136	111	164	144	53	183
7	1040	3030	1330	263	494	154	133	115	156	118	53	319
8	834	3140	1330	265	424	152	134	127	171	101	52	392
9	788	3180	1360	269	352	166	147	125	198	81	53	348
10	726	3150	1230	273	302	183	152	130	211	71	56	323
11	698	3110	1040	279	263	190	160	140	207	68	55	265
12	690	3080	844	293	234	183	162	152	188	67	56	219
13	820	3090	738	275	212	182	158	147	188	62	60	190
14	1240	3190	674	261	199	156	159	133	171	67	61	180
15	1860	3300	602	263	183	150	147	150	160	78	59	170
16	2120	3300	550	281	171	152	143	153	156	70	56	166
17	2100	3050	517	283	166	150	133	159	152	58	50	147
18	2080	2690	483	267	164	147	110	146	156	53	49	143
19	2200	2330	452	273	168	137	100	132	158	55	56	150
20	2380	2100	417	269	170	144	94	122	168	57	74	150
21	2880	2100	394	257	176	134	91	118	160	62	89	152
22	3230	2140	372	255	177	140	88	119	174	62	100	170
23	3320	2160	354	245	174	133	91	126	182	49	100	171
24	3350	2170	342	234	174	137	94	116	168	47	101	172
25	3350	2170	331	228	190	140	100	120	152	54	102	231
26	3320	2180	325	247	176	139	102	134	153	61	103	257
27	3280	2180	302	255	170	148	106	137	144	64	102	236
28	3210	2160	281	273	165	139	109	137	136	57	98	257
29	3150	—	279	333	216	136	109	147	123	60	93	317
30	3080	—	277	478	218	141	98	164	118	60	87	345
31	3010	—	259	—	190	—	96	165	—	57	—	499
Mean	2071	2738	785	271	294	153	123	129	165	78.6	69.3	215
Runoff in Ac.Ft.	127300	152100	48280	16140	18070	9120	7560	7920	9810	4330	4130	13220
	Water Year Total 585440								Calendar Year Total 418480			

U. S. Geological Survey, U. S. Bureau of Reclamation and Division of Water Resources cooperative station located at highway bridge on road between Gustine and Stevinson, Mile 129.5 above mouth of San Joaquin River and 5.7 miles above the confluence of the Merced River. Drainage area is 8090 square miles. Period of record 1937 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 116

FLOW OF SAN JOAQUIN RIVER NEAR NEWMAN - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4030	5370	3990	1010	1500	1930	475	247	332	397	228	268
2	3700	5320	3580	985	1690	1570	437	260	353	411	222	280
3	3170	5310	3370	915	1790	1250	410	250	378	411	220	290
4	2470	5330	3280	848	1720	1020	385	263	371	380	220	313
5	2160	5380	3190	852	1690	870	414	282	385	380	228	366
6	2030	5630	3140	895	1780	784	407	318	396	349	232	456
7	1910	5760	3110	925	1760	704	385	305	385	322	235	636
8	1730	5760	3090	950	1650	634	410	305	389	313	238	688
9	1580	5890	3060	945	1470	606	448	318	422	280	235	652
10	1440	5920	2930	880	1370	634	425	315	456	255	260	608
11	1410	6070	2720	825	1460	646	403	332	456	248	240	556
12	1440	5990	2520	776	1700	582	403	322	414	248	238	496
13	2380	6330	2410	726	1950	566	389	367	403	245	238	460
14	2820	6510	2360	708	1700	506	360	311	396	242	242	453
15	3400	6350	2240	678	1300	482	364	298	396	258	240	446
16	3780	6400	2180	678	1080	479	364	308	385	265	240	436
17	4520	6250	2120	712	910	494	342	302	378	258	232	414
18	4680	5750	2060	762	895	546	279	286	360	235	232	400
19	4290	5110	2000	735	1120	634	250	292	364	230	238	411
20	5740	4590	1950	686	1520	674	238	286	371	225	265	408
21	6780	4310	1900	666	2000	606	220	266	364	228	272	411
22	7050	4300	1820	666	2130	650	220	273	392	225	280	425
23	6420	4290	1660	662	2190	820	250	266	418	212	282	436
24	6280	4250	1600	626	2150	758	241	282	382	225	282	450
25	6360	4200	1570	630	2080	654	257	266	353	242	288	516
26	6680	4180	1550	704	2130	570	270	325	385	240	290	584
27	6660	4180	1470	717	2340	498	260	335	378	248	268	568
28	6080	4140	1380	730	2750	479	254	305	378	240	248	592
29	5730	—	1260	838	2830	475	279	356	385	235	260	676
30	5590	—	1160	1150	2610	475	279	360	385	250	260	754
31	5460	—	1080	—	2190	—	260	349	—	235	—	970
Mean	4122	5317	2315	796	1789	720	335	302	387	275	248	497
Runoff in Ac.Ft.	253400	295300	142300	47370	110000	42840	20580	18550	23030	16920	14760	30580
	Water Year Total 1435810								Calendar Year Total 1015630			

Station is maintained jointly by the Division of Water Resources and 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. Combine flow with Merced River Slough (Table 133) to give total flow passing this point. Drainage area is 9990 square miles. Period of record 1912 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 117

FLOW OF SAN JOAQUIN RIVER AT GRAYSON (LAIRD SLOUGH) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5040	6520	4520	1160	1310	3100	530	230	483	590	365	400
2	4620	6060	4350	1120	1550	2170	540	265	530	600	350	420
3	4100	5960	3980	1090	1700	1700	510	267	570	660	360	460
4	3660	5900	3700	1030	1800	1400	500	233	568	630	365	490
5	2940	5860	3500	980	1810	1200	510	300	520	660	365	540
6	2640	5940	3500	980	1890	1070	500	340	510	650	360	660
7	2460	6270	3580	990	2000	980	440	370	520	640	360	770
8	2310	6380	3600	1000	1840	880	440	340	580	620	365	775
9	2120	6400	3620	1020	1650	820	470	330	570	600	360	740
10	1960	6000	3560	1000	1460	760	480	385	590	550	350	720
11	1860	6700	3380	950	1460	800	470	410	590	480	370	720
12	1850	6790	3110	920	1480	770	480	460	570	475	368	720
13	2270	6860	2820	890	1600	680	460	440	540	475	368	700
14	2800	7260	2590	870	1880	660	500	410	520	470	372	690
15	3300	7360	2520	860	1640	660	485	330	550	520	370	680
16	3900	7290	2500	850	1330	780	490	335	580	550	365	670
17	4400	7200	2420	820	1180	840	450	360	570	560	360	650
18	5340	7140	2280	830	1040	880	400	380	568	450	348	620
19	5300	6420	2240	840	1020	960	350	395	540	410	360	630
20	5160	5700	2160	830	1200	950	280	430	560	380	390	650
21	6200	5060	2050	800	1530	750	250	360	600	350	430	650
22	7820	4800	1950	805	2140	810	250	330	620	330	432	655
23	7080	4740	1870	810	2600	920	270	340	680	310	432	685
24	6670	4680	1820	810	2860	900	285	390	690	320	432	690
25	6520	4600	1790	830	2920	900	260	420	630	340	410	730
26	6790	4520	1730	850	2860	740	270	440	580	365	420	800
27	7200	4480	1620	900	2920	630	280	520	600	350	432	840
28	7300	4440	1510	950	3440	570	285	505	650	350	382	880
29	6820	—	1430	1030	4180	560	305	520	600	360	382	950
30	6520	—	1320	1120	4680	520	335	500	560	350	382	1200
31	6540	—	1240	—	4260	—	310	497	—	365	—	1430
Mean	4629	5976	2654	931	2104	982	400	385	575	478	380	717
Runoff in Ac.Ft.	284608	331894	163160	55408	129382	58433	24565	23667	34193	29375	22621	44063
	Water Year Total 1689666								Calendar Year Total 1201369			

Station is maintained jointly by City of San Francisco (Hetch Hetchy Water Supply), Division of Water Resources, Modesto Irrigation District and Turlock Irrigation District. Station is at Laird Slough Bridge, Mile 96.05 above mouth of San Joaquin River and 5 miles above the confluence of the Tuolumne River. High flows by-passing this station through old channel of San Joaquin River are included in this table. Period of record 1931 to date. Records for 1951 computed by the City of San Francisco.

TABLE 118

FLOW OF SAN JOAQUIN RIVER AT HETCH HETCHY CROSSING - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7700	8500	6080	2760	1900	7660	1050	465	780	910	1240	1320
2	7150	8050	6620	2370	2570	5240	1000	440	800	940	1220	1430
3	6600	7650	6750	2300	2500	3910	960	435	860	1210	1230	1580
4	5900	7200	6350	2180	2720	2850	910	445	860	1420	1230	1600
5	5050	6850	6000	2080	3300	2500	930	467	820	1480	1220	1840
6	4650	7800	6440	1980	3970	2200	890	495	800	1460	1210	2410
7	4350	9600	7550	1960	4600	1910	800	520	850	1530	1200	2310
8	4250	10050	7040	1750	4350	1540	790	510	880	1510	1200	2260
9	4000	10050	7010	1620	3550	1880	800	490	890	1500	1200	2120
10	3850	11000	6900	1520	2650	2230	770	500	900	1460	1210	2050
11	3650	11550	6730	1380	2420	2220	740	550	850	1380	1240	2170
12	3900	9400	5800	1300	2350	2160	730	720	810	1380	1260	2280
13	5200	9980	5980	1520	2650	2050	690	760	780	1390	1210	2210
14	5150	10360	4820	1630	2980	1990	730	690	770	1400	1210	2200
15	5250	10360	5640	1680	2820	2440	740	540	800	1420	1250	2160
16	5600	10260	5960	1620	2490	3300	740	440	800	1480	1250	2070
17	5850	10030	5950	1530	2380	3060	710	490	790	1560	1220	1880
18	7100	9600	5900	1520	2260	3540	660	510	780	1460	1220	1870
19	7400	9000	5640	1530	2100	3720	610	600	780	1360	1200	2060
20	7750	8460	5340	1420	2300	3460	540	680	780	1320	1230	2120
21	9500	7580	5400	1150	2660	2560	440	560	830	1290	1320	2130
22	10950	7140	5280	1050	4780	3260	460	500	940	1250	1320	2170
23	12100	6960	5270	950	6300	3230	490	480	950	1220	1340	2450
24	12900	6920	5440	950	6940	2430	480	520	980	1220	1300	2390
25	13050	6800	5270	1000	7260	2060	440	600	940	1300	1320	2500
26	12500	6520	5060	1020	7320	1820	440	600	900	1340	1380	2560
27	11750	6030	4800	1160	7340	1630	460	750	900	1270	1340	2590
28	10100	5580	4500	1250	8020	1310	470	740	930	1260	1340	2770
29	9600	—	4230	1400	9340	1170	500	750	970	1260	1290	2990
30	9100	—	3860	1420	10180	1160	550	820	910	1230	1290	3800
31	7950	—	3500	—	10060	—	540	780	—	1230	—	4600
Mean	7415	8546	5713	1567	4422	2681	679	576	854	1337	1256	2287
Runoff in Ac.Ft.	455901	474605	351293	93223	271914	159531	41772	35399	50836	82195	74757	140608
	Water Year Total 3352338								Calendar Year Total 2232034			

Station is maintained jointly by City of San Francisco (Hetch Hetchy Water Supply) and Division of Water Resources. Station is at Mile 82.65 above mouth of San Joaquin River and 2.9 miles above the confluence of the Stanislaus River. Period of record 1936 to date. Records for 1951 computed by the City of San Francisco.

TABLE 119

FLOW OF SAN JOAQUIN RIVER NEAR VERNALIS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11400	11500	8350	3970	4730	10500	1300	498	994	1370	1690	1970
2	10900	11700	8820	3420	5370	7350	1300	454	999	1390	1680	2100
3	10200	11600	8960	3230	5200	5180	1300	498	1050	1620	1660	2460
4	8700	11300	8290	3000	4970	3930	1210	600	1050	1870	1630	2450
5	7630	11000	7810	2830	5190	3340	1180	630	1020	1940	1590	2880
6	6880	10600	8740	2610	5570	2990	1110	645	950	1990	1530	3710
7	6440	10200	9400	2630	6620	2630	955	640	982	2060	1510	3730
8	6220	10000	9400	2440	7670	2410	955	585	982	2010	1520	3530
9	5940	9820	9220	2220	6750	2490	1050	575	994	1950	1550	3440
10	5680	9970	9040	2000	5260	2820	1030	595	1040	1920	1590	3260
11	5330	10800	8830	1820	3990	2780	977	655	982	1800	1640	3120
12	6230	11700	8440	1820	3670	2700	966	757	906	1820	1660	3000
13	8440	12900	7950	2890	3750	2580	872	856	872	1860	1580	3010
14	8490	13300	7380	3160	4000	2460	944	774	867	1890	1570	2920
15	8520	13200	7460	3250	3910	2630	977	686	884	1880	1650	2850
16	8660	13100	7950	3150	3720	3440	988	570	960	1910	1700	2770
17	8470	12900	7980	3030	3900	3770	933	665	966	1990	1700	2590
18	9550	12400	8020	3000	3770	3960	850	740	955	1920	1710	2540
19	10400	11800	7580	3000	3900	4060	784	840	972	1800	1680	2680
20	11100	11100	6660	2680	4400	4040	675	916	938	1740	1700	2750
21	12700	9980	7580	1920	4970	3120	600	911	966	1720	1780	2780
22	13800	9340	7900	2000	6350	3300	655	845	1150	1680	1870	2760
23	13700	9260	7720	2750	8210	3530	635	850	1180	1550	2110	2990
24	14000	9260	7870	2620	8950	2820	640	834	1190	1620	2170	2970
25	14300	9100	7390	2570	9460	2450	605	955	1130	1740	2200	3040
26	14700	8800	7050	2350	9660	2210	508	938	1110	1790	2240	3160
27	14700	8290	6800	1930	9720	2020	540	994	1110	1730	2070	3150
28	14600	7830	6320	1860	10600	1780	555	999	1160	1690	2020	3400
29	14500	—	5890	2230	12100	1480	555	994	1310	1700	1950	3690
30	14100	—	5280	3190	13200	1370	670	1050	1370	1690	1940	5150
31	12400	—	4760	—	12700	—	655	994	—	1680	—	6360
Mean	10280	10810	7769	2652	6525	3338	870	759	1035	1785	1763	3136
Runoff in Ac.Ft.	632100	600500	477700	157800	401200	198600	53500	46700	61560	109700	104900	192800
	Water Year Total 4738170								Calendar Year Total 3037060			

This station is maintained jointly by the Division of Water Resources and the U. S. Geological Survey. It is located at Durham Ferry Bridge, 3 miles below the confluence of the Stanislaus River and is at Mile 76.7 above the mouth of the San Joaquin River. Drainage area is 14010 square miles. Period of record 1922 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 120

FLOW OF COTTONWOOD CREEK NEAR FRIANT - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.4	16	19	1.9	1.0					(a)		
2	6.1	15	15	1.9	.6							
3	5.8	15	11	2.1	.4							
4	6.4	14	12	2.3	.3							
5	5.6	45	33	1.9	.2							
6	5.4	22	17	1.6	.2							
7	5.4	18	13	1.5	0							
8	5.4	16	11	1.1	0							
9	5.4	15	9.8	1.0	0							
10	22	14	8.2	.8	0							
11	47	47	7.0	.6	0							
12	40	87	7.0	.3	0	N	N	N	N			
13	20	36	7.0	.3	0	0	0	0	0			
14	18	32	6.7	.2	0							
15	18	28	5.8	.3	0							
16	38	25	5.8	.3	0							
17	22	24	5.4	.3	0	F	F	F	F			
18	46	22	5.0	.2	0	L	L	L	L			
19	62	20	4.6	.4	0	0	0	0	0			
20	36	19	4.8	.7	0	W	W	W	W			
21	32	19	4.6	.3	0							
22	32	19	4.2	.1	0							
23	31	17	3.6	0	0							
24	28	16	3.6	0	0							
25	26	15	3.3	0	0							
26	25	17	2.8	.1	0							
27	23	20	2.5	0	0							
28	21	15	2.5	1.1	0							
29	21	—	2.5	8.6	0							
30	21	—	2.6	2.3	0							
31	17	—	2.2	—	0	—			—		—	
Mean	22.5	23.9	7.82	1.07	.09	0	0	0	0			
Runoff in Ac.Ft.	1380	1320	481	64	5.4	0	0	0	0			
	Water Year Total 4493								Calendar Year Total			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 1 mile above the mouth. Cottonwood Creek enters the San Joaquin River at Mile 269.53R. Drainage area is 38 square miles. Period of record 1941 to September 30, 1951. Records for 1951 computed by U. S. Geological Survey.
(a) Station discontinued October 1, 1951.

TABLE 121

FLOW OF LITTLE DRY CREEK NEAR FRIANT - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.6	15	17	4.0	4.0		0	0.6	0.4	0.5	0.5	0.5
2	5.4	14	15	3.8	2.9		0	.5	.4	.6	.5	.3
3	5.2	14	12	3.8	2.7		0	.4	.4	.6	.5	3.3
4	5.2	13	12	3.8	2.3		0	.4	.4	.6	.5	2.2
5	4.9	42	30	3.6	2.0		0	.4	.4	.5	.4	2.7
6	4.5	24	19	3.2	1.9		0	.4	.4	.5	.6	.5
7	4.5	18	15	2.9	1.5		0	.6	.3	.5	.6	.2
8	4.5	15	14	2.7	1.3		0	.5	.3	.4	.6	.2
9	4.5	15	12	2.5	1.1		0	.5	.3	.5	.6	.1
10	23	14	11	2.2	.8		0	.4	.4	.4	.6	.1
11	73	40	10	1.9	.6		.1	.4	.3	.4	.6	.3
12	67	98	9.0	1.6	.5	N	.1	.4	.3	.5	.6	.4
13	26	39	9.0	1.4	.5	0	.1	.4	.3	.5	.6	.5
14	18	28	9.0	1.4	.6		.1	.4	.3	.5	.6	.5
15	18	25	8.3	1.3	.5		.1	.4	.3	.5	.6	.1
16	42	21	8.0	1.2	.4		.1	.4	.3	.6	.6	.1
17	22	19	7.6	1.2	.3	F	.2	.4	.3	.5	.6	.3
18	43	18	7.0	1.2	.2	L	.3	.3	.5	.5	.6	.1
19	96	15	6.4	1.5	.2	0	.1	.3	.4	.5	.6	.2
20	43	15	6.4	1.9	.1	W	.1	.3	.3	.5	.7	.1
21	34	14	6.4	1.7	0		.1	.4	.3	.4	.6	.1
22	29	14	6.4	1.4	0		.1	.3	.3	.5	.4	.1
23	26	12	6.1	1.2	0		.1	.3	.3	.6	.3	.1
24	24	12	6.1	1.1	0		.2	.3	.4	.6	.3	.1
25	21	11	5.9	1.3	0		.2	.3	.5	.6	.2	.1
26	20	12	5.6	1.7	0		.1	.3	.4	.5	.1	.1
27	19	15	5.4	1.7	0		.1	.3	.4	.5	.4	.2
28	18	15	5.2	2.9	0		.1	.4	.4	.5	2.5	.2
29	20	—	4.7	12	0		.2	.3	.5	.5	.6	12
30	20	—	4.5	6.4	0		.4	.3	.4	.5	.1	71
31	17	—	4.3	—	0	—	.5	.3	—	.5	—	38
Mean	24.6	21.7	9.62	2.62	0.79	0	.11	.38	.36	.51	.57	4.35
Runoff in Ac.Ft.	1510	1200	592	156	48	0	6.7	24	22	31	34	267
	Water Year Total 5483								Calendar Year Total 3891			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 4 miles above the mouth. Little Dry Creek enters the San Joaquin River at Mile 264.0L. Drainage area is 58 square miles. Period of record 1937 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 122

FLOW OF FRESNO SLOUGH BY-PASS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.6				0	9.6						
2	4.3				0	4.4						
3	3.5				0	2.7						
4	3.5				0	.7						
5	3.1				0	0						
6	2.1				0	0						
7	1.3				0	0						
8	.9				0	0						
9	.7				0	0						
10	.6				0	0						
11	.5				0	0						
12	.4	N	N	N	0	0	N	N	N	N	N	N
13	.1	0	0	0	0	0	0	0	0	0	0	0
14	.1				0	0						
15	0				0	0						
16	0				0	0						
17	0	F	F	F	0	0	F	F	F	F	F	F
18	0	L	L	L	0	0	L	L	L	L	L	L
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	W	W	W	0	0	W	W	W	W	W	W
21	64				0	0						
22	52				0	0						
23	8.1				0	0						
24	3.0				0	0						
25	1.1				0	0						
26	.3				0	0						
27	0				0	0						
28	0				119	0						
29	0	—			160	0						
30	0	—			138	0						
31	0	—		—	30	—			—		—	
Mean	4.97	0	0	0	14.4	0.58	0	0	0	0	0	0
Runoff in Ac.Ft.	306	0	0	0	887	35	0	0	0	0	0	0
	Water Year Total 71958								Calendar Year Total 1228			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station, also known as James By-Pass and Fresno Slough Cut-off, located a short distance below the station presently operated by the King's River Water Association. Station is located below Kerman-San Joaquin highway crossing on Fresno Slough By-Pass 5.8 miles above its confluence with Fresno Slough. Fresno Slough By-Pass enters Fresno Slough at Mile 11.8R above mouth of Fresno Slough. Period of record 1927 to 1932; 1935 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 123

FLOW OF PANOCHE CREEK NEAR PANOCHE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.5	0.8	1.4	0.2	0.1						0	0.3
2	.5	.8	2.7	.2	.1						0	.4
3	.6	.8	1.2	.3	.1						0	.6
4	.6	.8	1.0	.3	.1						0	7.9
5	.6	1.0	1.0	.3	.1						0	34
6	.6	1.1	.9	.2	.1						0	2.4
7	.6	1.0	.8	.2	.1						0	.8
8	.6	1.0	.7	.2	.1						0	.6
9	.6	1.0	1.0	.2	.1						0	.6
10	1.9	1.0	1.2	.1	.1						0	.5
11	2.1	1.0	.8	.1	.1						0	.6
12	1.8	1.0	.6	.1	.1						.1	6.4
13	1.1	1.0	.6	.1	.1	N	N	N	N	N	.1	6.0
14	.9	1.0	.6	.1	.1	0	0	0	0	0	.1	1.3
15	.9	.8	.5	.1	.1						.1	1.1
16	1.3	.7	.5	.1	.1						.1	1.0
17	1.0	.6	.4	.1	0	F	F	F	F	F	.1	.8
18	.9	.6	.4	.1	0	L	L	L	L	L	.1	.8
19	1.0	.6	.3	.1	0	0	0	0	0	0	.1	.8
20	.9	.6	.4	.1	0	W	W	W	W	W	1.0	.8
21	.8	.8	.3	.1	0						2.6	.8
22	.8	.9	.4	.1	0						1.2	.8
23	.8	1.1	.3	.1	0						.5	.8
24	.8	1.1	.3	.1	0						.2	.7
25	.8	.9	.3	.1	0						.2	.7
26	.8	.9	.2	.1	0						.2	.7
27	.8	1.1	.2	.1	0						.2	.7
28	.9	1.1	.2	.2	0						.2	76
29	1.0	—	.2	.1	0						.2	89
30	1.0	—	.2	.1	0						.2	52
31	.9	—	.2	—	0	—			—		—	21
Mean	0.92	0.90	0.64	0.14	0.05	0	0	0	0	0	0.25	10.0
Runoff in Ac.Ft.	56	50	39	8	3	0	0	0	0	0	15	617
	Water Year Total 260								Calendar Year Total 788			

U. S. Geological Survey station located approximately 10 miles east of Panoche. Panoche Creek is a west-side tributary to the San Joaquin River. Period of record October 1949 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 124

FLOW OF FRESNO RIVER NEAR DAULTON - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	92	150	154	142	144	70	24	5.1		0	8.1	25
2	89	142	154	140	147	63	23	4.8		0	9.3	126
3	89	137	128	133	157	57	22	3.4		0	8.9	78
4	92	135	128	126	165	54	22	2.3		0	8.5	107
5	89	349	361	122	188	57	21	2.3		0	8.5	364
6	87	287	340	122	154	59	20	1.8		0	8.1	128
7	80	210	261	128	126	60	20	1.6		0	6.5	72
8	80	182	233	128	133	54	19	1.3		0	5.4	64
9	80	174	220	124	147	53	18	1.3		0	6.9	50
10	108	165	204	122	130	53	18	0.8		0	6.5	42
11	202	204	188	119	119	54	17	.6		0	6.9	36
12	323	622	176	115	122	52	16	.6	N	0	6.9	32
13	136	311	174	109	113	51	16	.5	0	0	7.3	30
14	126	250	176	111	119	47	16	.4		0	10	29
15	142	230	162	111	138	44	15	.4		0	10	26
16	244	210	160	109	125	41	14	.4		0	9.7	24
17	196	185	160	106	127	38	14	.4	F	0	9.3	23
18	271	179	150	111	132	37	13	.2	L	0	8.9	22
19	1180	168	137	115	132	37	12	.2	O	0	9.7	21
20	409	157	135	124	127	36	10	.1	W	0.3	16	22
21	287	157	135	122	115	37	9.7	.1		.4	54	20
22	257	162	135	115	108	35	9.7	.1		.5	40	24
23	261	144	126	111	110	34	9.3	.1		.5	24	24
24	230	133	119	119	120	32	8.9	.1		1.6	20	25
25	213	124	119	119	127	30	8.1	.1		5.4	18	26
26	201	133	113	124	120	29	6.9	.1		15	16	24
27	185	150	115	111	104	28	6.5	0		12	16	24
28	174	154	140	107	91	27	6.5	0		8.9	15	24
29	168	—	142	310	82	26	5.8	0		8.1	18	728
30	191	—	147	174	95	25	5.4	0		5.4	20	932
31	162	—	147	—	80	—	5.4	0	—	7.3	—	562
Mean	208	200	169	128	126	44.0	13.9	.94	0	2.11	13.7	120
Runoff in Ac.Ft.	12780	11120	10390	7590	7730	2620	857	58	0	130	818	7410
	Water Year Total 90520								Calendar Year Total 61503			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 5 miles southeast of Daulton. Drainage area 270 square miles. Fresno River is an east-side tributary to the San Joaquin River at Mile 184.OR. Period of record October 1941 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 125

FLOW OF SALT SLOUGH NEAR LOS BANOS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	276	580	168	99	146	82	54	59	84	35	27	41
2	186	584	124	101	153	76	69	62	83	33	29	43
3	142	577	119	94	156	68	83	76	91	35	31	44
4	118	573	115	105	149	67	77	81	123	36	33	46
5	104	582	110	108	147	91	76	73	96	41	34	51
6	97	578	102	97	143	72	69	64	85	44	33	52
7	95	582	102	99	131	60	77	66	117	39	33	53
8	93	590	106	107	108	76	83	70	119	36	32	52
9	93	594	106	112	95	76	85	75	114	33	32	55
10	95	596	99	111	82	73	91	70	100	33	32	50
11	101	588	94	160	76	72	91	75	95	32	32	47
12	102	592	94	141	78	61	92	79	95	29	30	47
13	98	594	98	139	75	60	95	83	88	28	28	48
14	95	607	96	131	77	63	84	138	82	26	29	47
15	166	613	101	134	81	59	94	124	61	24	28	48
16	212	499	105	136	76	55	87	144	54	24	26	46
17	221	388	101	130	80	50	70	95	53	24	27	43
18	227	341	97	119	76	52	65	78	51	22	29	41
19	291	263	86	119	68	60	61	73	68	22	32	41
20	400	245	87	118	69	55	61	73	65	22	37	41
21	485	269	89	115	67	56	63	73	47	22	39	79
22	565	275	93	107	78	53	72	71	39	22	41	69
23	605	272	97	103	82	53	76	71	38	21	52	53
24	624	269	104	102	78	53	79	74	38	22	61	47
25	624	265	124	112	65	52	84	69	41	26	58	49
26	624	263	126	111	61	57	84	66	47	26	49	55
27	620	263	104	113	61	51	90	61	44	27	41	60
28	609	249	92	120	77	53	89	68	43	26	38	65
29	598	—	87	134	85	57	76	80	45	26	39	73
30	582	—	87	143	87	51	73	83	43	26	39	83
31	580	—	91	—	87	—	69	82	—	26	—	84
Mean	314	453	103	117	93.4	62.1	78	79.2	71.6	28.6	35.7	53.3
Runoff in Ac.Ft.	19300	25170	6360	6980	5740	3700	4800	4870	4260	1760	2120	3280
	Water Year Total 109500								Calendar Year Total 88340			

U. S. Geological Survey station located at San Luis Ranch approximately 7 miles north of Los Banos. Salt Slough is an overflow channel of the San Joaquin River. Period of record 1941 to date. Record for 1951 computed by U. S. Geological Survey.

TABLE 126

FLOW OF CHOWCHILLA RIVER AT BUCHANAN DAM SITE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	89	168	170	86	92	16	1.1				0	13
2	82	158	179	82	78	15	1.0				0	173
3	82	152	146	82	70	15	1.0				0	107
4	89	149	154	82	72	14	1.1				0	342
5	82	456	560	79	84	14	1.0				0	976
6	76	336	386	76	70	13	1.1				0	166
7	74	243	280	75	63	13	1.1				0	83
8	71	205	236	72	57	13	1.0				0	57
9	70	188	221	69	53	13	1.0				0	45
10	102	177	203	67	49	10	1.1				0	38
11	296	282	182	64	46	4.7	1.0				0	33
12	476	505	172	59	44	4.2	1.1	N	N	N	0	30
13	219	298	170	56	43	6.5	1.0	0	0	0	0	30
14	170	247	165	56	46	8.8	.9				0	28
15	155	221	157	54	45	3.8	.7				0	25
16	256	201	150	52	41	8.5	.7				0	23
17	195	184	144	52	39	7.7	.7	F	F	F	0	22
18	550	179	134	52	37	7.2	.6	L	L	L	0	21
19	1500	167	127	52	30	6.5	.5	0	0	0	0	22
20	513	160	124	56	31	6.5	.5	W	W	W	26	24
21	372	158	119	52	30	4.7	.4				56	22
22	322	167	115	49	28	7.0	.4				66	20
23	305	152	110	47	28	7.2	.4				34	19
24	272	141	107	46	26	6.9	.3				20	19
25	247	131	103	49	25	5.0	.3				15	19
26	230	139	101	56	24	6.0	.2				13	19
27	211	165	97	51	22	4.0	.1				11	20
28	197	160	95	65	20	1.9	.1				11	44
29	197	—	92	258	18	1.4	.1				11	1770
30	219	—	90	134	17	1.2	.1				10	1420
31	186	—	89	—	17	—	0		—		—	689
Mean	255	210	167	71.0	43.4	8.36	0.66	0	0	0	9.10	204
Runoff in Ac.Ft.	15680	11680	10270	4220	2670	497	41	0	0	0	541	12530
	Water Year Total 100078								Calendar Year Total 58129			

U. S. Geological Survey station located 5 miles west of Raymond. Drainage area 238 square miles. Chowchilla River is an east-side tributary to the San Joaquin River at mile 151.0R. Period of record October 1921 to September 1923, October 1930 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 127

FLOW OF SAN LUIS CREEK NEAR LOS BANOS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.9	1.1	1.5	1.6	1.0	.4	0			.1	.4	.8
2	.9	1.2	1.3	1.7	1.1	.4	0			.4	.4	.7
3	1.0	1.2	1.3	1.5	.8	.4	.1			.5	.4	1.2
4	1.0	1.3	1.4	1.6	.2	.3	.1			.3	.4	29
5	1.0	1.6	5.7	1.5	.2	.4	.1			0	.4	57
6	1.0	1.3	14	1.4	.1	.4	.1			0	.4	3.5
7	1.0	1.3	7.3	1.4	.2	.4	0			.1	.4	1.2
8	1.1	1.3	4.8	1.6	.5	.4	0			.1	.5	1.1
9	1.2	1.3	3.7	1.6	.3	.4	0			0	.5	1.0
10	1.2	1.2	2.8	1.7	.6	.4	0			0	.5	.9
11	1.3	1.3	2.0	1.5	.6	.4	.1			.1	.5	.9
12	1.2	1.2	1.7	1.6	.6	.4	.1	N	N	.1	.5	.9
13	1.1	1.2	1.7	1.6	.6	.4	.1	0	0	.1	.5	.9
14	1.2	1.2	1.7	1.4	.6	.3	0			.2	.5	.9
15	1.4	1.3	1.7	1.3	.5	.2	0			.2	.6	.8
16	1.5	1.2	1.7	1.2	.5	.2	0			.1	.6	.8
17	1.4	1.2	1.7	1.3	.5	.2	0	F	F	.2	.6	.8
18	1.3	1.3	1.8	1.3	.4	.3	0	L	L	.4	.6	.8
19	2.1	1.4	1.8	1.3	.4	.3	0	0	0	.3	.9	.7
20	2.8	1.3	1.8	1.2	.3	.4	0	W	W	.3	1.1	.8
21	2.0	1.5	1.6	1.2	.4	.4	0			.2	.8	.8
22	1.7	1.6	1.6	1.3	.3	.3	0			.2	.6	.8
23	1.5	1.8	1.7	1.0	.4	.2	0			.2	.6	.9
24	1.4	1.5	1.7	1.1	.4	0	.1			.3	.6	.9
25	1.3	1.4	1.6	1.2	.3	0	.1			.7	.6	.9
26	1.2	1.6	1.5	1.1	0	0	.1			.5	.6	.9
27	1.2	1.6	1.5	1.1	0	0	0			.4	.7	.9
28	1.2	1.5	1.4	1.2	0	0	0			.4	.6	30
29	1.2	—	1.4	1.0	0	0	0			.4	.6	160
30	1.2	—	1.4	1.0	0	0	0			.4	.6	118
31	1.1	—	1.5	—	.2	—	0		—	.3	—	72
Mean	1.31	1.35	2.53	1.35	.39	.26	.03	0	0	.24	.57	15.8
Runoff in Ac.Ft.	81	75	155	80	24	16	2.0	0	0	15	34	973
	Water Year Total 5493								Calendar Year Total 1455			

U. S. Geological Survey station located approximately 12 miles west of Los Banos. San Luis Creek is a west-side tributary to the San Joaquin River. Period of record October 1949 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 128

FLOW OF BEAR CREEK ABOVE SAN JOAQUIN RIVER - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1 2 3 4 5												
6 7 8 9 10												
11 12 13 14 15												
16 17 18 19 20	Records not available at the time of publication of this report.											
21 22 23 24 25												
26 27 28 29 30 31		— — —		—		—			—		—	
Mean												
Runoff in Ac.Ft.		Water Year Total							Calendar Year Total			

U. S. Bureau of Reclamation station located about one mile above the mouth. Bear Creek is an east-side tributary to the San Joaquin River at Mile 140.5R. Period of record 1940 to date. Records for 1951 to be computed by U. S. Bureau of Reclamation. Record of flow during 1950 is given in Table 163 of this report.

TABLE 129

FLOW OF MERCED RIVER AT EXCHEQUER - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1210	1250	1250	1540	1600	2640	1830	1820	1330	74	66	49
2	114	1250	1250	1540	1600	2290	1830	1830	1330	31	67	48
3	16	1260	1250	1540	1610	2130	1810	1810	1320	33	69	48
4	16	1260	1250	1540	1610	2080	1790	1790	1330	29	123	50
5	15	1260	1260	1540	1610	2010	1800	1760	1330	34	67	50
6	15	1270	1270	1540	1620	1950	1770	1740	1320	49	62	46
7	16	1270	1330	1540	1650	1920	1720	1690	1310	127	58	45
8	16	1280	1280	1540	1670	1890	1720	1670	1310	58	59	45
9	16	1400	1250	1540	1930	1850	1730	1610	1310	45	60	44
10	16	1660	1250	1480	2250	1790	1770	1530	1310	42	59	44
11	1210	1540	1250	1570	2360	1760	1810	1500	1310	43	100	44
12	1300	2570	1250	1600	2790	1770	1810	1530	1280	45	59	44
13	1540	1550	1250	1600	2220	1800	1770	1540	1230	46	56	44
14	1540	1540	1260	1600	2030	1810	1750	1550	1190	86	38	44
15	1860	1550	1250	1610	1930	1850	1750	1580	1190	45	36	44
16	2900	1550	1250	1590	1920	1900	1750	1600	1220	45	37	43
17	1890	1550	1260	1570	2170	2070	1750	1620	1220	42	55	43
18	2150	1270	1260	1580	2640	2110	1740	1620	1210	46	52	43
19	4360	1270	1260	1580	3290	1970	1750	1620	1200	48	53	43
20	4360	1280	1260	1580	3720	1920	1780	1620	1190	43	54	43
21	2120	1260	1260	1580	3670	2320	1780	1610	1170	98	53	43
22	1500	1250	1270	1620	3610	2130	1760	1600	1150	45	53	43
23	1500	1250	1270	1540	3500	1850	1810	1580	1130	41	53	43
24	2170	1240	1310	1640	3470	1720	1820	1550	1120	32	53	43
25	2520	1240	1280	1600	3720	1740	1820	1500	1110	43	54	43
26	2030	1230	1280	1620	4680	1740	1810	1470	1170	49	54	43
27	1250	1230	1420	1600	4470	1740	1770	1420	1210	49	54	43
28	1250	1250	1390	1580	4520	1780	1810	1380	1210	90	54	46
29	1250	—	1420	1580	3750	1790	1830	1360	1190	55	50	46
30	1250	—	1460	1600	3420	1810	1830	1340	821	68	52	55
31	1250	—	1540	—	3050	—	1810	1330	—	66	—	49
Mean	1377	1385	1293	1576	2728	1938	1784	1586	1224	53.1	59.0	45.2
Runoff in Ac.Ft.	84690	76920	79520	93780	167800	115300	109700	97530	72840	3270	3510	2780
	Water Year Total 1212770								Calendar Year Total 907640			

U. S. Geological Survey and Merced Irrigation District cooperative station located 0.5 mile downstream from Lake McClure. Drainage area is 1035 square miles. Period of record 1922 to date. (Prior records available at a site 1 mile upstream.) Records for 1951 computed by U. S. Geological Survey.

TABLE 130

FLOW OF MERCED RIVER BELOW SNELLING (YOSEMITE VALLEY RAILROAD CROSSING) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1060	*1170	1220	356	725	918	103	11	12	22	5.0	9.9
2	484	*1170	1190	308	744	537	107	12	12	8.0	5.3	11
3	130	*1170	1210	328	577	388	103	12	14	6.0	7.2	11
4	105	*1180	1210	356	706	324	63	13	13	5.6	8.3	15
5	97	*1230	1230	401	862	281	58	12	14	5.3	8.3	43
6	90	*1180	1210	419	878	233	29	11	14	5.0	9.1	28
7	76	*1190	1290	414	854	213	26	11	16	5.0	8.3	22
8	69	*1190	1210	374	725	184	22	8.7	22	4.4	8.3	20
9	69	*1190	1210	296	814	171	21	6.6	23	4.4	8.3	18
10	69	*1190	1240	233	1070	152	24	9.9	26	5.0	9.9	18
11	339	*1200	1250	157	1570	130	24	10.0	26	5.3	11	13
12	1090	*1200	1240	135	1760	121	23	9.9	24	5.0	12	9.1
13	1500	*1200	1230	135	1150	66	24	11	17	4.7	14	8.3
14	1510	*1200	1240	130	725	66	14	12	13	4.7	14	8.3
15	1460	*1210	1250	135	537	74	14	11	9.9	4.1	14	6.9
16	3040	*1210	1230	149	437	92	13	10	9.5	4.1	13	6.6
17	2330	*1210	1220	160	526	190	12	10	8.7	4.1	9.9	6.6
18	1410	*1210	1250	160	926	339	12	11	8.3	4.1	8.3	6.9
19	4530	*1220	1260	162	1560	285	12	11	7.6	3.8	8.3	7.6
20	4550	*1220	1240	149	2160	203	12	12	8.0	3.8	9.1	12
21	2640	1190	1130	132	2230	410	13	11	8.3	4.1	9.1	11
22	1540	*1180	942	130	2030	463	12	12	9.5	3.5	9.5	12
23	1530	*1190	942	137	1960	259	12	14	11	3.8	10	11
24	1940	1180	958	137	1840	184	12	12	11	5.3	9.9	12
25	2560	1190	894	147	1980	127	11	15	11	6.0	9.5	12
26	2320	1190	806	154	2780	139	10	17	9.9	5.0	8.7	11
27	1170	1190	732	162	2900	123	9.9	20	8.7	4.4	9.1	9.5
28	1160	1170	619	216	3040	83	9.5	17	7.6	4.7	9.1	14
29	1170	—	548	468	2230	83	9.9	14	7.2	4.4	9.1	38
30	1170	—	468	642	1790	83	11	11	8.3	4.4	9.1	113
31	*1170	—	437	—	1370	—	11	12	—	4.7	—	216
Mean	1367	1194	1068	243	1402	231	27.0	11.9	13.0	5.3	9.5	23.9
Runoff in Ac.Ft.	84060	66290	65660	14440	86190	13730	1661	734	774	327	565	1469
	Water Year Total 650650								Calendar Year Total 335900			

Division of Water Resources station located at Merced-Snelling highway bridge, Mile 42.1 above mouth. Period of record 1930 to date.
* Estimated.

TABLE 131

FLOW OF MERCED RIVER AT CRESSEY BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1320	1380	1480	531	879	1330	150	75	90	99	81	106
2	1260	1360	1500	448	929	933	150	81	90	135	86	114
3	340	1370	1490	431	827	658	148	76	94	111	90	120
4	227	1380	1460	474	811	522	147	70	97	95	98	136
5	187	1670	1560	508	1020	444	138	71	98	86	110	244
6	163	1390	1580	562	1070	391	124	74	110	82	107	408
7	156	1520	1550	562	1080	331	114	80	115	80	115	260
8	134	1480	1490	562	969	298	128	75	117	78	107	213
9	123	1470	1460	474	936	258	120	71	134	69	107	187
10	123	1920	1460	398	1100	235	104	70	141	70	104	171
11	126	1760	1460	309	1380	216	100	74	152	76	104	160
12	1470	2470	1460	227	1950	185	97	78	153	74	107	146
13	1450	2670	1450	208	1580	142	97	74	146	71	107	134
14	1630	1850	1450	201	1010	132	97	75	128	74	112	122
15	1490	1790	1450	199	795	142	94	76	119	69	115	115
16	2520	1780	1440	204	628	155	92	75	108	69	111	110
17	2970	1770	1430	233	595	204	77	75	103	68	110	106
18	1510	1530	1440	237	827	436	81	71	102	67	103	103
19	3820	1480	1440	239	1300	466	71	72	102	69	98	102
20	5420	1470	1430	235	1960	391	74	66	90	69	108	99
21	4640	1470	1420	216	2330	369	68	65	90	67	111	102
22	1840	1460	1170	199	2170	685	69	69	99	64	108	103
23	1720	1460	1140	196	2130	534	71	65	99	65	116	107
24	1740	1450	1140	187	1940	352	70	67	112	69	119	104
25	2660	1460	1100	202	1960	246	63	76	116	90	115	102
26	2710	1450	1060	224	2330	194	69	86	119	94	111	102
27	1700	1460	954	211	3170	184	69	93	116	87	107	98
28	1410	1450	854	252	3160	161	70	106	112	84	104	100
29	1400	—	753	456	2790	144	71	106	106	82	102	216
30	1380	—	655	734	2040	148	70	100	100	81	102	421
31	1380	—	607	—	1710	—	74	100	—	78	—	731
Mean	1581	1631	1301	337	1528	363	95.7	77.8	112	79.7	106	172
Runoff in Ac.Ft.	97230	90580	80000	20070	93970	21590	5885	4784	6662	4903	6298	10600
	Water Year Total 928896								Calendar Year Total 442572			

Division of Water Resources station located at Cressey Bridge, Mile 27.6 above mouth. Period of record 1941 to date.

TABLE 132

FLOW OF MERCED RIVER NEAR STEVINSON - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1350	1530	1500	692	895	1750	299	157	169	277	160	206
2	1340	1510	1530	664	1020	1400	302	174	181	293	158	206
3	1050	1500	1540	608	1110	1060	244	162	194	265	160	211
4	616	1520	1520	568	993	847	238	168	192	243	162	218
5	512	1570	1520	562	1060	728	267	182	204	218	167	251
6	456	1980	1620	588	1230	633	260	199	217	172	169	342
7	426	1820	1570	620	1240	562	236	172	220	192	171	385
8	410	1680	1580	639	1160	488	262	165	204	188	175	320
9	389	1640	1520	622	1030	466	286	180	217	171	175	288
10	376	1640	1510	548	1020	478	255	174	228	154	174	263
11	370	1970	1500	496	1240	470	226	188	216	148	174	250
12	566	1900	1510	426	1620	396	234	187	204	148	175	236
13	1350	2790	1490	408	1840	370	220	206	206	152	175	223
14	1550	2290	1490	396	1460	320	202	164	205	147	174	205
15	1610	1940	1480	373	1040	310	214	158	211	157	175	198
16	1620	1880	1480	360	849	311	210	157	206	172	180	190
17	2820	1850	1470	396	714	329	204	154	204	174	178	187
18	2520	1820	1470	449	739	400	149	156	130	158	181	182
19	1940	1580	1480	415	1020	506	157	172	188	154	186	181
20	4160	1520	1460	362	1540	514	144	158	196	149	192	180
21	4480	1500	1440	351	2020	430	132	160	204	151	192	180
22	3340	1510	1340	360	2190	526	153	164	230	152	192	182
23	2070	1500	1180	360	2110	648	169	158	230	149	192	183
24	1930	1500	1140	329	2020	556	153	172	216	153	192	196
25	2180	1480	1120	351	1950	468	164	168	233	164	196	200
26	2730	1480	1080	423	2060	362	160	208	246	174	200	198
27	2600	1500	1010	438	2640	290	152	188	258	175	198	194
28	1730	1490	958	426	2920	288	140	199	256	172	223	194
29	1600	—	871	514	3000	290	190	208	262	167	216	204
30	1570	—	787	699	2520	288	175	187	277	165	211	310
31	1550	—	723	—	2040	—	168	168	—	162	—	417
Mean	1652	1710	1351	481	1559	549	205	175	215	178	182	233
Runoff in Ac.Ft.	101600	94990	83090	28650	95780	32700	12620	10740	12800	10940	10860	14310
	Water Year Total 800550								Calendar Year Total 509080			

U. S. Geological Survey, U. S. Bureau of Reclamation and Division of Water Resources cooperative station, also known as Merced River below Stevinson Drain, located at Mile 4.6R above mouth. Drainage area is 1274 square miles. Period of record 1944 to date. (Prior records available at a site 3.5 miles downstream) Records for 1951 computed by U. S. Geological Survey.

TABLE 133

FLOW OF MERCED RIVER SLOUGH NEAR NEWMAN - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	129	145	85	0.3	0	73						
2	120	137	82	.3	4.0	33						
3	69	134	80	.3	9.8	5.5						
4	3.9	133	76	.2	4.7	1.0						
5	1.3	141	72	.2	6.8	0.2						
6	1.1	218	85	.2	19	.2						
7	1.1	203	79	.2	20	.1						
8	1.0	175	78	.2	15	.1						
9	0.8	174	70	.2	7.0	.1						
10	.8	177	64	.1	5.7	0						
11	.9	244	61	.1	18	0						
12	5.2	226	59	.1	55	0	N	N	N	N	N	N
13	84	356	56	0	93	0	0	0	0	0	0	0
14	117	312	54	0	46	0						
15	135	253	53	0	8.0	0						
16	136	248	51	0	1.0	0						
17	344	237	49	0	0.2	0	F	F	F	F	F	F
18	311	204	48	0	.1	0	L	L	L	L	L	L
19	191	136	46	0	4.3	0	0	0	0	0	0	0
20	579	109	45	0	44	0	W	W	W	W	W	W
21	675	98	44	0	118	0						
22	500	98	36	0	154	0						
23	289	94	21	0	139	0						
24	260	92	19	0	126	0						
25	292	90	17	0	107	0						
26	382	90	14	0	129	0						
27	373	90	9.5	0	233	0						
28	224	89	6.3	0	291	0						
29	181	—	2.2	0	303	0						
30	164	—	0.7	0	217	0						
31	151	—	.3	—	125	—			—		—	
Mean	185	168	47.2	0.08	74.3	3.77	0	0	0	0	0	0
Runoff in Ac.Ft.	11350	9330	2900	5	4570	225	0	0	0	0	0	0
	Water Year Total 115367								Calendar Year Total 28380			

U. S. Geological Survey, U. S. Bureau of Reclamation and Division of Water Resources cooperative station, also known as Merced River Slough near Hills Ferry Road Bridge, located 500 feet downstream from the head of the slough between Merced River and San Joaquin River. This station records the flow which at high stages in the Merced River by-passes the Hills Ferry Road bridge and reaches the San Joaquin River at Mile 122.2 at a point below the Newman gaging station. Period of record 1941 to date. Records for 1951 computed by the U. S. Geological Survey.

TABLE 134

FLOW OF ORESTIMBA CREEK NEAR NEWMAN - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.1	7.6	12	.9	.2							0
2	2.8	6.8	15	.8	.1							0
3	2.9	6.4	12	.7	.1							0
4	2.9	6.1	10	.7	.1							160
5	2.9	9.7	36	.7	.1							184
6	2.7	25	53	.7	.1							29
7	2.7	17	42	.7	.1							3.8
8	2.7	13	41	.7	.1							0
9	2.5	12	34	.6	0							0
10	2.7	9.3	27	.6	0							0
11	7.6	8.9	22	.5	0							0
12	17	8.9	18	.5	0	N	N	N	N	N	N	0
13	12	8.4	15	.4	0	O	O	O	O	O	O	0
14	8.0	7.6	13	.4	0							0
15	6.4	6.8	12	.3	0							0
16	6.1	5.8	9.7	.3	0							0
17	5.5	5.2	8.0	.3	0	F	F	F	F	F	F	0
18	5.5	4.2	6.8	.3	0	L	L	L	L	L	L	0
19	52	3.9	6.1	.3	0	O	O	O	O	O	O	0
20	38	3.6	5.5	.3	0	W	W	W	W	W	W	0
21	27	3.6	4.8	.3	0							0
22	21	3.6	4.2	.3	0							0
23	18	3.9	3.6	.2	0							0
24	15	4.2	3.1	.2	0							0
25	13	3.9	2.9	.2	0							0
26	12	5.8	2.7	.2	0							0
27	10	8.0	2.1	.2	0							0
28	9.3	9.7	1.7	.2	0							0
29	10	—	1.2	.2	0							91
30	12	—	1.1	.2	0							238
31	9.3	—	1.0	—	0	—			—		—	114
Mean	11.1	7.82	13.8	0.43	0.03	0	0	0	0	0	0	26.4
Runoff in Ac.Ft.	680	434	846	26	1.8	0	0	0	0	0	0	1630
	Water Year Total 9688								Calendar Year Total 3618			

U. S. Geological Survey station located at highway bridge five miles west of Newman. Orestimba Creek is a west-side tributary to the San Joaquin River at Mile 115. Period of record 1932 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 135

FLOW OF TUOLUMNE RIVER ABOVE LA GRANGE DAM - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1590	1910	2060	1820	3350	4440	2250	1820	1660	1430	810	1210
2	1550	1870	2130	1880	3140	3560	2240	1790	1550	1410	822	777
3	1580	1730	2090	1910	3050	3250	2240	1780	1640	1320	704	1380
4	1510	1570	1950	1880	3130	3230	2150	1760	1490	1180	557	1520
5	1520	2290	2090	1880	3210	2680	2120	1680	1710	1210	789	1370
6	1420	3100	2660	1880	2910	2250	2120	1780	1710	1150	779	1420
7	1500	3380	2920	2320	3300	2720	2110	1770	1790	935	810	1440
8	1490	3360	2920	2770	3240	4130	2080	1880	1710	1260	818	1260
9	1550	3490	2920	2780	3160	4210	2070	1890	1690	1290	920	1050
10	1450	3410	2930	2870	3160	4180	2020	1880	1780	1230	700	1460
11	1480	3180	2740	2940	3350	4180	2020	2120	1820	1250	557	1870
12	1510	3470	2370	2950	3540	4190	2020	2120	1870	1210	655	2020
13	1550	3510	2090	2950	2810	4240	2040	2130	1800	1070	794	1980
14	1450	3530	2610	2960	3470	5380	2020	2140	1770	761	812	2030
15	1610	3490	2870	2970	3370	6070	1930	2160	1760	1180	807	1700
16	1910	2940	2920	2950	3320	6050	2050	2160	1430	1050	802	1470
17	2500	2620	2920	2980	3230	6070	2030	2130	1620	972	681	1980
18	2600	2410	2720	2990	3100	6050	2030	2140	1840	946	591	2060
19	3470	2190	2870	2990	3100	4980	2010	2160	1860	986	872	2050
20	4730	1900	2310	2960	3430	4200	2020	2160	1880	781	814	2070
21	4820	1950	2070	3000	6940	6100	2000	2200	1850	620	789	2090
22	5420	1790	2630	3020	7130	4560	1960	1900	1800	937	600	1700
23	6280	1900	2920	3010	7940	3240	1980	1850	1730	933	727	1490
24	6000	1800	2960	3030	7920	3240	1940	1810	1870	940	719	1990
25	4580	1610	2740	3140	7800	3240	1870	1790	1900	795	582	1490
26	3050	1840	2930	3210	7760	3010	1860	1750	1900	782	894	1930
27	2560	1890	3000	3190	8470	2270	1860	1830	1910	628	822	2030
28	2350	2080	3020	3260	8840	2810	1920	1820	1810	542	838	2070
29	2620	—	3030	3250	10020	2470	1770	1800	1880	785	942	1700
30	2140	—	2550	3380	8410	2270	1830	1820	1700	810	801	1420
31	1830	—	2030	—	6070	—	1880	1830	—	788	—	1930
Mean	2570	2508	2612	2771	4925	3976	2011	1931	1761	1006	760	1676
Runoff in Ac.Ft.	158000	139300	160600	164900	302800	236600	123600	118700	104800	61850	45240	103100
	Water Year Total 2349210								Calendar Year Total 1719490			

U. S. Geological Survey station located 0.5 mile downstream from Don Pedro Dam and 3.5 miles upstream from La Grange Dam. Drainage area is 1540 square miles. Period of record 1915 to date. (Prior records available at a site 3.5 miles downstream.) Records for 1951 computed by U. S. Geological Survey.

TABLE 136

FLOW OF TUOLUMNE RIVER AT LA GRANGE BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1680	1350	1840	505	510	2190	30	18	7.9	366	530	718
2	1570	1180	1870	608	273	1100	29	18	7.2	411	524	576
3	1580	844	*1850	649	798	618	28	18	7.2	545	530	582
4	1510	675	*1740	550	1230	566	27	18	7.2	556	524	665
5	1520	1190	1840	510	1890	208	26	18	5.9	561	524	691
6	1400	2010	2270	370	2280	45	23	17	5.2	566	530	860
7	1490	2430	2800	14	2230	171	22	11	5.9	566	535	980
8	1430	2410	2880	14	1480	1220	21	6.6	5.9	537	540	814
9	1540	3010	2880	14	1010	1280	19	4.8	5.2	537	545	613
10	1440	3420	2910	14	856	1190	20	4.4	5.9	592	566	562
11	1580	3210	2750	14	696	1180	19	4.8	6.6	592	530	1320
12	1560	3480	2470	14	917	1180	18	5.2	10	587	505	1390
13	1550	3490	2100	14	911	1220	18	5.9	9.3	566	535	1260
14	1540	3470	2500	14	844	2250	18	6.6	6.6	530	545	1270
15	1550	3480	2900	13	820	3290	18	7.2	6.6	582	524	911
16	1810	3030	2920	13	960	3280	18	7.9	5.9	634	519	752
17	2490	2640	2920	13	887	3270	18	7.9	5.9	603	514	1110
18	2620	2460	2760	13	613	3470	18	8.6	8.6	613	456	1170
19	3220	2310	2870	13	649	2770	18	8.6	12	537	511	1200
20	4470	1910	2490	12	648	1510	18	8.6	12	546	482	1160
21	4680	1920	2100	12	4360	3290	18	9.3	10	496	500	1400
22	5140	1800	2560	12	4700	2290	18	7.9	8.6	505	395	1650
23	5990	1230	2970	12	5340	881	18	7.2	10	576	423	1460
24	5900	1800	3000	13	5250	675	18	7.2	11	582	535	1840
25	4680	1310	2830	13	5140	717	18	7.9	12	524	482	1200
26	3120	342	2690	14	5020	613	18	7.2	14	505	514	1740
27	2570	738	2590	13	5660	50	18	7.2	14	519	487	1880
28	2390	1700	2220	38	7160	119	18	7.9	14	519	500	1980
29	2340	—	1800	35	7840	131	18	7.2	15	500	505	1680
30	1690	—	1190	418	6450	31	18	7.2	31	524	505	1430
31	1330	—	613	—	4160	—	18	7.9	—	514	—	1790
Mean	2496	2101	2391	132	2628	1363	20.1	9.3	9.6	544	511	1195
Runoff in Ac.Ft.	153500	116700	147000	7856	161800	81100	1238	571	573	33430	30410	73500
	Water Year Total 1454128								Calendar Year Total 807678			

Station is maintained jointly by Division of Water Resources and Turlock Irrigation District. Station is at Mile 50.5 above mouth. Period of record 1937 to date. Records for 1951 computed by Division of Water Resources.
* Estimated.

TABLE 137

FLOW OF TUOLUMNE RIVER AT ROBERTS FERRY BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1960	1570	1840	702	702	2140	96	49	36	200	602	803
2	1720	1440	1870	749	401	1260	88	49	38	435	608	817
3	1740	1100	1870	803	549	696	82	49	38	596	602	846
4	1690	925	1810	749	1200	651	85	47	36	602	620	866
5	1700	1360	1920	657	1530	561	82	49	38	620	602	933
6	1570	1940	2180	573	2170	*329	82	51	38	608	*478	1020
7	1680	2360	2730	106	2220	*229	82	49	38	614	*483	1180
8	1670	2340	2900	57	1520	*683	82	47	38	620	*487	1060
9	1710	2790	2920	64	1100	*1170	78	45	36	651	*492	940
10	1640	3200	2920	71	933	*1190	75	43	36	657	*511	1110
11	1770	3050	2800	80	838	*1190	73	39	36	676	*478	1340
12	1730	3250	2610	59	896	*1200	66	39	38	657	*455	1500
13	1710	3290	2250	61	940	1220	61	39	39	645	*483	1380
14	1650	3270	2540	59	867	1720	59	38	39	608	*492	1400
15	1720	3240	2930	59	838	2970	59	39	39	567	*472	1230
16	1860	2900	2970	59	940	2920	57	39	39	689	*468	1020
17	2480	2520	2940	59	978	2930	57	39	39	683	*464	1250
18	2640	2370	2800	62	702	3080	57	38	36	664	*412	1400
19	3070	2270	2860	62	689	2870	55	38	36	651	*464	1400
20	4370	1950	2550	62	614	1500	55	34	38	645	*444	1390
21	4700	2000	2170	59	3310	2610	53	34	43	602	*455	1460
22	5050	1970	2450	57	4210	2400	53	36	45	537	*356	1820
23	5850	1950	2870	60	4870	1150	53	38	45	639	*386	1620
24	5860	1760	2880	62	4830	796	53	38	45	657	*482	1940
25	4970	1560	2730	64	4730	790	53	38	45	651	*435	1710
26	3170	831	2610	66	4610	796	51	38	49	608	*464	1780
27	2560	411	2460	66	5020	275	53	38	49	596	*439	1980
28	2440	1450	2220	71	6560	118	51	36	51	608	*451	2080
29	2420	—	1860	118	7430	366	49	34	51	590	*456	1920
30	1970	—	1430	194	6470	127	51	36	51	602	*456	1650
31	1540	—	933	—	4190	—	51	38	—	608	—	1840
Mean	2601	2110	2414	199	2479	1331	64.6	40.8	40.8	608	483	1378
Runoff in Ac.Ft.	159900	117200	148400	11840	152400	79220	3971	2507	2430	37360	28750	84720
	Water Year Total 1458358								Calendar Year Total 828698			

Station is maintained jointly by Division of Water Resources and Modesto Irrigation District. Station is at Mile 39.9 above mouth. Period of record 1930 to date. Records for 1951 computed by Division of Water Resources.
* Estimated.

TABLE 138

FLOW OF TUOLUMNE RIVER AT HICKMAN-WATERFORD BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2440	1680	2030	773	808	2560	161	124	110	145	671	744
2	2050	1600	2060	825	504	1500	153	122	110	522	682	837
3	2030	1250	2030	889	503	808	147	124	110	650	676	819
4	2050	1060	1950	843	1300	734	147	130	113	656	687	819
5	2010	1420	2040	739	1600	656	145	124	113	692	676	912
6	1390	2050	2230	796	2290	282	142	127	113	682	676	964
7	1910	2660	2910	289	2240	172	147	120	113	682	666	1080
8	1910	2620	3110	169	1710	826	140	122	113	692	676	1030
9	1970	2900	3100	147	1190	1350	137	117	113	697	682	912
10	1910	3610	3130	132	970	1250	130	113	113	697	692	930
11	1990	3500	3010	127	825	1230	130	110	113	708	713	1200
12	1940	3670	2790	127	883	1240	130	106	113	708	671	1430
13	1930	3750	2310	127	941	1250	130	106	113	708	676	1330
14	1900	3730	2510	130	901	1620	124	106	113	687	671	1350
15	1940	3750	3060	132	854	3160	124	106	113	635	692	1250
16	2030	3430	3130	132	947	3100	124	106	113	767	676	964
17	2600	2880	3110	132	1010	3080	127	108	113	750	676	1140
18	3050	2740	3010	130	734	3220	127	108	113	708	616	1340
19	3420	2610	3010	134	728	3170	127	108	113	723	666	1340
20	4040	2100	2840	132	702	1680	127	108	110	723	702	1340
21	5270	2030	2290	130	3090	2540	127	108	110	671	656	1340
22	5440	2020	2520	132	4580	2780	127	108	110	587	621	1810
23	6380	2050	3120	132	5270	1360	130	108	110	702	540	1620
24	6530	2030	3150	130	5260	895	130	108	113	728	640	1740
25	5970	1810	3010	130	5160	854	127	110	113	739	682	1780
26	3660	1100	2840	132	5040	860	124	110	115	671	640	1720
27	2940	412	2690	130	5360	468	124	110	117	671	697	1970
28	2760	1510	2480	158	6640	198	124	110	117	671	666	2090
29	2740	—	1990	207	8050	363	122	110	117	645	671	2020
30	2430	—	1600	216	7300	225	124	110	120	666	682	1770
31	1700	—	1060	—	4890	—	124	110	—	666	—	1850
Mean	2944	2356	2586	280	2664	1448	132	113	113	666	668	1337
Runoff in Ac.Ft.	181000	130800	159000	16660	163800	86140	8136	6936	6724	40960	39740	82200
	Water Year Total 1613336								Calendar Year Total 922096			

Station is maintained jointly by Division of Water Resources and Modesto Irrigation District. Station is at Mile 31.7 above mouth. Period of record 1932 to date. Records for 1951 computed by Division of Water Resources.

TABLE 139

FLOW OF TUOLUMNE RIVER AT MODESTO - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2600	1880	2270	1090	930	3420	387	300	282	319	772	826
2	1880	1860	2580	1010	942	2140	352	286	279	526	772	1000
3	1970	1640	2560	1050	769	1370	334	293	273	712	772	950
4	1960	1390	2280	1050	1240	1100	344	329	275	775	781	1070
5	1880	1350	2220	926	1650	978	354	307	257	799	766	1330
6	1840	2620	2870	896	2460	778	326	334	264	808	766	1830
7	1760	3040	3130	736	2360	529	339	291	255	830	769	1420
8	1820	2920	3260	520	2100	616	362	282	255	826	769	1360
9	1820	2940	3240	451	1500	1470	342	326	255	840	778	1170
10	1860	3720	3220	403	1270	1430	326	284	264	822	784	1010
11	1800	3690	3180	339	1100	1390	336	270	244	844	802	1230
12	2800	3660	3020	317	1060	1370	312	279	255	836	772	1500
13	2640	4490	2540	319	1140	1380	317	319	249	844	757	1540
14	2100	4020	2500	329	1150	1470	319	286	259	858	781	1460
15	1900	3900	3090	342	1110	2840	332	286	266	868	793	1470
16	2020	4320	3160	329	1110	3150	332	288	257	878	778	1220
17	2480	3160	3190	334	1180	3190	334	286	268	875	778	1040
18	2880	3000	3180	332	1070	3230	305	284	249	864	763	1370
19	3020	2830	3040	352	896	3420	312	282	249	858	736	1450
20	4430	2430	3120	349	896	2260	312	286	253	847	833	1440
21	5040	2320	2530	339	1660	2180	305	291	262	819	790	1450
22	5010	2340	2500	344	4130	3300	346	307	264	754	784	1770
23	5640	2200	3120	352	4820	1890	336	302	270	784	706	1840
24	6250	2270	3240	336	5090	1200	336	302	275	840	733	1660
25	5760	2130	3220	344	5050	1070	334	295	291	886	799	2080
26	4320	1560	3040	392	4900	1040	317	291	295	812	781	1680
27	3220	854	2840	387	4960	875	307	305	295	787	802	2060
28	2960	1210	2790	457	6030	517	295	300	291	784	793	2180
29	2800	—	2320	625	7190	478	310	291	291	772	790	2510
30	2600	—	1990	661	7320	498	324	291	302	766	796	3580
31	1960	—	1380	—	5580	—	310	295	—	772	—	3350
Mean	2939	2634	2794	524	2675	1686	329	296	268	794	777	1608
Runoff in Ac.Ft.	180700	146300	171800	31160	164500	100300	20220	18180	15960	48800	46210	98870
	Water Year Total 1667690								Calendar Year Total 1043000			

Station is maintained jointly by Division of Water Resources, U. S. Geological Survey and Modesto Irrigation District. Station is located at the Tidewater Southern Railroad bridge at Mile 15.92 above the mouth of the Tuolumne River and 0.6 mile downstream from the confluence of Dry Creek. Period of record 1940 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 140

FLOW OF TUOLUMNE RIVER AT TUOLUMNE CITY - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2880	1780	2410	1310	860	4390	580	380	370	380	815	860
2	2060	1820	2840	1160	1180	2600	440	378	365	430	830	1000
3	2260	1760	3020	1220	940	1800	430	380	368	710	835	1000
4	2640	1520	2700	1240	1170	1360	420	382	370	830	835	1160
5	2450	1430	2590	1160	1660	1240	435	383	365	870	830	1220
6	2390	2320	2990	1100	2180	1080	418	385	368	910	815	1710
7	2260	3140	3320	1030	2370	790	418	382	368	910	815	1500
8	2290	3140	3490	710	2290	670	422	380	372	910	815	1400
9	2250	3070	3520	620	1750	1380	420	385	372	960	815	1250
10	2220	3820	3510	550	1430	1560	408	380	372	960	840	1090
11	2220	4100	3430	500	1260	1520	408	376	360	960	850	1210
12	2760	3920	3320	490	1170	1500	400	380	363	960	845	1880
13	3220	4910	2900	480	1230	1480	405	383	365	960	810	1560
14	2580	4640	2640	480	1280	1500	405	377	372	1010	830	1480
15	2380	4440	3010	485	1220	2540	408	375	372	1010	850	1500
16	2500	4300	3280	470	1210	3070	400	375	365	960	840	1330
17	2780	3860	3300	480	1260	3100	398	372	370	1010	815	1150
18	3480	3350	3270	465	1250	3170	390	373	362	960	815	1370
19	3660	3120	3100	470	1050	3340	400	375	360	960	780	1310
20	4460	2840	3200	470	1010	2670	392	377	358	960	870	1500
21	5520	2520	2740	460	1060	1910	390	375	360	910	860	1500
22	5420	2560	2510	465	3600	3170	368	378	360	870	815	1650
23	5960	2370	2940	465	4420	2300	387	372	362	830	760	1840
24	6700	2440	3180	450	4970	1420	387	375	362	910	730	1710
25	6400	2320	3200	450	5040	1180	385	370	365	1010	800	1960
26	5120	2080	3010	480	4950	1140	382	372	370	960	820	1780
27	3720	1700	2850	480	4920	1050	382	375	362	870	815	1940
28	3200	1460	2790	495	5430	650	380	373	358	870	840	2080
29	3000	—	2460	640	6800	505	382	370	356	870	815	2230
30	2780	—	2150	750	7300	570	383	372	360	830	815	2980
31	2160	—	1700	—	6540	—	378	375	—	830	—	3260
Mean	3346	2883	2947	668	2671	1822	407	377	365	883	821	1594
Runoff in Ac.Ft.	205726	160126	181230	39719	164231	108407	25053	23177	21723	54307	48833	98003
	Water Year Total 1743410								Calendar Year Total 1130535			

Station is maintained jointly by Division of Water Resources, City of San Francisco (Hetch Hetchy Water Supply), and Turlock Irrigation District. Station is at highway bridge, 3.35 miles above the mouth. Period of record 1930 to date. Records for 1951 computed by City of San Francisco.

TABLE 141

FLOW OF DRY CREEK NEAR MODESTO (CLAUSS ROAD BRIDGE) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	47	63	117	72	116	78	62	53	*60	58	26	39
2	46	59	515	52	87	*80	59	*50	*55	55	23	81
3	45	53	352	64	79	*81	58	*49	*52	49	22	142
4	46	50	169	73	94	*83	65	54	*49	44	21	211
5	44	54	194	70	82	84	65	57	47	50	20	520
6	60	676	628	69	70	91	65	51	49	54	19	711
7	65	295	316	76	65	79	66	56	50	54	18	283
8	57	159	193	77	68	71	58	59	40	49	19	155
9	51	114	154	76	52	70	51	59	39	46	20	97
10	50	91	112	59	52	66	55	58	44	45	21	71
11	52	80	94	57	54	79	62	*52	45	45	23	59
12	1120	201	82	55	59	83	60	*51	50	50	23	51
13	552	641	70	62	60	81	61	*51	52	52	20	44
14	245	226	63	68	66	71	59	*50	57	46	20	40
15	156	140	58	73	78	74	62	*49	55	43	20	37
16	125	106	55	66	78	78	61	*49	48	40	20	36
17	194	91	51	76	76	84	56	*48	46	36	20	33
18	171	77	47	80	71	91	51	47	48	40	20	32
19	178	68	45	69	*70	72	52	44	51	41	22	32
20	472	62	43	71	*68	71	55	50	48	42	27	31
21	260	58	40	76	*64	77	54	56	46	37	34	30
22	159	54	36	87	59	78	49	55	44	30	42	30
23	122	51	36	79	66	102	51	61	46	41	46	30
24	115	50	34	70	76	98	49	65	42	41	39	31
25	102	49	31	73	84	80	*49	56	45	42	34	33
26	88	46	31	96	75	81	*47	53	43	52	31	34
27	80	46	31	91	66	89	*44	53	42	50	30	34
28	73	81	31	*120	80	76	41	54	38	40	30	36
29	69	—	29	*150	98	60	50	54	46	33	31	518
30	63	—	37	*178	95	56	58	62	56	29	33	1790
31	61	—	37	—	96	—	59	65	—	27	—	1360
Mean	160	134	120	79.5	74.3	78.8	55.9	53.9	47.7	44.0	25.8	214
Runoff in Ac.Ft.	9854	7420	7400	4731	4570	4689	3439	3314	2836	2705	1535	13150
	Water Year Total 96188								Calendar Year Total 65643			

Station is maintained jointly by Division of Water Resources and Modesto Irrigation District. Station was moved to this location, 5.4 miles above Modesto, in 1941 from previous location at Mile 2.9. Dry Creek enters the Tuolumne River above the Modesto gaging station at Mile 16.5R. Period of record 1930 to date. Records for 1951 computed by Division of Water Resources.

* Estimated.

TABLE 142

FLOW OF STANISLAUS RIVER BELOW MELONES POWERHOUSE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2760	3340	1410	1970	2950	2700	1380	1140	654	299	228	453
2	1800	3300	1470	1860	2610	2250	1380	1150	654	293	190	467
3	936	3300	1380	1900	1900	2050	1380	1150	668	362	23	785
4	950	2350	1430	1910	1710	2000	1380	1150	676	385	22	1010
5	950	550	2630	1910	1710	2010	1370	1140	676	381	163	1360
6	933	10	2580	1960	3650	2010	1400	1130	663	380	197	1340
7	923	10	2140	1840	3690	2030	1370	1130	663	379	196	1330
8	938	82	2150	1770	3200	2020	1370	1130	672	391	223	1310
9	943	436	1940	1710	2080	1960	1370	1130	676	174	223	1210
10	650	1720	1820	1730	1720	1890	1370	1130	672	380	20	747
11	1850	2460	1690	3120	1730	1860	1360	1130	440	384	29	470
12	2800	2840	1630	3960	1750	1900	1360	1120	584	388	207	454
13	2770	2600	1680	3770	1750	1950	1360	1130	636	379	212	446
14	2750	2310	1810	3720	1980	2030	1350	1130	352	339	224	438
15	1580	2170	1920	3590	2370	2220	1340	1140	302	316	213	434
16	1500	2040	1990	3500	2090	2360	1340	1150	191	298	218	406
17	1740	1940	2050	3520	2370	2470	1240	1140	6.6	285	28	398
18	1670	1880	376	3410	3170	2370	1210	1130	4.8	275	38	372
19	2390	1750	1100	2350	3500	2130	1210	1130	4.5	276	229	376
20	2540	1710	3500	1860	3730	1930	1210	1120	5.0	291	215	386
21	1670	1580	2590	3520	3700	1820	1200	1120	7.0	212	778	386
22	970	1730	2550	3530	3610	1760	1190	1120	8.2	253	828	386
23	949	1600	2300	3200	3540	1700	1190	1130	5.4	258	770	383
24	1580	1520	2190	2960	3750	1670	1180	1120	51	260	752	386
25	2670	1470	2280	1960	3880	1670	1180	1120	227	265	333	383
26	3460	1450	2340	1740	4250	1470	1170	1120	286	252	292	383
27	4050	1450	2100	1740	5070	1400	1170	1120	287	282	297	383
28	4270	1390	2150	1740	4720	1400	1160	785	288	300	278	724
29	3140	—	2290	3650	4340	1400	1160	663	288	293	288	1290
30	1370	—	2370	3540	3470	1400	1150	658	300	287	284	1390
31	3560	—	2090	—	3220	—	1150	658	—	254	—	1420
Mean	1957	1791	1998	2631	3007	1928	1279	1075	365	309	267	700
Runoff in Ac.Ft.	120300	99450	122900	156600	184900	114700	78640	66080	21710	18980	15860	43050
	Water Year Total 1672340								Calendar Year Total 1043170			

U. S. Geological Survey station located 1 mile downstream from Melones Dam. Drainage area is 898 square miles. Period of record 1931 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 143

FLOW OF STANISLAUS RIVER AT ORANGE BLOSSOM BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2840	3810	1730	*422	2910	1330	38	33	9.3	215	189	746
2	2410	3790	1660	*273	2250	660	38	35	8.6	224	174	715
3	1160	3690	1430	202	1490	295	36	35	12	279	154	981
4	1060	3230	1420	218	1270	200	36	36	11	311	96	1350
5	746	2130	3590	215	1210	197	38	36	22	314	90	2330
6	858	282	3250	314	2490	213	38	35	21	289	116	1830
7	873	127	2510	232	3670	314	38	35	12	282	161	1760
8	829	102	2500	227	2620	270	38	35	14	286	166	1740
9	576	94	2130	*143	1440	324	38	33	14	247	192	1630
10	469	940	1960	*154	259	264	39	33	15	184	184	1230
11	2770	1970	1760	1020	179	169	39	31	9.3	295	94	537
12	3570	3210	1630	2850	169	136	39	32	17	289	88	526
13	3180	2500	1650	2600	*148	145	39	30	19	279	136	507
14	3100	2140	1790	2520	125	166	38	31	24	264	184	491
15	2310	2060	1940	2390	514	276	36	27	19	256	195	484
16	1400	1850	2020	2210	824	466	39	26	16	235	192	466
17	2020	1650	2070	2230	681	618	36	26	15	230	192	473
18	2230	1540	1080	2060	1460	613	35	26	55	230	113	430
19	2920	1450	163	1260	2100	364	35	25	60	224	111	422
20	3080	1320	3670	202	2420	179	36	26	38	215	221	437
21	2620	1150	2910	1420	2400	111	36	26	25	200	618	426
22	951	1610	2640	2280	2400	90	38	24	20	171	863	426
23	1120	1600	2340	1810	2290	85	36	22	20	192	800	426
24	1340	1470	1640	1500	2760	58	35	24	20	200	769	422
25	2840	1370	1480	720	2620	43	36	24	19	205	476	422
26	3350	1370	1560	189	2920	40	38	27	20	202	273	419
27	4270	1480	1170	171	3840	39	36	24	164	205	279	419
28	4580	1380	*305	276	3710	36	35	21	195	218	276	1140
29	4260	—	*756	2390	3540	38	36	20	189	218	279	2670
30	1040	—	*782	3710	2200	38	36	16	213	213	295	2890
31	3600	—	*556	—	1880	—	35	15	—	205	—	2250
Mean	2206	1761	1826	1207	1896	259	37.0	28.0	43.2	238	266	1000
Runoff in Ac.Ft.	135600	97810	112300	71820	116600	15430	2273	1724	2571	14630	15820	61480
	Water Year Total 1324682								Calendar Year Total 648058			

Station is maintained jointly by Division of Water Resources and Oakdale Irrigation District. Station is at highway bridge, Mile 44.7 above mouth or 5.7 miles above Oakdale. Period of record 1930 to date. Records for 1951 computed by Division of Water Resources.
* Estimated.

TABLE 144

FLOW OF STANISLAUS RIVER AT RIVERBANK (BURNEYVILLE BRIDGE) - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2590	3130	1490	791	2770	1600	120	84	75	297	284	368
2	2500	3090	1670	716	2290	1200	115	81	72	305	264	806
3	1640	3060	1470	551	1820	825	117	84	72	355	228	583
4	1480	2870	1400	577	1500	663	129	91	73	368	155	1020
5	1400	2350	2450	567	1460	618	127	91	75	394	111	1660
6	1370	1170	2740	618	1670	622	127	93	75	388	109	1350
7	1410	719	2320	638	3300	698	124	86	80	368	205	1280
8	1390	510	2060	612	2570	688	115	84	80	366	226	1250
9	1340	377	1970	506	1900	694	108	88	80	368	252	1220
10	1180	606	1830	473	855	677	97	90	75	214	247	1110
11	1530	1440	1650	519	612	561	88	91	76	352	161	632
12	3400	2440	1520	2220	529	479	91	86	75	368	113	535
13	2790	2180	1520	2270	452	464	100	90	75	371	138	506
14	2640	2020	1600	2210	405	479	99	88	75	363	235	494
15	2480	1900	1700	2160	628	542	104	84	80	342	250	479
16	1620	1790	1760	2020	1140	674	93	80	84	336	245	473
17	1910	1590	1800	2040	874	758	97	78	76	328	242	452
18	1900	1550	1590	1960	1250	817	88	76	81	323	163	431
19	2470	1500	618	1720	1760	684	90	76	127	320	120	414
20	2880	1360	1680	747	1990	497	93	73	104	318	194	420
21	2560	1150	2690	836	2080	344	93	75	80	307	336	420
22	1560	1270	2210	2160	2100	274	104	76	72	252	698	417
23	1540	1560	2230	1850	2020	238	104	78	69	269	730	417
24	1540	1500	1710	1630	2140	196	93	78	69	286	694	417
25	2240	1450	1540	1390	2300	157	97	80	67	307	674	417
26	2600	1410	1580	635	2330	144	93	80	66	302	368	417
27	3320	1500	1440	548	2820	133	88	81	140	292	333	417
28	3670	1410	1100	494	3160	124	86	81	269	310	325	473
29	3630	—	1030	1330	3050	124	83	83	279	315	312	1740
30	1980	—	1060	3270	2250	127	86	78	259	318	323	1800
31	2380	—	964	—	1860	—	86	76	—	312	—	1800
Mean	2159	1676	1690	1269	1803	537	101	82.6	100	326	291	781
Runoff in Ac.Ft.	132800	93090	103900	75490	110800	31940	6218	5078	5970	20060	17320	48040
	Water Year Total 1296568								Calendar Year Total 650706			

Station is maintained jointly by Division of Water Resources, Oakdale and South San Joaquin Irrigation districts. Station is at Mile 32.0 above mouth. Period of record 1940 to date. Records for 1951 computed by Division of Water Resources.

TABLE 145

FLOW OF STANISLAUS RIVER AT RIPON - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2980	3650	1670	936	3520	1900	255	188	165	321	364	385
2	2940	3650	1960	821	3000	1530	253	170	159	340	345	726
3	2390	3860	1830	651	2450	1090	255	175	148	354	327	679
4	1740	3820	1660	620	1950	836	266	181	150	330	297	985
5	1630	3510	2050	600	1760	714	259	208	165	418	243	1440
6	1530	2190	3350	589	1710	663	243	206	159	423	218	1690
7	1530	1020	3180	686	3160	668	241	190	151	406	223	1470
8	1500	770	2690	596	3480	733	225	181	150	404	271	1400
9	1440	665	2540	568	2630	679	225	172	156	401	234	1370
10	1360	631	2310	490	1470	684	204	170	156	372	296	1300
11	1330	1440	2130	475	842	626	216	169	149	332	294	1030
12	2950	2610	1980	1400	665	549	200	191	156	323	228	681
13	3440	3280	1880	2540	578	486	235	177	141	408	201	626
14	3180	2870	1920	2530	539	486	223	183	142	419	228	598
15	3070	2570	2100	2530	527	533	222	169	147	399	273	576
16	2260	2510	2200	2440	992	661	226	169	154	394	285	566
17	1900	2270	2220	2330	981	758	218	164	172	383	281	545
18	2000	2120	2260	2310	1100	849	210	164	159	375	278	543
19	2500	2000	1240	2170	1690	800	209	175	172	367	218	541
20	3100	1910	1130	1350	2110	656	204	171	195	367	208	578
21	3200	1810	3230	702	2370	509	208	173	178	361	224	560
22	2510	1700	3000	1330	2390	419	206	166	164	351	523	519
23	1660	1990	2790	2220	2370	372	222	175	169	327	693	513
24	1600	1880	2380	1930	2350	369	204	195	159	348	693	515
25	2110	1740	1920	1700	2730	327	204	171	155	373	686	515
26	2940	1670	1810	986	2650	302	208	178	152	378	517	515
27	3530	1690	1790	654	3000	306	202	192	151	370	406	515
28	4140	1720	1510	629	3650	284	195	196	238	365	336	576
29	4500	—	1280	960	3670	257	209	191	292	377	370	1320
30	3940	—	1180	2890	3260	256	201	178	327	378	367	2020
31	2200	—	1140	—	2420	—	183	165	—	373	—	2350
Mean	2487	2198	2075	1371	2129	643	220	179	171	376	343	892
Runoff in Ac.Ft.	152900	122100	127600	81590	130900	38280	13550	11010	10180	23120	20410	54840
	Water Year Total 1435800								Calendar Year Total 736480			

Station maintained jointly by Division of Water Resources, U. S. Geological Survey, and Modesto Irrigation District. Station is at Highway 99 and is 16 miles above mouth of river. Period of record 1940 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 146

FLOW OF STANISLAUS RIVER NEAR MOUTH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1										345	396	414
2										350	335	458
3										359	368	738
4										396	341	767
5										412	299	1140
6										444	260	1590
7										482	244	1420
8										409	272	1360
9										385	306	1330
10										409	327	1300
11										334	334	1160
12										398	302	851
13										409	250	751
14										447	246	706
15										431	284	677
16										406	318	652
17										409	324	632
18									(a) 156	398	327	610
19									147	359	295	592
20									139	354	260	601
21									168	366	270	626
22									179	357	385	586
23									216	292	674	574
24									164	336	744	568
25									132	375	744	565
26									139	387	693	574
27									147	387	514	565
28									173	380	455	586
29		—							262	390	436	788
30		—							364	398	414	1810
31		—		—		—			—	401	—	2170
Mean										387	382	876
Runoff in Ac.Ft.										23810	22740	53870
		Water Year Total							Calendar Year Total			

Division of Water Resources station located 2.9 miles above the mouth. Period of record September 1951 to date. (Prior records available at other sites for 1930 to 1950.) The former station located 4.3 miles above the mouth was destroyed in the flood of November 1950.
(a) Beginning of record at this site.

TABLE 147

FLOW OF KINGS RIVER AT PIEDRA - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1230	1230	1120	1800	3140	4530	2710	645	227	148	209	393
2	1150	1200	1080	1790	3050	4250	2540	600	222	150	204	1310
3	1220	1130	997	1770	3320	4440	2430	575	216	150	206	726
4	1210	1170	1060	1700	3460	4200	2260	556	206	150	204	911
5	1160	1420	1300	1640	3470	4140	1980	533	201	150	199	2020
6	1100	1560	1490	1710	3180	4410	1770	502	196	156	199	930
7	1050	1490	1430	1770	3140	4570	1640	466	192	156	194	742
8	990	1590	1330	1930	3320	4530	1570	438	187	150	196	640
9	955	1490	1360	2300	3470	4580	1550	414	184	146	192	565
10	976	1540	1320	3010	3980	4040	1560	390	182	142	187	538
11	1210	1590	1240	3750	4570	3990	1550	371	173	144	184	570
12	1250	1920	1250	4440	4440	4180	1510	360	171	146	178	655
13	1080	1660	1460	4650	3560	4550	1440	342	171	156	178	666
14	1080	1520	1640	4740	3280	4860	1370	325	169	160	184	615
15	1080	1420	1680	4370	3160	5170	1310	318	164	158	182	542
16	1160	1330	1700	4500	3270	5540	1280	305	164	158	182	538
17	1120	1270	1740	4110	3990	5760	1300	302	158	158	182	497
18	1040	1230	1690	3510	4950	5370	1560	312	162	158	175	492
19	3430	1190	1680	3560	5760	4990	1690	318	162	160	175	488
20	1770	1170	1740	3360	6490	5460	1610	325	160	146	282	492
21	1590	1120	1800	3440	6730	4810	1460	308	160	146	484	418
22	1470	1110	1790	3770	6660	4100	1250	305	160	142	345	442
23	1590	1050	1780	3880	6080	3650	1100	292	160	142	299	479
24	1540	983	1810	3750	5820	3490	1000	289	156	148	302	442
25	1490	1000	1950	3700	8260	3310	922	283	152	293	335	450
26	1470	1020	2030	3240	9590	3390	854	275	152	307	335	398
27	1440	1120	2070	3150	10000	3240	776	261	150	245	371	442
28	1360	1060	2170	3780	9310	3070	732	245	152	255	386	676
29	1390	—	2280	3940	7920	2890	715	237	150	237	382	9990
30	1400	—	2100	3390	6710	2730	698	232	152	229	363	8090
31	1260	—	1880	—	5700	—	693	227	—	227	—	3020
Mean	1344	1307	1612	3215	5177	4288	1446	366	174	175	250	1264
Runoff in Ac.Ft.	82630	72560	99110	191300	318300	255200	88920	22510	10340	10740	14860	77720
		Water Year Total 1600870								Calendar Year Total 1244190		

U. S. Geological Survey station located 0.5 mile downstream from highway bridge at Piedra. The Kings River flows into the Tulare Lake area. Drainage area 1694 square miles. Period of record 1895 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 148

FLOW OF KAWEAH RIVER NEAR THREE RIVERS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	450	416	407	521	770	852	378	80	47	35	56	138
2	429	400	387	521	789	866	350	79	47	35	56	541
3	429	397	356	510	932	874	334	76	47	36	55	307
4	419	410	394	489	939	810	310	74	45	37	54	436
5	410	452	442	486	954	803	284	71	43	37	52	1210
6	394	479	525	500	910	796	261	68	43	36	50	379
7	384	472	493	500	866	831	247	66	43	35	50	265
8	375	482	489	518	969	824	236	64	38	32	49	207
9	359	465	496	592	991	796	228	63	38	31	48	187
10	378	476	469	757	1120	751	221	61	38	32	47	174
11	410	482	442	939	1170	763	215	59	37	32	46	176
12	384	584	469	1030	999	763	207	56	35	32	46	207
13	356	500	547	1070	874	757	198	55	36	35	48	286
14	359	479	588	1100	831	776	182	54	36	33	48	227
15	365	452	610	1030	845	796	174	53	37	33	48	195
16	378	423	631	969	874	866	166	52	36	32	48	182
17	365	407	631	859	999	796	179	55	36	33	47	171
18	473	403	606	763	1250	719	184	53	36	33	46	164
19	1100	381	610	817	1360	725	221	52	36	32	47	176
20	547	394	600	751	1460	719	179	49	36	32	121	164
21	482	371	650	796	1500	610	157	49	35	32	164	164
22	482	378	650	888	1390	562	145	48	35	33	118	154
23	518	346	620	962	1240	518	136	46	34	33	97	157
24	503	350	580	824	1420	518	132	46	32	36	102	159
25	503	353	600	852	1740	486	124	47	32	165	95	154
26	496	371	602	744	1870	459	115	45	32	95	102	149
27	479	391	597	725	1830	446	107	42	32	76	111	143
28	462	371	625	1000	1590	419	102	41	33	70	118	250
29	462	—	641	1080	1400	407	98	41	36	64	115	4220
30	469	—	588	845	1280	384	93	43	36	61	115	3280
31	416	—	543	—	1100	—	85	47	—	58	—	1400
Mean	453	424	545	781	1171	690	195	56.0	37.6	45.0	73.3	517
Runoff in Ac.Ft.	27840	23570	33500	46490	72020	41040	12000	3440	2240	2770	4360	31780
	Water Year Total 421290								Calendar Year Total 301050			

U. S. Geological Survey station located 3 miles southwest of Three Rivers post office. Kaweah River is a tributary of the Tulare Lake area. Period of record 1936 to date. Prior records available at a site 2 miles upstream. Records for 1951 were computed by the U. S. Geological Survey.

TABLE 149

FLOW OF TULE RIVER NEAR PORTERVILLE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	122	155	164	155	210	81	26	1.4	0.7	0.9	8	50
2	119	147	177	151	205	78	27	1.1	.7	1.0	8	150
3	117	140	139	143	251	76	26	1.0	.4	1.0	8	100
4	117	140	137	139	246	74	25	0.8	.5	1.7	8	200
5	115	145	155	137	251	70	25	1.0	.6	2.4	7	562
6	111	150	256	139	241	71	23	0.8	1.3	3.2	7	204
7	106	150	210	133	222	68	20	.7	1.4	1.6	7	126
8	103	150	205	135	228	67	18	.7	1.4	1.2	7	99
9	98	145	205	141	215	65	18	.8	1.3	0.7	6	85
10	115	145	193	143	205	62	16	.8	0.7	.7	6	81
11	130	150	179	143	198	57	17	.8	.3	.7	6	77
12	145	250	188	145	186	54	17	.8	.3	.8	7	89
13	119	200	222	147	173	50	17	.6	.5	1.0	8	128
14	114	180	248	149	173	48	16	.4	1.1	1.1	9	100
15	112	159	254	151	164	46	16	.4	1.1	1.0	10	90
16	128	151	251	147	145	45	15	.4	.3	1.1	10	80
17	121	139	246	143	139	42	13	.4	.3	1.4	9	75
18	130	139	235	139	141	42	11	.4	.4	1.6	8	70
19	587	131	225	143	141	40	9.7	.5	.9	2.0	8	70
20	292	130	220	149	139	41	8.0	.5	1.1	3.2	30	70
21	222	122	215	137	139	40	5.8	.4	.6	4	70	70
22	193	126	208	130	135	42	4.0	.4	1.1	4	50	65
23	200	117	200	122	126	40	3.8	.4	1.0	4	30	65
24	200	115	193	122	121	39	3.5	.7	.7	4	30	65
25	202	114	188	137	115	36	3.5	.6	.5	50	30	65
26	202	115	188	149	112	33	3.0	.3	.5	20	30	65
27	193	145	184	132	106	34	2.7	.3	.6	15	30	63
28	179	133	182	168	100	31	3.1	.2	.7	13	30	67
29	179	—	177	337	93	29	2.0	.3	.7	11	30	1500
30	193	—	168	238	88	28	2.0	.3	.8	10	30	2000
31	168	—	162	—	84	—	1.8	1.0	—	9	—	800
Mean	166	146	199	151	164	51.0	12.9	0.62	0.75	5.56	17.9	236
Runoff in Ac.Ft.	10180	8100	12250	9010	10100	3030	791	38	45	342	1070	14540
	Water Year Total 111289								Calendar Year Total 69486			

U. S. Geological Survey and Division of Water Resources cooperative station located at highway bridge 1 mile upstream from the South Fork. Drainage area is 266 square miles. Period of record 1901 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 150

FLOW OF SOUTH FORK TULE RIVER NEAR SUCCESS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	48	48	58	54	64	22	6.4			0	3.7	15
2	48	47	60	53	66	20	6.4			0	2.5	81
3	48	46	57	52	76	20	7.1			0	2.5	34
4	48	45	58	52	74	19	5.4			0	2.4	64
5	47	48	64	53	72	18	5			0	2.4	163
6	47	49	112	54	68	18	4			0	2.2	46
7	45	48	89	54	64	18	3			0	2.1	29
8	43	49	86	53	62	17	3			0	2.2	23
9	40	48	82	52	58	16	2.5			0	2.2	19
10	42	48	75	52	56	16	2.1			0	1.8	16
11	43	49	71	49	54	15	1.5			0	1.7	19
12	47	69	71	45	52	14	1.7	N	N	0	2.2	28
13	41	57	74	45	51	12	1.7	O	O	0	3.5	38
14	40	52	77	45	52	12	1.4			0	4.6	28
15	40	50	77	44	50	12	1.3			0	5.1	19
16	47	48	77	43	45	11	1.2			0	5.1	19
17	42	47	75	42	42	11	.6	F	F	C	4.6	17
18	48	48	72	42	40	10	.8	L	L	0	3.1	17
19	180	45	70	44	39	10	.7	O	O	0	3.1	38
20	77	45	70	45	37	10	.8	W	W	.2	17	30
21	63	46	69	43	36	10	.4			.2	28	23
22	60	50	67	42	34	10	.3			.2	19	22
23	60	48	65	41	34	10	.2			.3	13	21
24	60	48	64	42	32	9	.1			.5	12	21
25	59	47	62	48	29	9	0			18	11	20
26	57	48	62	52	28	8.7	0			11	12	19
27	56	51	61	46	26	7.9	0			6.7	10	19
28	54	52	60	58	25	7.1	0			4.4	9.2	20
29	53	—	59	87	24	5.7	0			3.9	8.7	359
30	54	—	58	68	23	6.0	0			3.7	7.9	624
31	50	—	56	—	22	—	0		—	3.7	—	185
Mean	54.4	49.1	69.6	50	46.3	12.8	1.86	0	0	1.70	6.83	67
Runoff in Ac.Ft.	3350	2730	4280	2980	2850	762	114	0	0	105	406	4120
	Water Year Total 30127								Calendar Year Total 21697			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 5 miles upstream from the mouth. Drainage area is 106 square miles. Period of record 1930 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 151

FLOW OF TULE RIVER AT WORTH BRIDGE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	165	205	219	201	241	80	6.0			0	5.3	47
2	162	196	254	196	233	76	6.7			0	5.3	247
3	160	189	210	187	299	72	7.5			0	5.3	119
4	162	189	203	182	292	68	6.7			0	3.9	241
5	157	194	219	178	292	62	6.7			0	4.6	696
6	152	205	386	182	280	64	5.6			0	6.3	223
7	147	206	333	176	257	60	5.6			0	6.7	152
8	143	210	317	178	259	57	5.6			0	6.3	121
9	140	208	305	179	244	52	5.6			0	5.0	103
10	157	206	280	165	228	54	3.1			0	6.0	96
11	171	206	254	154	223	46	6.0			0	5.6	93
12	196	366	257	147	214	41	4.3	N	N	0	6.7	110
13	166	283	296	146	203	36	4.3	O	O	0	7.5	153
14	162	254	320	145	203	30	4.3			0	9.5	128
15	160	223	339	145	194	26	2.8			0	11.0	102
16	176	212	336	143	173	24	3.6			0	11.0	92
17	168	199	330	135	162	22	2.4	F	F	0	10.5	86
18	176	197	302	135	159	17	1.6	L	L	0	9.0	82
19	848	192	280	138	157	15	2.8	O	O	0	13	111
20	414	187	286	150	157	14	1.8	W	W	0	25	117
21	292	182	280	138	157	17	1.1			0	77	94
22	254	182	275	129	157	17	.6			0	64	87
23	264	176	264	125	145	16	.6			0	46	86
24	259	173	251	122	136	13	0			0	40	87
25	264	166	246	138	126	11	0			65	38	84
26	262	166	241	162	119	9.0	0			196	41	80
27	249	197	233	146	112	8.0	0			173	42	77
28	233	187	228	154	112	9.5	0			165	43	78
29	228	—	223	436	96	7.0	0			162	42	1730
30	249	—	214	292	88	7.5	0			165	42	2510
31	215	—	206	—	84	—	0		—	61	—	1050
Mean	224	206	270	170	187	34.4	3.1	0	0	31.8	213	293
Runoff in Ac.Ft.	13790	11420	16640	10120	11510	2045	189	0	0	1958	12660	18010
	Water Year Total								Calendar Year Total 98342			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located 1 mile above the head of Porter Slough and 2.2 miles downstream from the junction of South Fork. Period of record 1944 to date. Records for 1951 computed by Division of Water Resources.

TABLE 152

FLOW OF TULE RIVER ABOVE LITTLE PIONEER DITCH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	18	4.0	297	22	0	322	433	124			0
2	0	15	33	282	16	0	327	427	140			0
3	0	12	25	277	42	0	332	456	232			0
4	0	11	14	267	61	0	287	468	154			0
5	0	14	18	287	64	0	332	468	0			179
6	0	15	46	292	64	0	369	456	0			0
7	0	17	75	287	66	0	342	468	0			0
8	0	16	32	287	64	0	332	451	0			0
9	0	6.9	30	297	54	0	369	445	0			0
10	0	0	14	358	35	0	352	462	0			0
11	0	0	0	327	10	0	287	488	0			0
12	0	24	0	317	0	0	381	369	6.9	N	N	0
13	0	44	0	248	0	0	445	277	125	0	0	0
14	0	19	0	111	0	44	501	327	238			0
15	0	3.8	0	62	0	364	468	226	262			0
16	0	0	0	130	0	307	445	234	352			0
17	0	0	0	140	0	277	468	230	387	F	F	0
18	0	0	0	144	0	287	451	204	297	L	L	0
19	134	0	19	158	0	287	410	217	297	0	0	0
20	41	2.9	188	161	0	287	381	212	287	W	W	0
21	19	5.5	221	168	0	272	393	212	198			0
22	19	14	226	136	0	277	398	212	0			0
23	19	6.2	267	144	0	307	375	212	0			0
24	19	0	234	168	0	292	381	212	0			0
25	23	5.2	317	168	0	337	393	208	0			0
26	25	0	433	117	0	358	398	212	0			0
27	27	0	352	0	0	358	369	208	0			0
28	26	0	358	0	0	358	375	188	0			0
29	30	—	347	136	0	347	422	168	0			475
30	32	—	332	78	0	317	427	188	0		—	1740
31	25	—	307	—	0	—	422	204	—			364
Mean	14.2	8.9	126	195	16.1	169	386	308	104	0	0	89.0
Runoff in Ac.Ft.	871	495	7720	11590	988	10070	23710	18930	6208	0	0	5470
	Water Year Total								Calendar Year Total 86052			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located 0.8 mile upstream from Ottle Bridge and 14.4 miles downstream from junction of South Fork. Period of record 1942 to date. Records for 1951 computed by Division of Water Resources.

TABLE 153

FLOW OF TULE RIVER AT TURNBULL STATION - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												0
2												0
3												0
4												0
5												0
6												0
7												0
8												0
9												0
10												0
11												0
12	N	N	N	N	N	N	N	N	N	N	N	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14												0
15												0
16												0
17	F	F	F	F	F	F	F	F	F	F	F	0
18	L	L	L	L	L	L	L	L	L	L	L	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	W	W	W	W	W	W	W	W	W	W	W	0
21												0
22												0
23												0
24												0
25												0
26												0
27												0
28												0
29		—										0
30		—										0
31		—		—		—			—		—	27
Mean	0	0	0	0	0	0	0	0	0	0	0	0.9
Runoff in Ac.Ft.	0	0	0	0	0	0	0	0	0	0	0	54
	Water Year Total 13331								Calendar Year Total 54			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station located just above the Corcoran-Angiola Highway bridge, 39.0 miles downstream from the junction of South Fork. This station measures inflow to Tulare Lake area and at times the flows are a combination of direct Tule River water, Kaweah River water via Elk Bayou (See Table 158), and Kings River water via Homeland Canal, and waste water from Tulare Irrigation District. Period of record 1942 to date. Records for 1951 computed by Division of Water Resources.

TABLE 154

FLOW OF WHITE RIVER NEAR DUCOR - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.8	5.4	9.6	6.0	11	1.2						0
2	3.5	5.4	12	5.7	9.6	1.0						0
3	3.3	5.1	9.6	5.4	12	1.1						0
4	3.3	5.1	9.6	5.7	10	1.1						0
5	3.3	5.4	19	5.7	9.6	1.0						0
6	3.3	6.0	33	5.7	9.0	.9						0
7	3.3	5.7	25	5.4	8.5	.9						0
8	3.3	5.4	20	5.4	8.5	1.1						0
9	3.3	5.4	18	5.4	8.0	1.1						0
10	4.0	5.1	14	5.7	7.6	.9						0
11	5.1	5.4	13	5.4	7.2	.9						0
12	7.2	12	13	5.4	6.8	.8	N	N	N	N	N	0
13	5.4	10	12	5.4	6.8	.7	0	0	0	0	0	0
14	4.5	8.0	11	5.1	7.2	.6						0
15	4.8	6.8	11	5.1	6.8	.6						0
16	5.4	6.0	11	5.1	6.0	.5						0
17	6.0	5.7	10	5.1	5.1	.3	F	F	F	F	F	0
18	6.0	6.0	9.6	5.1	4.5	.2	L	L	L	L	L	0
19	34	6.4	9.0	5.4	4.3	.1	0	0	0	0	0	0.2
20	18	5.7	8.5	6.0	3.8	.1	W	W	W	W	W	7.2
21	11	5.7	8.5	5.1	3.3	0						3.2
22	8.5	5.7	8.5	4.8	3.1	0						2.8
23	8.5	5.4	8.5	4.3	2.7	0						3.6
24	7.6	5.1	8.5	4.3	2.9	0						4.0
25	7.2	4.8	8.0	5.1	3.1	0						4.0
26	6.8	5.1	7.6	6.0	2.9	0						4.2
27	6.4	8.5	7.2	6.4	2.5	0						4.6
28	5.7	6.8	6.8	6.4	2.1	0						5.3
29	6.4	—	6.4	18	1.7	0						12
30	7.2	—	6.8	17	1.5	0						118
31	6.0	—	6.8	—	1.3	—			—		—	61
Mean	6.84	6.18	11.7	6.22	5.79	0.50	0	0	0	0	0	7.42
Runoff in Ac.Ft.	421	343	717	370	356	30	0	0	0	0	0	456
	Water Year Total 3106								Calendar Year Total 2693			

U. S. Geological Survey and U. S. Bureau of Reclamation cooperative station located 500 feet downstream from bridge at Gilliam Ranch and 8 miles southeast of Ducor. White River is a tributary of the Tulare Lake area. Period of record 1944 to date. Records for 1951 computed by U. S. Geological Survey.

TABLE 155

FLOW OF KERN RIVER NEAR BAKERSFIELD - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	577	510	468	648	1001	1841	1006	338	155	154	190	242
2	501	530	500	632	998	1607	1010	318	161	149	193	267
3	524	525	489	627	951	1453	959	303	156	126	179	420
4	558	522	465	605	967	1420	920	307	147	132	184	400
5	555	528	479	602	948	1360	877	299	145	130	187	453
6	545	566	543	605	947	1375	809	286	133	135	187	904
7	519	570	543	623	856	1404	763	267	132	133	179	559
8	491	561	536	640	877	1442	721	251	133	131	180	410
9	485	583	522	632	855	1459	685	241	135	132	182	334
10	480	583	508	645	850	1507	640	2 9	129	134	184	290
11	518	606	503	686	893	1469	629	215	127	135	179	319
12	527	618	488	717	1017	1440	628	213	119	136	163	362
13	493	647	505	832	1022	1488	617	192	118	140	175	413
14	474	609	548	928	991	1554	609	189	118	139	178	450
15	507	589	581	975	958	1663	582	188	127	133	180	414
16	532	579	586	1003	948	1778	550	174	131	133	192	354
17	511	545	591	968	923	2027	541	182	132	135	174	323
18	486	532	597	957	982	1934	577	185	125	137	178	316
19	543	530	599	932	1144	1756	626	191	126	141	171	326
20	663	505	604	940	1411	1723	677	191	121	146	185	365
21	551	500	604	925	1633	1726	720	174	123	139	248	311
22	539	509	642	885	1746	1625	641	165	119	149	258	291
23	542	499	626	889	1755	1501	553	174	116	153	222	314
24	574	471	619	943	1728	1389	509	168	98	150	218	316
25	559	458	614	975	1875	1261	475	170	123	163	233	311
26	555	481	624	974	2232	1186	433	182	121	241	243	292
27	555	493	654	946	2619	1196	411	161	143	221	242	295
28	556	485	655	881	2777	1130	392	140	155	200	248	295
29	591	—	663	1009	2582	1105	366	138	134	193	245	537
30	570	—	659	1037	2331	1047	362	156	127	193	252	6732
31	544	—	682	—	2057	—	345	150	—	188	—	2634
Mean	536	541	571	822	1383	1496	633	211	131	152	201	653
Runoff in Ac.Ft.	32980	30020	35100	48910	85040	88990	38940	12960	7793	9364	11960	40160
	Water Year Total 565653								Calendar Year Total 442217			

Kern County Land Company station located 5 miles northeast of Bakersfield. Drainage area 2420 square miles. Kern River is a tributary of the Tulare Lake Basin. Period of record 1893 to date. Records for 1951 computed by Kern County Land Company.

TABLE 156

DELIVERY FROM FRIANT-KERN CANAL TO TULE RIVER - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1			0	111		0	332	432	260			
2			0	112		0	318	444	263			
3			0	113		0	314	450	253			
4			0	113		0	288	455	183			
5			0	113		0	330	464	83			
6			0	111		0	360	458	0			
7			0	123		0	346	460	0			
8			0	135		0	342	462	0			
9			0	135		0	352	460	0			
10			0	204		0	325	460	0			
11			0	273		0	286	470	0			
12	N	N	0	295	N	0	380	363	81	N	N	N
13	0	0	0	236	0	0	419	281	174	0	0	0
14			0	139		123	444	270	255			
15			0	130		305	438	272	255			
16			0	149		300	436	272	321			
17	F	F	0	150	F	298	432	270	340	F	F	F
18	L	L	0	148	L	300	426	267	300	L	L	L
19	O	O	0	150	O	295	402	263	281	O	O	O
20	W	W	0	153	W	294	398	260	263	W	W	W
21			0	153		294	398	258	167			
22			0	144		300	400	262	0			
23			0	142		306	398	254	0			
24			0	149		302	402	257	0			
25			59	152		334	402	258	0			
26			154	96		351	390	258	0			
27			117	0		351	386	258	0			
28			110	0		349	402	259	0			
29		—	111	0		342	419	263	0			
30		—	110	0		297	413	262	0			
31		—	110	—		—	417	262	—		—	
Mean	0	0	24.9	131	0	171	380	335	116	0	0	0
Runoff in Ac.Ft.	0	0	1529	7793	0	10197	23395	20597	6920	0	0	0
	Water Year Total								Calendar Year Total 70431			

This flow is the delivery from Friant-Kern Canal into Tule River under contract agreements with the U. S. Bureau of Reclamation. This point of delivery is located on the Tule River approximately four miles west of Porterville. Records for 1951 computed by U. S. Bureau of Reclamation.

TABLE 157

DELIVERY FROM FRIANT-KERN CANAL TO PORTER SLOUGH - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1			0	75						0	0	
2			0	75						0	0	
3			0	74						0	0	
4			0	74						1.9	0	
5			0	72						8.3	0	
6			0	75						3.3	0	
7			0	78						0	0	
8			0	86						0	0	
9			0	90						0	0	
10			0	93						0	0	
11			0	93						0	40	
12	N	N	0	92	N	N	N	N	N	0	53	N
13	0	0	0	93	0	0	0	0	0	0	53	0
14			0	92						0	51	
15			0	25						0	49	
16			0	0						0	41	
17	F	F	0	0	F	F	F	F	F	0	0	F
18	L	L	0	0	L	L	L	L	L	0	0	L
19	O	O	0	0	0	0	0	0	0	0	0	0
20	W	W	0	0	W	W	W	W	W	0	0	W
21			0	0						0	0	
22			0	0						0	0	
23			0	0						0	0	
24			41	0						0	0	
25			41	0						0	0	
26			34	0						0	0	
27			55	0						0	0	
28			58	0						0	0	
29		—	71	0						0	0	
30		—	68	0						0	0	
31		—	70	—		—			—	0	—	
Mean	0	0	14.4	39.6	0	0	0	0	0	.4	9.6	0
Runoff in Ac.Ft.	0	0	889	2354	0	0	0	0	0	27	569	0
	Water Year Total								Calendar Year Total 3839			

This flow is the delivery from Friant-Kern Canal into Porter Slough under contract agreements with the U. S. Bureau of Reclamation. This point of delivery is at the intersection of Porter Slough with the Friant-Kern Canal approximately four miles west of Porterville. Records for 1951 computed by U. S. Bureau of Reclamation.

TABLE 158

FLOW OF ELK BAYOU ABOVE ELK BAYOU AVENUE - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0				0							0
2	0				0							0
3	0				0							0
4	0				0							0
5	0				0							0
6	0				0							0
7	0				0							0
8	0				0							0
9	0				0							0
10	0				0							0
11	0				0							0
12	0	N	N	N	0	N	N	N	N	N	N	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0				0							0
15	0				0							0
16	0				0							0
17	0	F	F	F	0	F	F	F	F	F	F	0
18	0	L	L	L	0	L	L	L	L	L	L	0
19	0	O	O	O	0	O	O	O	O	O	O	0
20	0	W	W	W	0	W	W	W	W	W	W	0
21	3.8				0							0
22	2.8				0							0
23	1.9				0							0
24	0				0							0
25	0				0							0
26	0				1.5							0
27	0				29							0
28	0				36							0
29	0	—			26							0
30	0	—			13							170
31	0	—		—	1.3	—			—		—	243
Mean	0.3	0	0	0	3.4	0	0	0	0	0	0	13.3
Runoff in Ac.Ft.	17	0	0	0	212	0	0	0	0	0	0	819
	Water Year Total 6675								Calendar Year Total 1048			

U. S. Bureau of Reclamation station located 1 mile east of Elk Bayou Avenue and 3.6 miles downstream from Highway 99. The flows passing this station, mainly of Kaweah River origin, can enter Tule River above the Turnbull gaging station. At times Tule River water enters Elk Bayou above this station via Porter Slough. Period of record 1942 to date. Records for 1951 computed by U. S. Bureau of Reclamation.

TABLE 159

FLOW OF SOUTH FORK KINGS RIVER BELOW EMPIRE WEIR #2 - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1					0							0
2					0							0
3					0							0
4					0							0
5					0							0
6					0							0
7					0							0
8					0							0
9					0							0
10					0							0
11					0							0
12	N	N	N	N	0	N	N	N	N	N	N	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14					0							0
15					0							0
16					0							0
17	F	F	F	F	0	F	F	F	F	F	F	0
18	L	L	L	L	0	L	L	L	L	L	L	0
19	O	O	O	O	0	O	O	O	O	O	O	0
20	W	W	W	W	0	W	W	W	W	W	W	0
21					0							0
22					0							0
23					0							0
24					0							0
25					0							0
26					14							0
27					133							0
28					485							0
29		—			473							0
30		—			174							0
31		—		—	0	—			—		—	30
Mean	0	0	0	0	41.3	0	0	0	0	0	0	1.0
Runoff in Ac.Ft.	0	0	0	0	2535	0	0	0	0	0	0	60
	Water Year Total 41133								Calendar Year Total 2595			

Kings River Water Association station located 1 mile southwest of Stratford. This station measures inflow of Kings River water to the Tulare Lake area. Period of record 1937 to date. Records for 1951 computed by Kings River Water Association.

TABLE 160

FLOW OF CROSS CREEK BELOW LAKELAND CANAL #2 - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												0
2												0
3												0
4												0
5												0
6												0
7												0
8												0
9												0
10												0
11												0
12	N	N	N	N	N	N	N	N	N	N	N	0
13	O	O	O	O	O	O	O	O	O	O	O	0
14												0
15												0
16												0
17	F	F	F	F	F	F	F	F	F	F	F	0
18	L	L	L	L	L	L	L	L	L	L	L	0
19	O	O	O	O	O	O	O	O	O	O	O	0
20	W	W	W	W	W	W	W	W	W	W	W	0
21												0
22												0
23												0
24												0
25												0
26												0
27												0
28												0
29		—										0
30		—										0
31		—		—		—			—		—	210
Mean												6.8
Runoff in Ac.Ft.												417
		Water Year Total 14191							Calendar Year Total 417			

Corcoran Irrigation District station located below the Cross Creek weir, 4 miles east of Guernsey. Cross Creek is a tributary of Tulare Lake area. At times the flow is a combination of Kaweah River water, Kings River water and Cottonwood Creek water. Period of record 1921 to date. Records for 1951 computed by Corcoran Irrigation District.

TABLE 161

FLOW OF WEST-SIDE CANAL NEAR LOST HILLS - 1951

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12	N	N	N	N	N	N	N	N	N	N	N	N
13	O	O	O	O	O	O	O	O	O	O	O	O
14												
15												
16												
17	F	F	F	F	F	F	F	F	F	F	F	F
18	L	L	L	L	L	L	L	L	L	L	L	L
19	O	O	O	O	O	O	O	O	O	O	O	O
20	W	W	W	W	W	W	W	W	W	W	W	W
21												
22												
23												
24												
25												
26												
27												
28												
29		—										
30		—										
31		—		—		—			—		—	
Mean	0	0	0	0	0	0	0	0	0	0	0	0
Runoff in Ac.Ft.	0	0	0	0	0	0	0	0	0	0	0	0
		Water Year Total 0							Calendar Year Total 0			

Division of Water Resources and U. S. Bureau of Reclamation cooperative station, also known as Main Drain at Hart's Station, located at bridge on State Highway between Wasco and Lost Hills. This station measures inflow of Kern River water to the Tulare Lake area. Period of record 1944 to date. Records for 1951 computed by Division of Water Resources.

TABLE 162

TULARE LAKE (IN KINGS COUNTY) - 1951

Date	Daily Elevation in Feet(a)											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	184.78	184.05	183.0									
2	184.74	184.03	182.90									
3	184.7	184.01	182.85									
4	184.68	183.98	182.80									
5	184.66	183.96	182.70									
6	184.63	183.94	182.69									
7	184.61	183.92	182.55									
8	184.59	183.90	182.42									
9	184.57	183.85	182.29									
10	184.55	183.85	182.15									
11	184.52	183.05	182.12									
12	184.5	183.85	182.10									
13	184.48	183.85	181.93									
14	184.46	183.85	181.87									
15	184.44	183.85	181.82									
16	184.40	183.85	181.66									
17	184.37	183.80	181.50									
18	184.35	183.75	181.43									
19	184.32	183.70	181.35									
20	184.29	183.65	180.05									
21	184.27	183.60	179.95									
22	184.25	183.55	179.85									
23	184.23	183.50	179.75									
24	184.21	183.45	179.65									
25	184.19	183.37	179.55									
26	184.17	183.30	179.45									
27	184.15	183.20	179.35									
28	184.13	183.10	179.25									
29	184.11	—	179.15									
30	184.09	—	179.05									
31	184.07	—	179.0	—		—			—		—	
Mean												
Runoff in Ac.Ft.												
	Water Year Total								Calendar Year Total			

Station is maintained and operated by Tulare Lake Water Storage Basin District. Station is located approximately 6 miles southwest of Corcoran on the south end of El Rico Bridge. Prior records are available at other sites 1937 to date.
(a) U.S.G.S. Datum.

TABLE 163(a)

FLOW OF BEAR CREEK ABOVE SAN JOAQUIN RIVER - 1950

Date	Daily Mean Flow in Second Feet											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18	320	81	39	14	35	21	10	16	7	30	286
2	17	234	75	28	17	39	21	9	15	7	25	255
3	16	180	69	26	22	38	21	9	16	7	12	263
4	14	158	63	24	28	37	23	10	15	7	12	313
5	10	195	58	17	49	35	24	10	16	6	12	760
6	10	617	54	17	72	34	24	11	18	7	11	2480
7	20	1316	55	18	75	32	19	10	18	7	8	2440
8	122	1681	49	25	71	30	18	12	20	6	8	2260
9	128	1307	46	53	62	25	17	14	24	5	9	2520
10	126	1059	46	160	56	25	18	16	29	5	11	2570
11	126	814	47	336	45	24	21	17	36	6	12	2240
12	146	614	50	528	34	31	19	19	45	5	16	1890
13	144	488	42	601	30	40	20	21	53	5	12	1560
14	141	379	73	478	31	32	20	24	54	5	11	1260
15	137	310	80	383	36	32	19	26	52	6	11	1250
16	127	254	80	377	42	29	20	24	54	5	10	1600
17	114	206	73	364	41	29	20	22	57	5	10	1890
18	169	173	71	305	35	37	31	20	57	4	14	1700
19	388	151	84	236	27	41	33	20	113	3	61	1560
20	425	134	106	90	21	41	30	20	119	4	344	1460
21	366	123	85	48	18	33	32	20	108	3	879	1380
22	291	116	36	34	16	32	30	22	107	3	1740	1310
23	208	110	30	44	18	31	27	22	89	4	1600	1260
24	163	109	31	72	21	30	25	22	71	4	1420	1190
25	138	110	67	71	24	30	23	22	59	4	1410	1030
26	117	112	120	64	24	33	22	22	48	3	1390	1000
27	105	109	147	24	28	33	19	23	50	6	1300	887
28	113	92	174	17	49	27	14	23	32	4	1060	845
29	195	—	150	12	83	24	9	23	11	13	654	805
30	385	—	98	11	82	22	10	24	8	37	375	795
31	394	—	61	—	42	—	10	.22	—	21	—	683
Mean	157.2	409.7	74.2	150.1	39.1	32.0	21.3	18.4	47.0	6.90	416.0	1347.0
Runoff in Ac.Ft.	9666	22753	4564	8930	2406	1906	1309	1129	2797	426	24735	82794
	Water Year Total 56783								Calendar Year Total 163415			

This record was not available at the time of publication of the 1950 Water Supervision Report.
(a) Table 119 of 1950 Report.

TABLE 164

SUMMARY OF WATER UTILIZATION OF SACRAMENTO-SAN JOAQUIN VALLEYS

	Year	Acreage			Diversion Acre-Feet	Irrigation Draft Average c.f.s. July	Gross Duty of Water		Runoff in % of Normal Sacto. R. at Red Bluff
		General	Rice	Total			Ac.Ft. per Acre	Acres per Sec.Ft.	
							(a)	(a)	
Sacramento River	1941	118600	85200	203800	1150000	4314	5.65	86	121
	1942	111200	107700	218900	1279000	4662	5.74	85	130
Redding	1943	107400	115600	223000	1417000	4699	6.24	78	98
	1944	111900	122200	234100	1678000	5502	7.06	69	54
to	1945	106500	115100	221600	1676000	5766	7.44	65	77
	1946	117600	124100	241700	1778000	5560	7.24	67	93
Sacramento	1947	121600	124000	245600	1707000	5600	6.82	71	59
	1948	149700	124100	273800	1593000	5947	5.71	85	88
	1949	143500	137300	280800	1873000	6344	6.55	74	70
	1950	152800	108500	2061300	1794000	5944	6.74	72	66
	Av. 1941 to 1950	124100	116400	240500	1594000	5434	6.51	75	90
	1951	162200	140800	303000	1975000	6653	6.41	76	105
									Sacto. R. at Red Bluff
Back Borrow Pit	1941	3890	1970	5860	19550	103	3.34	146	165
	1942	2760	5650	8410	37790	179	4.49	108	130
Knights Landing	1943	2810	11680	14490	74550	279	5.15	94	98
Outfall Gates	1944	960	9020	9980	65760	240	6.59	74	54
	1945	1580	5180	6760	38520	161	5.70	85	77
to	1946	2060	7880	9940	70920	256	7.13	68	93
	1947	2300	9040	11340	73940	254	6.52	75	59
Highway 20 Bridge	1948	2460	7080	9540	59100	257	6.19	78	88
	1949	1270	9000	10280	69500	230	6.76	72	70
	1950	3230	5920	9150	64400	203	7.04	69	66
	Av. 1941 to 1950	2330	7240	9570	57400	216	5.89	87	90
	1951	2860	6970	9830	73500	241	7.48	65	105
									Sacto. R. at Red Bluff
					(b)		(b)	(b)	
	1941	270	1280	1550	30300	106	19.55	25	165
Colusa Trough	1942	270	1520	1790	28260	104	15.79	31	130
	1943	600	2770	3370	40730	160	12.09	40	98
above	1944	1540	4490	6030	53710	198	8.91	55	54
	1945	200	3880	4080	48490	171	11.88	41	77
Highway 20 Bridge	1946	3030	3690	6720	71220	256	10.60	46	93
	1947	1040	6570	7610	80480	281	10.58	46	59
	1948	3250	4740	7990	67470	275	8.44	58	88
	1949	3140	5560	8700	90200	310	10.37	47	70
	1950	4930	5150	10080	108100	353	10.72	45	66
	Av. 1941 to 1950	1830	3960	5790	61900	221	11.89	43	90
	1951	4050	6640	10690	130200	417	12.18	40	105
									Sacto. R. at Red Bluff
	1941	1840	890	2730	9860	44	3.61	135	165
	1942	1730	880	2610	12370	52	4.74	103	130
Yolo By-Pass	1943	1860	1410	3270	18670	84	5.72	85	98
	1944	1540	4230	5770	33360	126	5.78	84	54
and	1945	1820	3820	5640	35800	141	6.35	77	77
	1946	1790	3000	4790	30260	112	6.32	77	93
Knights Landing Ridge Cut	1947	3220	2980	6200	27180	110	4.38	111	59
	1948	1710	2260	3990	27800	93	7.00	69	88
	1949	1740	2150	3890	34500	83	8.87	55	70
	1950	1650	1920	3570	29300	84	8.21	59	66
	Av. 1941 to 1950	1890	2350	4240	25900	93	6.10	80	90
	1951	3650	3360	7010	40700	141	5.81	84	105
									Feather R. near Oroville
	1941	9620		9620	27020	40	2.81	173	136
	1942	8720	1050	9770	31880	65	3.26	149	139
Lower Butte Creek	1943	8730	2020	10750	35890	77	3.35	145	117
	1944	7750	1760	9510	33670	60	3.51	139	58
and	1945	7820	2110	9930	39580	88	4.00	122	78
	1946	8250	1850	10100	45670	123	4.56	107	87
Butte Slough	1947	4520	1120	5640	19800	58	3.54	137	53
	1948	4650	660	5310	27620	106	5.20	93	81
	1949	7140	1870	9010	65200	205	7.24	67	54
	1950	7200	1540	8740	50500	187	5.78	84	80
	Av. 1941 to 1950	7440	1400	8840	37700	101	4.32	122	88
	1951	6980	1700	8680	53400	206	6.15	79	119

(a) Excluding Municipal diversions, the City of Sacramento and the City of Redding.
(b) Includes an undetermined amount of water used by cooperative plants and is not indicative of use.

TABLE 164 (CONT'D)

SUMMARY OF WATER UTILIZATION OF SACRAMENTO-SAN JOAQUIN VALLEYS

	Year	Acreage			Diversion Acre-Feet	Irrigation Draft Average c.f.s. July	Gross Duty of Water		Runoff in % of Normal Feather R. near Oroville
		General	Rice	Total			Ac. Ft. per Acre	Acres per Sec. Ft.	
East and West Borrow Pits of Sutter By-Pass and Sacramento Slough	1941	7830	2440	10270	31260	141	3.04	160	136
	1942	5550	1790	7340	22680	88	3.09	157	139
	1943	5380	3040	8420	33140	133	3.94	123	117
	1944	5890	4300	10190	51100	195	5.01	97	58
	1945	4710	7000	11710	54720	199	4.67	104	78
	1946	9380	4920	14300	59160	217	4.14	117	87
	1947	8840	3210	12050	48440	180	4.02	121	53
	1948	7920	2640	10560	36240	149	3.43	142	81
	1949	8300	6180	14480	77600	252	5.35	91	54
	1950	11650	4480	16130	89100	329	5.52	88	80
	Av. 1941 to 1950	7540	4000	11540	50300	188	4.22	120	88
	1951	11120	6110	17230	103200	405	5.99	81	119
									Feather R. near Oroville
Feather River Mouth to Oroville Bridge	1941	27660	26640	54300	475200	1681	8.75	56	118
	1942	38480	25180	63660	539700	2042	8.48	57	139
	1943	24090	46570	70660	623600	2134	8.82	55	117
	1944	25240	49840	75080	712900	2312	9.50	51	58
	1945	25110	47860	72970	698400	2313	9.57	51	78
	1946	27190	51080	78270	744800	2362	9.52	51	87
	1947	28260	49750	78010	674400	2245	8.65	56	53
	1948	29530	43260	72790	586300	2292	8.05	60	81
	1949	31000	51100	82200	716300	2241	8.71	56	54
	1950	34000	41300	75300	662100	2229	8.79	55	80
	Av. 1941 to 1950	29100	43200	72300	643400	2185	8.88	55	88
	1951	31200	56500	87700	727300	2319	8.29	59	119
									Yuba R. at Smartville
Yuba River Mouth to Smartville	1941	7470	1350	8820	73530	221	8.34	58	130
	1942	6660	1120	7780	74710	243	9.60	51	138
	1943	6280	2310	8590	93800	280	10.92	45	127
	1944	7010	2400	9410	93260	273	9.91	49	57
	1945	8820	1050	9900	84230	229	8.51	57	89
	1946	8870	1960	10830	98690	278	9.11	53	97
	1947	8280	3630	11910	100100	282	8.40	58	55
	1948	8720	3120	11840	92760	281	7.75	62	82
	1949	8840	3300	12140	106800	316	8.80	55	60
	1950	10000	2640	12640	127400	342	10.08	48	85
	Av. 1941 to 1950	8100	2290	10390	94500	274	9.14	54	92
	1951	9640	3410	13050	110300	313	8.45	57	164
									American R. at Fairoaks
American River Mouth to Fairoaks	1941	3050		3050	5310	25	(a) 1.75	(a) 277	111
	1942	3130		3130	4170	23	1.30	374	138
	1943	3110		3110	4580	25	1.89	258	136
	1944	3200		3200	4820	25	1.63	298	51
	1945	2940		2940	3860	16	1.30	374	88
	1946	2890		2890	4120	18	1.77	275	101
	1947	3670		3670	5910	19	1.68	290	50
	1948	3630		3630	5880	28	1.92	254	79
	1949	3860		3860	5510	24	2.60	187	65
	1950	4000		4000	4600	18	2.52	192	90
	Av. 1941 to 1950	3350		3350	4880	22	1.84	278	91
	1951	4830		4830	5450	21	1.94	250	169
									Sacto. R. at Red Bluff
Sacramento River System Sacramento River and Tributaries	1941	180200	119800	300000	1822000	6675	(b) 6.03	(b) 81	165
	1942	178500	144900	323400	2031000	7458	6.24	78	130
	1943	160300	185400	345700	2342000	7871	6.73	72	98
	1944	165000	198200	363200	2726000	8931	7.47	65	54
	1945	159500	186000	345500	2680000	9084	7.72	63	77
	1946	181100	198500	379600	2903000	9182	7.61	64	93
	1947	181700	200300	382000	2737000	9029	7.12	68	59
	1948	211600	187900	399500	2496000	9428	6.25	78	88
	1949	208800	216500	425300	3039000	10005	7.11	68	70
	1950	229500	171500	401000	2929000	9689	7.27	67	66
	Av. 1941 to 1950	185600	180900	366500	2570000	8731	6.96	70	90
	1951	236500	225500	462000	3218000	10716	6.94	70	105

(a) Excluding diversion and acreage of the Carmichael Irrigation District.
(b) Excluding Municipal diversions on Sacramento River, the City of Sacramento and the City of Redding. Also excluding diversion and acreage of the Carmichael Irrigation District on American River.

TABLE 164 (CONT'D)

SUMMARY OF WATER UTILIZATION OF SACRAMENTO-SAN JOAQUIN VALLEYS

	Year	Acreage			Diversion Acre-Feet	Irrigation Draft Average c.f.s. July	Gross Duty of Water		Runoff in % of Normal San Joaquin R. near Vernalis
		General	Rice	Total			Ac. Ft. per Acre	Acres per Sec. Ft.	
Old San Joaquin River and Tom Paine Slough Delta Uplands (a)	1941	32810		32810	60430	248	1.84	264	129
	1942	33110		33110	61900	254	1.87	260	120
	1943	45660	150	45810	76150	267	1.66	292	118
	1944	47000	240	47240	105700	325	2.24	217	63
	1945	37300	220	37520	106400	369	2.84	171	107
	1946	40000	320	40320	126100	374	3.13	155	93
	1947	43140	550	43690	136800	423	3.13	155	56
	1948	45380	470	45850	135600	427	2.96	164	68
	1949	51310	380	51690	157700	480	3.05	159	62
	1950	50230	360	50590	161200	491	3.19	153	76
	Av. 1941 to 1950	42590	270	42860	112800	366	2.59	199	89
	1951	49560	410	49970	152000	477	3.04	160	118
									San Joaquin R. near Vernalis
San Joaquin River Stockton to Vernalis	1941	19300		19300	40080	195	2.08	234	129
	1942	17930		17930	42180	198	2.35	206	120
	1943	19500		19500	51720	189	2.65	183	118
	1944	20730		20730	59310	185	2.86	170	63
	1945	19940		19940	62330	213	3.12	155	107
	1946	24500		24500	77150	250	3.15	154	93
	1947	25120		25120	84480	251	3.36	144	56
	1948	25550		25550	66600	226	2.61	186	68
	1949	26900		26900	78600	243	2.92	166	62
	1950	26600		26600	84600	277	3.18	153	76
	Av. 1941 to 1950	22600		22600	64700	223	2.86	175	89
	1951	26600		26600	74900	242	2.82	173	118
									San Joaquin R. near Vernalis
San Joaquin River Vernalis to Fremont Ford	1941	39870	480	40350	93420	431	2.32	210	129
	1942	41930	580	42510	104400	461	2.46	198	120
	1943	41140	340	41480	121700	486	2.93	166	118
	1944	42190	1460	43650	138300	440	3.17	153	63
	1945	41600	850	42450	131400	495	3.10	157	107
	1946	43090	1400	44490	160000	520	3.60	135	93
	1947	43080	1360	44440	181400	554	4.08	119	56
	1948	46380	540	46920	144800	471	3.09	157	68
	1949	45780	620	46400	166800	551	3.59	135	62
	1950	48110	390	48500	175100	537	3.61	135	76
	Av. 1941 to 1950	43320	800	44120	141700	495	3.20	156	89
	1951	48740	730	49470	172700	571	3.49	139	118
									Merced R. at Exchequer
Merced River Mouth to Yosemite Valley Railroad Crossing (b)	1941	3570		3570	7590	32	2.13	229	138
	1942	3300		3300	8400	44	2.55	191	122
	1943	3680		3680	11720	50	3.18	153	122
	1944	4510		4510	13500	42	2.99	162	65
	1945	4400		4400	11820	50	2.69	181	104
	1946	4480		4480	14400	59	3.21	151	89
	1947	5910		5910	21080	71	3.57	136	54
	1948	6490		6490	17760	80	2.74	178	65
	1949	7940		7940	25640	92	3.23	150	60
	1950	7910		7910	23900	78	3.02	161	68
	Av. 1941 to 1950	5220		5220	15600	60	2.93	169	89
	1951	8090		8090	22200	78	2.74	177	116
									Tuolumne R. near La Grange
Tuolumne River Mouth La Grange Dam (c)	1941	1300		1300	3150	10	2.42	201	127
	1942	1620		1620	2770	10	1.71	284	120
	1943	1830		1830	2620	9	1.43	339	120
	1944	3160		3160	4100	13	1.30	375	67
	1945	3260		3260	3560	12	1.09	445	106
	1946	3560		3560	4920	15	1.38	352	96
	1947	3760		3760	7470	20	1.99	245	56
	1948	3750		3750	6230	21	1.66	293	72
	1949	4400		4400	6440	18	1.46	332	63
	1950	4690		4690	6100	18	1.30	374	79
	Av. 1941 to 1950	3130		3130	4740	15	1.51	321	91
	1951	4500		4500	4620	14	1.03	473	127

(a) Excluding diversions and acreages of Delta Mendota Canal.
(b) Excluding diversion and acreage of Merced Irrigation District.
(c) Excluding diversion and acreage of Modesto, Turlock and Waterford Irrigation Districts.

TABLE 164 (CONT'D)

SUMMARY OF WATER UTILIZATION OF SACRAMENTO-SAN JOAQUIN VALLEYS

	Year	Acreage			Diversion Acre-Feet	Irrigation Draft Average c.f.s. July	Gross Duty of Water		Runoff in % of Normal Stanislaus R. below Melones
		General	Rice	Total			Ac. Ft. per Acre	Acres per Sec. Ft.	
Stanislaus River	1941	6940	110	7050	16660	56	2.37	206	107
	1942	7100	130	7230	20010	75	2.77	176	119
Mouth	1943	7360		7360	22060	73	3.00	162	125
	1944	7920		7920	21830	69	2.76	176	54
to	1945	6870		6870	21660	72	3.15	154	102
	1946	6340		6340	26810	82	4.23	115	94
Goodwin Dam	1947	6600		6600	30080	88	4.56	107	52
	1948	7920		7920	29700	99	3.75	130	72
(a)	1949	8550		8550	23160	76	2.71	179	60
	1950	8450		8450	33400	102	3.95	123	86
	Av. 1941 to 1950	7410	20	7430	24500	79	3.30	147	87
	1951	8340		8340	34700	99	4.16	117	136
San Joaquin River System									San Joaquin at Vernalis
	1941	103800	590	104400	221300	972	2.12	229	129
San Joaquin River	1942	105000	710	105700	239700	1042	2.27	214	120
	1943	119200	490	119700	286000	1074	2.39	203	118
Stockton-Fremont Ford	1944	125500	1700	127200	342700	1074	2.69	180	63
	1945	113400	1070	114500	337200	1211	2.94	165	107
and Tributaries	1946	122000	1720	123700	409400	1300	3.31	147	93
	1947	127600	1910	129500	461300	1407	3.56	136	56
(b)	1948	135500	1010	136500	400700	1324	2.94	166	68
	1949	144900	1000	145900	458300	1460	3.14	155	62
	1950	146000	800	146800	484300	1530	3.30	147	76
	Av. 1941 to 1950	124300	1100	125400	364100	1237	2.87	174	89
	1951	145800	1100	146900	461100	1481	3.14	155	118
Combined above Delta									
	1941	284000	120400	404400	2043000	7647	5.01 (c)	97 (c)	
Sacramento River	1942	283500	145600	429100	2271000	8500	5.26	92	
and Tributaries	1943	279500	185900	465400	2628000	8945	5.61	87	
and	1944	290500	199900	490400	3069000	10005	6.23	78	
San Joaquin River	1945	272900	187100	460000	3017000	10295	6.52	74	
Stockton-Fremont Ford	1946	303100	200200	503300	3312000	10482	6.55	74	
and Tributaries	1947	309300	202200	511500	3198000	10436	6.22	78	
	1948	347100	188900	536000	2897000	10752	5.40	90	
(b)	1949	353800	217500	571200	3497000	11465	6.09	80	
	1950	375500	172300	547800	3413000	11192	6.20	78	
	Av. 1941 to 1950	309900	182000	491900	2934000	9972	5.91	83	
	1951	383700	225600	609300	3685000	12230	6.02	81	

(a) Excluding diversions and acreages of South San Joaquin Irrigation District and Oakdale Irrigation District.
(b) Excluding diversions and acreages of Merced Irrigation District on Merced River, Modesto Irrigation District and Turlock Irrigation District on Tuolumne River, South San Joaquin Irrigation District and Oakdale Irrigation District on Stanislaus River.
(c) Excluding municipal diversions on Sacramento River, the City of Sacramento and the City of Redding. Also excluding diversion and acreage of the Carmichael Irrigation District on American River.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
--"M" STREET BRIDGE--	0.0												
--"I" STREET BRIDGE--	0.4												
--GAGING STATION-SACRAMENTO RIVER AT SACRAMENTO--	0.43L												
City of Sacramento	0.8L	1-18" 3-20"	2491	3090	3678	4612	5057	4922	4045	3084	(a)30979	Municipal	
--AMERICAN RIVER--	1.1L												
--BACK BORROW PIT RECLAMATION DISTRICT 1000--	1.3L												
E. Fourness	1.45R	1-8"				49	82	206	121		458	160	
--RECLAMATION DISTRICT 1000 DRAIN--	2.1L												
Elmer F. Christophel	2.15L	1-8"		10	20	28	35	14	29		136	38	
D. D. Parr	3.15L	1-6"				6	32				38	26	
Rose Orchard	3.55R	1-16"	40	6	208	377	245	105	164		1145	177	
Evergreen Farms (b)	3.75R	1-6"			15	50	52	51	41		209	65	
M.C.C. Van Loben Sells	4.0R	1-10"			15	76	96	55	17		259	150	
--SACRAMENTO WEIR--	4.2R												
Reese and Greer	4.65R	1-7"			7	36	46	9			98	58	
Jack R. Damron	5.05R	1-14"				61	74	21			156	25	
R. S. Seydel	5.25R	1-8"				17	9	19			45	37	
A. R. Merkley	5.3R	1-6"			2	42	33				77	59	
Lucy Casselman	5.5R	1-6"				20	20	2			42	(c)31	
A. A. Casselman	5.55R	1-6"				26	28	2			56	39	
J. E. Bandy	6.0R	1-6"	NO DIVERSION										
Riverside Mutual Water Company	6.1L	2-18"		566	813	1115	1278	1354	421	45	5592	(d)2026	114
W. W. White	6.6R	1-6"	NO DIVERSION										
--RECLAMATION DISTRICT 1000 DRAIN #3--	6.85L												
Fred C. Jones	7.5L	1-8"				45	48	26			119	98	
M. R. Williamson	7.8L	1-10"			34	45		42			121	90	
A. Marty	7.9R	1-8"				100	55	32	29	14	230	200	
E. D. Willey	7.9L	1-10"		2	9	11	162	57			241	129	
M. Marty	8.3R	1-8"				28	59	25	24	8	144	200	
Blauth Estate	8.5R	1-7"				51	40	12			103	73	
H. Waldeck	8.7R	1-6"				38	34	17	20		109	35	
Fong Yen, et al	9.3L	1-10"		45	60	256	191	132	87		771	273	
Henry Amen	9.35R	1-14"		30	35	154	256	186	80	121	862	254	
F. C. Jones	9.8L	1-8" 1-14"				14	36	37	9	1	97	27	
Carl Casselman	9.9R	1-12"			39	128	195	41	23		426	130	
Lloyd M. Robbins	10.25L	1-14"		93	26	53	107	106	77		462	506	
Ray Hughes	10.65R	1-12"	NO DIVERSION										
Edward Russell	10.75L	1-12"				11	18				29	20	
W. A. Ten Eyck	11.1R	1-12"		26		40	54	55			175	190	
--ELKHORN FERRY--	11.9												
Conaway Ranch	12.0R	4-36"		7043	8462	12544	14901	12568	5248		60766	(e)2621	(e)7058
Thomas O'Connor Estate	12.5R	1-12"			13	145	97	134	36		425	145	
William Plumb, Jr.	12.7R	1-6"	NO DIVERSION										
Lewis Thornton (f)	12.95L	1-3"				1	1	1			3	3	
Frank F. Newman	13.1R	1-12"				117	157	67			341	190	
J. Corey	13.2R	1-8"	PLANT REMOVED										
V. Santoni (g)	13.25R	1-8"			12		14	2			28	7	
Elkhorn Mutual Water Company (Natomas)	14.1L	1-20" 1-24"		1235	893	1903	2016	1933	669		8649	2660	176

(a) Additional acre-feet diverted: January-2152, February-1957, November-2201 and December-2142.
(b) New Installation in 1951.
(c) This acreage also received an undetermined amount of well water.
(d) Includes an undetermined acreage which also received water by controlled drainage and wells.
(e) Included in these figures are 300 acres of general crops and approximately 100 acres of rice which also received an undetermined amount of water from controlled drainage. The rice figure also includes 1032 acres outside of Conaway Ranch.
(g) Formerly listed as J. DeNigris.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
Joseph Veress	14.25R	1-14"			38	232	1			6	277	180	
M. E. Dole	14.4R	1-6"				PLANT REMOVED							
J. A. Damron	15.1R	1-10"		22		158	97	208	2		487	250	
Natomas Central Mutual Water Company	16.0L	1-24" 2-32" 2-38"		5086	7208	8594	10574	10357	5590	1189	48598	(a)7198	(a)8992
Henry Rich (Hershey Plant)	16.27R	1-20"		290	646	607	614	627	182	3	2969	30	(b)250
Sacramento River Ranch (c)	16.62R	1-14"		19	17	113		75	132		(d)356	(e)100	
Sacramento River Ranch (c)	17.0R	1-14"				69	71				140	(f)	
Frank and Ruth Lang	17.4R	1-16"				35	225	121			381	86	
California Western States Life Insurance Company	17.75R	1-16"				NO DIVERSION							
Jose Alves and Sons	18.0R	1-20"				326	324	439			1089	600	
H. C. Lauppe	18.2L	2-10"			122	127	149	326	151		875	120	75
M. and J. Scheiber	18.45L	1-12"				60	180	177		7	424	160	
J. R. Brannely	18.7L	1-8"				5	63	5			73	50	
SACRAMENTO TO VERONA Totals Average cubic feet per second Monthly use in per cent of seasonal			2531 41 1.5	17563 295 10.4	22372 364 13.2	32525 547 19.2	37826 615 22.4	34568 562 20.4	17197 289 10.2	4478 73 2.7	169060 348	19516	16665
--GAGING STATION-SACRAMENTO RIVER AT VERONA--	19.6L												
--CROSS CANAL-RECLAMATION DISTRICTS 1000 AND 1001--	19.6L												
Arthur Drown	*(0.05S)	1-20"				36	43	47	19		145	85	
Natomas Central Mutual Water Company (Bennett Subd. Plant)	*(1.0S)	1-24"		1381	2221	2088	2382	2328	1295		11695	182	1025
Natomas Central Mutual Water Company	*(2.0S)	1-20" 2-24"		3225	3399	4875	5801	5559	2719		25578	(g)	(g)
Natomas Company (Ben May Plant)	*(3.35N)	1-16"		259	259	458	542	577	212	20	2327	240	440
Roy C. Osterli	*(3.35N)	1-14"		256	239	380	555	670	219		2319		275
--FEATHER RIVER--	20.9L												
--SACRAMENTO SLOUGH--	21.2L												
West Coast Life Insurance Co.	21.7R	1-15"		292	298	513	603	378	143	26	2253	500	
Sacramento River Ranch (h)	22.5R	1-22"		350	1223	1165	1618	1626	732		6714	110	500
A. F. Johnston	26.8L	1-16"				38	64				102	160	
Anthony Furlan	26.8L	1-16"				13	28	25			66	65	
--FREMONT WEIR--	28.0R												
Gustaf Inglin	28.2R	1-6"		36	4	16	18	20	2		96	27	
Hershey Estate	29.0R	1-12" (i)2-16"		214	683	774	751	644	411	3	3480	120	200
Russell Bros.	29.2R	1-12"			3	93	36	8	6		146	145	
M. R. Richardson	29.7R	1-8"				NO DIVERSION							
Sebastine Yturralde	29.9L	1-12"				100	15	64			179	104	
Leo Giovanetti	30.2L	1-5"		10		9	15	16			50	36	
Anthony Furlan	30.5L	1-14"		312	433	388	411	415	245		2204	80	100
M. R. Richardson	30.7R	1-10"			109	38	63	67	12		289	58	
Albert Nuez	30.75R	1-6"			29	27	46	23	15		140	30	
Alice E. West	30.9L	1-6"				NO DIVERSION							
A. C. Huston	31.5R	1-12"			93	21					114	150	
M. R. Richardson	31.75R	1-20"		3	32	102	14	38			189	20	
M. Alonso	31.8L	1-6"		5		5	8	9			27	36	
Sutter Mutual Water Company (Portuguese)	32.0L	1-20" 2-24"		1375	1991	2381	2492	2135	1223	147	11744	1799	401

* Cross Canal - The main drain between R.D. 1000 and 1001 joins the Sacramento River at Mile 19.6L. Distance from Sacramento River and the bank is shown in ().

(a) This is the combined acreage of this plant and the plant at Mile 19.6L (2.0S). Includes an undetermined acreage which also received water by controlled drainage and wells.

(b) This acreage also received an undetermined amount of water from the plant at Mile 16.62R.

(c) Formerly listed as Henry Rich.

(d) This plant furnished an undetermined amount of water to the rice acreage of the plant at Mile 16.27R.

(e) This is the combined acreage of this plant and the plant at Mile 17.0R.

(f) See the plant at Mile 16.62R.

(g) See the plant at Mile 16.0L.

(h) Formerly listed as Henry Rich (Keller Plant).

(i) One 16" unit was installed in 1951.

3C

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
J. F. Waters (a)	32.4L	1-12"					14	53	34		101	36	
Collier Bros.	32.5R	1-10"			17	37	28	30	20		132	84	
W.H. Zeigler and H.Carlson (b)	33.2L	2-10"		55	373	558	389	462	371		2208	515	110
J. G. Knox	33.35L	1-10" 1-12"			460	496	564	550	282		2352	70	110
Clarence Du Bois	33.5R	1-12"				84	66	78			228	119	
P.K., G.J. and W.N. Leiser and L.J. Mansager (c)	33.75L	1-14"		72	624	635	620	599	293		2843	104	273
Neil Wilson	33.85R	1-6"				18	17	16			51	30	
--SOUTHERN PACIFIC RAILROAD BRIDGE--	33.95												
VERONA TO KNIGHTS LANDING Totals Average cubic feet per second Monthly use in per cent of seasonal			0 0 0	7845 132 10.1	12490 203 16.1	15348 258 19.7	17203 280 22.1	16437 267 10.6	8253 139 0.3	196 3	77772 160	4905	3434
--GAGING STATION-SACRAMENTO RIVER AT KNIGHTS LANDING--	34.0L												
--KNIGHTS LANDING BRIDGE--	34.1												
--COLUSA BASIN DRAIN--	34.15												
River Farms Company	34.5R	1-16" 1-20" 1-24"		3404	3353	4000	4321	4125	905	86	20194	(d)1348	(d)1580
Wallace Ernst and A. Johnson (e)	34.85L	1-8" 1-12"			77	50	1	34			162	100	
Walter Raymond	35.2L	1-12"		7	19	37	8	13			84	140	
Knox and Anderson	35.8L	1-10"				41	40				81	70	
J. Goffitzer	35.85L	1-6"			7	18	9	5	6	3	48	17	
Kilgore and Rossi	36.2L	1-12" 1-14"		237	377	363	379	353	141		1850	154	165
Earl H. Gray	36.45L	1-8"		29		31	21	22			103	53	
Amedio Moroni	36.7L	1-5"				PLANT REMOVED							
--RECLAMATION DISTRICT #787 DRAINAGE PLANT--	37.0R												
Albert Nuttall	37.2L	1-14"				60					60	90	
Maynelle J. Bundock	37.75L	1-8"					33	4			37	85	
Alice Reel and Mabel Green (f)	38.4L	1-10"					20	21			41	90	
C. L. Reel	38.8L	1-10"					39				39	110	
Ivan Shuey	39.4L	1-12"				NO DIVERSION							
C. L. Reel	39.8L	1-10"				9	19				28	110	
William Duffy, Jr.	39.9L	1-6"					24				24	24	
Sutter Mutual Water Company (State Ranch Bend)	40.6L	2-24" 1-36"		1526	3985	4279	4893	4791	1423	13	20910	3685	1530
River Farms Company	41.0R	1-14" 1-16"		10	134	457	548	419			1568	708	
El Dorado Ranch	42.0R	1-14" 1-16"		119	196	80	372		44		811	(g)702	
Buell Ranch (M.K. Dean)	42.2L	1-6"				15	10	6			31	20	
Matteoli and Fracchia	42.3L	1-8"				75	46	79			200	50	
Kramer Ranch	43.1L	1-12"					115	61			176	110	
El Dorado Ranch	43.1R	1-18"				NO DIVERSION							
Reclamation District #2047	43.1R	2-50"		8628	13393	16177	18111	16420	5376		78105	(h)541	(h)7131
--RECLAMATION DISTRICT #108 DRAINAGE PLANT--	44.0R												
John Clauss	44.2L	1-18"				101	243		48	53	445	(i)775	
John Clauss (Fuchlin)	45.6L	1-14"			56	34	275		39		404	(j)	
Geo.J., Jr. and J.H. Henle	46.5L	1-14" 1-20"		243	793	875	954	673	437		3975	184	170

(a) New Installation in 1951.
(b) Formerly listed as Walter H. Zeigler.
(c) Formerly listed as Fred Leiser.
(d) This is the combined acreage of this plant and the plant on Back Borrow Pit at Mile 0.3L. Total acre-feet diverted by plant on Back Borrow Pit: 759.
(e) Formerly listed as Commercial Investment Company.
(f) Formerly listed as Addie Reel.
(g) This acreage also received an undetermined amount of controlled drainage water.
(h) Includes acreage irrigated as follows: Reclamation District #108; Rice 6059, General 44. River Farms Company; General 497, Rice 1072.
(i) This is the combined acreage of this plant and the plant at Mile 45.6L.
(j) See the plant at Mile 44.2L.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
P. J. Hiatt	48.7L	2-20"		1091	1150	1245	1119	1062	439		6106	242	336
G. J. Hiatt	49.7L	1-14"			73	42	10	11			136	125	
Reclamation District #108	51.1R	2-24" 1-36"		5174	7533	8019	7854	7304	1749		37633	415	2328
Holmes and Westover Company	51.2L	2-16"		190	1397	1241	1119	1095	538		5580	692	300
Fritz Erdman (a)	51.9R	1-12"			55	100	120	100			375	110	
Thomas Nelson (b)	52.0L	1-16"			72	361	273	272			978	310	
George Van Ruiten	52.9L	1-10"				32	18	3			53	(c)414	
River Farms Company	53.8R	(d)1-15"			372	520	515	477	461	20	2365	368	
George Van Ruiten	53.9L	1-12"			180	11	230	56	73		550	(e)	
Broomieside Farm	55.1L	1-20"			251		216	56			523	395	
Broomieside Farm	56.3L	1-16"			80	100					180	135	
Reclamation District #108	56.4R	1-12" 1-18" (f)2-22"		520	1385	1864	2123	1627	553		8072	955	570
C. M. Miller	56.42R	1-6"				NO DIVERSION							
Jacob Miller	56.65R	1-12"				NO DIVERSION							
Broomieside Farm (S.C. Crawford)	56.95L	1-20"		457	1029	944	1033	1028	490		4981	170	330
L. M. Miller	57.0R	1-10"				79	36				115	145	
Lamb Brothers	57.5L	1-16"				NO DIVERSION							
J. A. Neilsen	58.2L	1-15"		131	116	198	166	145	31	76	863	247	
Alex Grant	58.9L	1-16"			17	132					149	140	
I. G. Zumwalt	59.1R	1-12"				NO DIVERSION							
Lamb Brothers	59.8L	1-12" 1-14"				NO DIVERSION							
W. A. Larner	60.4L	1-14" 1-16"		128	631	907	942	977	508		4093	580	365
Dr. A.G. Richter (g)	60.5L	1-12"		43	268	415	393	287	106		1512	160	110
Robert Lane	61.35L	1-12"				NO DIVERSION							
Richard Moore	61.5R	1-12"			18	88	98				204	100	
Wayne Hine (h)	62.3R	1-10"			4	12	14	32	14		76	38	
Jake Broyles	62.3L	1-14"		397	523	503	527	173	114	20	2257	214	146
Jake Locovitch	62.6R	1-8"					1	24			25	30	
KNIGHTS LANDING TO WILKINS SLOUGH Totals Average cubic feet per second Monthly use in per cent of seasonal			0 0 0	22334 375 10.8	37544 611 18.2	43515 731 21.1	47288 769 22.9	41755 679 20.3	13495 227 6.6	271 4 0.1	206202 424	15151 151	15061
--GAGING STATION-SACRAMENTO RIVER AT WILKINS SLOUGH--	62.9R												
Reclamation District #108 (Wilkins Slough)	63.2R	5-42"		14059	17528	25714	22338	18332	2739		100710	(i)848	(i)1542
R. L. Young	63.3L	1-12"			4	58	37	14	5	5	123	80	
Haward and Files (j)	63.65L	1-8"			8	58	70	45	28	3	212	100	
Sutter Mutual Water Company (Tisdale Plants #1 and #2)	63.75L	6-42" 2-48"		27283	38460	38689	41569	40098	16648	3131	205878	(k)21335	14369
Robert E. Seaman (l)	63.9L	2-14"		296	666	555	880	682	207		3486	147	260
--TISDALE WEIR--	64.2L												
Lamb Bros. (a)	64.2L	1-14"			154	185	147	170	152		808		70
Ornbaum Livestock Company	64.3R	1-12"				5	4	13	6		28	20	
Tisdale Irrigation and Drainage Company	64.4L	1-12"			30	384	552	529	283		1778	340	80
Van Horn Ranch	64.9R	1-14"				101	115	163			379	150	
Juan Valsyves	65.1R	1-4"				10	20	21	1		52	20	
Walter Ettl	65.7L	1-8"		14	20	118	152	61			365	135	

(a) New Installation in 1951.
(b) Formerly listed as B. M. Chaplin.
(c) This is the combined acreage of this plant and the plant at Mile 53.9L.
(d) This unit replaces the 12" unit formerly listed at this location.
(e) See the plant at Mile 52.9L
(f) One 22" unit installed in 1951.
(g) Formerly listed as A. Earl Lane.
(h) Formerly listed as Samuel Hines.
(i) This is the combined acreage of this plant and the plant on the Back Borrow Pit at Mile 20.8L.
(j) Formerly listed as Lueltha Meister.
(k) Of this figure, 1276 acres was double cropped.
(l) Formerly listed as Edmund Seaman.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
Fred Schohr	65.8R	1-16"				NO DIVERSION							
J. L. Browning	66.4R	1-18"			32	228	372	317			949	(a)779	
Tisdale Irrigation and Drainage Company	67.1L	(b)1-16" 1-22"		668	758	1136	1307	1045	301		5215	1719	143
Newhall Land and Farming Company	67.5L	1-12" 2-24"	19	1460	1796	2384	2304	2056	1039		11058	2786	117
--RECLAMATION DISTRICT #70 DRAIN PLANT--	68.8L												
J. L. Browning	69.0R	(c)1-14" 1-22"				167	130	175	53		525	(d)	
Faxon, Morton and P. Andreotti	69.2R	1-18"		18	25	225	237	88	8		601	350	
--EDDY'S FERRY SITE (GRIMES)--	69.4S												
J. E. Hollenbeck	69.8R	1-4"				1					1	1	
H. F. Daly	70.4L	1-10"		13		61	51	38	27	15	205	(e)87	
Hoffman, Beckley, Ritchie Poundstone and Andreotti	70.4R	1-6" 1-20" 1-24"		781	1207	869	1081	970	73	3	4984	24	520
Meridian Farms Water Company #4	71.1L	1-24"		1090	1425	1572	1641	1546	829		8103	(f)2107	257
A. B. Armstrong	71.9R	1-14"		97	19	80	98	80	14	7	395	310	
H. and A. Andreotti	72.1L	2-14"		23		323	522	331			1199	400	
C. T. Froh	73.6R	1-10"					9	3	12		24	13	
Meridian Farms Water Company #3	74.8L	1-18"		1048	1169	1111	1280	1080	205		5893	(f)464	316
L. B. Westfall	75.3R	1-10"				82	121	20			223	(g)165	
J. H. Yates Estate	76.1L	1-10"			20	55	89	22	20	2	208	(h)145	
Robert Chesney	76.15L	1-10"		18		12	87	42	15		174	143	
M.S. Davis and C.K. Anderson	76.2L	1-8"		24	16	6	22	7			75	(i)60	
Steidlmayer Brothers	76.5R	1-16"			183		144				327	200	
J. J. Hankins	77.9L	1-16"			57	261	183	210			711	270	
Sebia Davis Estate	78.2R	1-16"		112		134	301	179	66		792	230	
Sebia Davis Estate	78.75R	2-12" 1-16"		62	203	61	540	264	306		(j)1436	445	
Sebia Davis Estate	78.8R	1-24"		1353	1692	2066	2510	2208	435		10264		(k)1600
C. E. Reische	79.0L	1-10"		23	19	82	76	41			241	(l)165	
Steidlmayer Brothers	79.0R	1-12"				42	74	31			147	69	
Mayfair Packing Company	79.3R	1-10"			19	19	45			1	(m)84	80	
J. J. Hankins	79.5L	1-8"				15	16				31	39	
A. M. Wood (n)	79.7L	1-10"				23	43	11			77	(o)116	
--MERIDIAN BRIDGE RECORDING GAGE--	79.8S												
Meridian Farms Water Company #1 and #2	80.0L	(p)1-10" 1-20" 1-24"		2853	3733	3879	4461	4232	1296	1	20455	(q)3080	1874
Roger C. Wilbur	80.3R	1-8"			21	35	71	13		60	200	65	
Wayne Hall and E.J. Burrows (r)	81.5L	1-16"				18	32	19			69	72	
Wayne Hall	81.8L	1-16"				34	18	40	31	13	136	55	
F.T. Reische and L.F. Wood	82.5L	1-12"				64	65	45	6		180	(s)117	
Steidlmayer Brothers	83.0R	1-20"		74	107	159	374	231	148	266	(t)1359	495	
J. E. Clark	83.3L	1-14"		64	165	354	625	548	184		1940	61	(u)140
J. E. Clark	83.5L	1-10"		157	326	175	9	20	21		708		(v)
--BUTTE SLOUGH OUTFALL GATES--	84.0L												
Steidlmayer Brothers	85.6R	1-12"				NO DIVERSION							

(a) This is the combined acreage of this plant and the plant at Mile 69.0R.
(b) These units replace the 12" and 20" units formerly listed at this location.
(c) These units replace the 24" unit formerly formerly listed at this location.
(d) See the plant at Mile 66.4R.
(e) Includes 40 acres of Rohleter lands.
(f) See the plant at Mile 80.0L.
(g) Includes 110 acres of Steidlmayer lands.
(h) Includes 20 acres of George Kaufman lands.
(i) Includes 20 acres of Albertson lands.
(j) This plant furnished an undetermined amount of this water to the plant at Mile 78.8R.
(k) This acreage also received an undetermined amount of water from plant at Mile 78.75R.
(l) Includes 40 acres of F. Goodnow lands, 19 acres of G. Rockholdt lands, 27 acres of C. Staas lands and 30 acres of E. Lemos lands.
(m) Additional acre-feet diverted: November-22.
(n) Formerly listed as Steve M. Burtis and G. Wood.
(o) Includes 65 acres of S. Burtis lands.
(p) The 10" unit was installed in 1951.
(q) An additional 794 acres was irrigated by controlled drainage from this plant and plants at Miles 71.1L and 74.8L.
(r) Formerly listed as Wayne Hall and L. Burrows.
(s) Includes 30 acres of Wayne Hall lands.
(t) Additional acre-feet diverted: November-11.
(u) This is the combined acreage of this plant and the plant at Mile 83.5L.
(v) See the plant at Mile 83.3L.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
Clifford Reichel	85.8L	1-8"				42	31	32			105	27	
W. H. Halsey	86.1R	1-12"		25	48	138	108	104	32	45	500	226	
Lydell Peck	86.1L	1-8"			34		35			29	98	70	
Howell Davis	86.2R	1-18"				107	111	81			299	165	
Mitchel Lobrovich and John Brayovich (a)	86.8L	1-8"			41	32		64			137	45	
Roger Wilbur	86.9R	1-10"	13	34	34	59	66	49	29	31	(b)315	215	
Roger Wilbur	87.4R	1-10"			23	55	45		38		161	45	
Jacobsen and O'Rourke	87.6L	1-8"				45	1	36			82	(c)42	
Swinford Tract Irrigation Co.	87.7R	1-12"		1	17	114	90	74		5	301	124	
J. Azevedo (d)	88.0R	1-6"				11	13				24	18	
Nagel and Locovitch	88.2L	1-10"				59	42				101	44	
Mayfair Packing Company	88.7L	1-14"			80	57	147			73	(e)357	(f)189	
Colusa Irrigation Company	89.2R	1-20"			38	504	345	201			1088	450	
Grace S. Arnold	89.25L	1-8"				59	74				133	75	
Reclamation District #1004	89.25L	1-12" 1-18"			679	713	1050	866	497		3805	(g)955	(g)1535
W.H. Halsey and M. Yerxa	89.26L	1-12"			56	106	111				273	120	
WILKINS SLOUGH TO COLUSA Totals Average cubic feet per second Monthly use in per cent of seasonal			32 1 0	51650 868 12.9	70912 1153 17.7	83711 1407 20.9	87091 1416 21.8	77747 1264 19.4	25754 433 6.4	3690 60 0.9	400587 824	41097	22823
--COLUSA BRIDGE - GAGING STATION SACRAMENTO RIVER AT COLUSA--	89.4R												
Lillian and Hattie Boggs	89.7L	1-10"		40	156	1					197	65	
Roberts Ditch Company	90.7R	1-18" 1-20"		671	396	830	1002	794	569	385	(h)4647	1249	
I. G. Zumwalt	91.0R	1-6"				5					5	14	
Paul R. Westfall	91.1L	1-8"					13	12			25	26	
I. G. Zumwalt	91.6R	1-12"				100	44			83	227	104	
--COLUSA WEIR--	92.4L												
George P. Ahlf	92.5L	1-6" 1-10"				NO DIVERSION							
W.H. Halsey and M. Yerxa	93.0R	1-8"				14	11				25	20	
Paul R. Westfall	93.4L	1-10"			8	24	61	27	28	20	168	159	
Tuttle Land Company	94.3R	1-20"		28	46	221	248	215	221		979	(i)225	
Roger Wilber	95.25L	1-12" 1-18"		493	894	704	1040	645	95	23	(j)3894	135	335
Ezra N. Lewis (k)	95.6L	1-20"			586	611	1010	1016	331	12	3566		400
Bridget Graham Ranch	95.8L	1-18"		2	15	11	9	12	16	9	74	30	
I. G. Zumwalt	96.8R	1-15"			102	142	197			76	(l)517	377	
H. Heitman	97.7R	1-12"		56	14	135	45	148	147	59	604	135	
Frank N. Beckley	98.0L	1-10"				20	131	12			163	144	
J. L. Erisey	98.3R	1-10"					82	4			86	55	
Otterson and Boggs	98.6L	1-15"		4	865	632	843	734	260		3338		(m)495
D. Boggs	98.8L	1-18"		279	134	470	84	374	15	12	(n)1368	55	
B.H. Mitchell Estate	99.0R	1-14"		7	106	12	45	149	130		449	100	
J. E. Boggs	99.1L	1-10"		84	54	46	59	16	10		269	160	
Hollis Sartain	99.2L	1-20"				NO DIVERSION							
L. W. Seaver	99.3R	1-10" 1-12"		50	79	262	389	105	98	64	1047	(o)356	
Dave George	99.8L	1-16"		206	865	716	1036	862	449		4134	30	300

(a) Formerly listed as Lloyd Scoggins.
(b) Additional acre-feet diverted: November-19.
(c) Includes 2 acres of Locovitch lands.
(d) Formerly listed as Frank and Thelma Azevedo.
(e) Additional acre-feet diverted: November-47.
(f) Includes 75 acres of DeJarnett land.
(g) This is the combined acreage of this plant and the plant on Butte Creek at Mile 4.3R. Total acre-feet diverted by plant on Butte Creek: 10347.
(h) Additional acre-feet diverted: November-51.
(i) Includes 6 acres of Halsey lands, 25 acres of Mayfair lands and 6 acres of Indian Service lands.
(j) Additional acre-feet diverted: November-50.
(k) Formerly listed as Erza N. Lewis.
(l) Additional acre-feet diverted: November-46
(m) This acreage also received an undetermined amount of water from from plant at Mile 98.6L.
(n) Includes an undetermined amount of water furnished to plant at Mile 98.6L.
(o) Includes 80 acres of Reimer lands and 24 acres of Middlecamp lands.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
St. Patrick Home Ranch	101.1R	1-20"			167	262	620	209			1258	(a)355	(a)160
Nettie, George and Ella Packer	102.8R	1-20"		96	487	268	711	364	71		(b)1997	(c)772	
Charles W. Welch	103.7R	1-16"		40	739	642	851	831	350	19	(d)3472	61	(e)480
Charles W. Welch	103.8R	1-14"					NO DIVERSION						
C. W. Tuttle	103.9R	1-12" 1-18"		649	1311	1357	1560	1130	94		6101	130	700
--MOULTON WEIR--	104.0L												
I. G. Zumwalt	104.8L	1-12"			15	20	96	11		14	(f)156	(a)110	
Lawrence Boyd	105.5L	1-10"					4	4			8	9	
Thousand Acre Ranch (H. W. Keller)	106.0R	1-14"		65	110	173	206	124	29		707	203	27
Howell Davis	106.5R	1-16"					NO DIVERSION						
Princeton Ranch Company	110.0R	1-12"			11	138					149	190	
I. G. Zumwalt	110.7L	1-12"			100						100	155	
Princeton Ranch Company	111.2R	1-6"					6				6	48	
--PRINCETON FERRY--	112.0												
I. G. Zumwalt	112.05L	1-12"				13	26				39	65	
Reclamation District #1004	112.1L	2-30" 1-50"		6068	9681	10104	10963	10822	3894		51532	(g)2073	(g)6897
Princeton-Codora-Glenn Irrigation District	112.4R	3-24"		3072	4276	4968	5394	5542	1235	111	24598	(h)2399	(h)4449
I. G. Zumwalt	112.6L	1-10"			1	150	55			69	275	200	
Opal L. Cushman (i)	115.5L	1-12"		40	35	75	93	94	51		388	98	
COLUSA TO BUTTE CITY Totals Average cubic feet per second Monthly use in per cent of seasonal			0 0 0	11950 201 10.3	21253 346 18.2	23126 389 19.8	26934 438 23.1	24256 394 20.8	8093 136 7.0	956 16 0.8	116568 240	10307	14243
--BUTTE CITY BRIDGE--	115.8												
--GAGING STATION - SACRAMENTO RIVER AT BUTTE CITY--	115.8L												
F. G. Gillespie (j)	115.68R	1-1½"					1				1	1	
R. H. Gebicke	115.85L	1-14"			21	103	131	98	58		411	359	
A. J. Stone (j)	116.37L	1-12"	6	114	98	135	196	101	33	41	(k)724	(a)130	
W. F. Wright, Jr.	116.7R	1-6"				28	68	13	5	38	152	139	
Cronin Estate	116.9L	1-16"		128		209	368	333		50	1088	125	
W. H. Stewart	120.3R	1-10"				26	31	15			72	40	
Robert T. Millar	122.3R	1-10"					NO DIVERSION						
Clarence Reed	123.7R	1-6"		5	5	18	17	20	9	6	80	35	
Howard Leach	123.8R	1-4"			1		1				2	2	
Princeton-Codora-Glenn Irrigation District	123.9R	(1)5-24"		2239	5155	4639	4197	4737	3870	780	25617	(m)	(m)
Provident Irrigation District	124.2R	2-24" 1-36" 2-42"	182	4806	10322	9521	10221	9037	753		(n)44842	(o)4421	(o)8593
J. Bartapelle	124.3R	1-12"		109	121	315	477	216	49	65	1352	240	
Joe Thomas	125.1R	1-6"					8	16			24	40	
Duart Geise	129.35R	1-6"				24	44	16	13		97	54	
F. S. Reager	130.75R	1-8"		57	52	89	148	89	31	18	484	246	
--GAGING STATION - SACRAMENTO RIVER AT ORD FERRY--	130.8R												

(a) This acreage also received an undetermined amount of well water.
(b) Additional acre-feet diverted: January-159.
(c) Includes 200 acres of gun club lands.
(d) Additional acre-feet diverted: November-17.
(e) This is the combined acreage of this plant and the plant on Colusa Trough at Mile 11.7L (0.3E). Total acre-feet diverted by plant on Colusa Trough: 1828.
(f) Additional acre-feet diverted: November-9.
(g) This is the combined acreage of this plant and the plants on Butte Creek at Miles 11.8R and 14.4R. Includes 597 acres of rice and 200 acres of general crop lands reused for duck ponds. Includes 430 acres of rice lands outside of district. Total acre-feet diverted by plants on Butte Creek: 17623.
(h) This is the combined acreage for this plant and the plants at Mile 123.9R and P.C.G.I.D. at Mile 154.8R. This acreage also received 10700 acre-feet from the plant at Mile 124.2R, and 7200 acre-feet from controlled drainage.
(i) Formerly listed as Edward L. Steele Estate.
(j) New Installation in 1951.
(k) Additional acre-feet diverted: November-1.
(l) Two 24" units were installed in 1951.
(m) See the plant at Mile 112.4R.
(n) Additional acre-feet diverted: November 1900. Includes 10700 acre-feet furnished to the Princeton-Codora-Glenn Irrigation District and an undetermined amount of water to 369 acres of rice of the Glenn-Colusa Irrigation District.
(o) This is the combined acreage of this plant, the plant on the Sacramento River at Mile 154.8R and the plants on Colusa Trough Opposite Miles 20.5R, 24.2R, 27.2R and at Mile 27.2R. Total acre-feet diverted by Colusa Trough plants: 73787. Includes 150 acres of general crops which received an undetermined amount of water from Glenn Colusa Irrigation District at Mile 154.8R.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
Ed Cramer	131.22L	1-6"				PLANT REMOVED							
E. S. Ballard	133.45L	2-6"		28	15	36	61	12			152	(a)203	
E. S. Ballard	133.5L	1-5"			4	49	131	68			252	(b)	
--STONY CREEK--	136.3R												
M. and T. Inc. and Parrott Investment Company	141.5L	1-20" 4-24"		1264	357	3197	5880	6802	1268	924	19692	(c)2168	(c)3013
--CHICO CREEK--	141.5L												
--OLD CHICO LANDING RAILROAD BRIDGE SITE--	142.1												
J. O. Bentz	143.8L	1-6"		31		29	37	12	28		137	43	
Glenn Beagle (d)	144.8L	1-6"				4	6	8	7		25	17	
Leonard Horning	146.1R	1-10"				13	60	49	45	18	185	60	
Leonard Horning (e)	147.1R	1-3"			1	2	11	15	9	2	40	6	
Holly Sugar Corporation	148.9R	1-10"				NO DIVERSION							
Wallace E. Ferrin and George A. Zundel	149.5L	1-12"			22	44	56	77	33		232	55	
--GAGING STATION - SACRAMENTO RIVER AT HAMILTON CITY - (GIANELLA BRIDGE)	149.5L												
J.A. and A.E. Lewis	149.7L	1-14"		26	53	44	107	76	154	26	486	(f)335	
James A. Lewis	150.0L	1-10"		12	67	23	154	79		1	336	(g)	
V. G. Strain	150.8R	1-12" 1-16"	196	340	210	337	484	322	83	83	2055	619	
A. Holecek	152.2R	1-6"		2	18	30	24	46	32	8	160	97	
W.M. Edwards and Son	152.4R	(h)1-6"				NO DIVERSION							
Jessie and McClain (i)	154.6R	1-5"			6	2	9	4			21	13	
G. G. Maas	154.7R	1-4"		1	3	2	2	1			9	9	
Jacinto Irrigation District	154.75R	1-36" 1-48"		4245	7666	8345	6811	7405	7808	4052	(j)46332	9069	
Glenn-Colusa Irrigation District	*154.8R	(k)1-48" 1-54" 4-66" 3-72" 1-100"	3179	99540	88700	119703	125836	113625	60102	38273	(l)648958	(m)30667	(m)43021
Compton-Delevan Irrigation District	*154.8R	*		1500	5000	5000	5000	5000	2687		24187		3022
Provident Irrigation District	*154.8R	*		500	500	500	500	500	500	299	3299	(n)	(n)
Princeton-Codora-Glenn Irrigation District	*154.8R	*		100	300	300	200	200	180		1280	(o)	(o)
Maxwell Irrigation District	*154.8R	*		850	1100	1100	1100	1100	1030		6280	770	960
J. Ewert	155.6R	1-2½"		1		2	4	2	1		10	9	
R. Pheiffer	155.7R	1-2½"	6		5	5	8	4	4	3	35	12	
F. Williams	156.0R	1-6"	6	3	2	8	9	9	9	4	50	14	
O. L. Shearman	156.8R	1-2½"		1	1	1	2	1	1		7	4	
Taresh Ranch (p)	158.8R	1-10"		32	38	71	35	48	37	5	266	60	
Jonathan Garst	161.7L	1-8"				39	47	45	3		134	55	
--GAGING STATION - SACRAMENTO RIVER AT VINA BRIDGE--	166.5R												
E. L. Dietz	166.7R	1-3"		1	1	3	4	5	3	2	19	6	
Russell L. Deckman	166.8R	1-2"		1	1	1	2	2	1	1	9	9	
Ernest Peterson	166.9R	1-6"	5	6	3	4	25	14	1		58	69	
--DEER CREEK--	168.5L												
--TEHAMA BRIDGE--	177.5												

* This is a common point of diversion for Glenn-Colusa, Compton-Delevan, Provident, Princeton-Codora-Glenn and Maxwell Irrigation Districts. See Glenn-Colusa Irrigation District plant at Mile 154.8R.

(a) This is the combined acreage for this plant and the plant at Mile 133.5L.

(b) See the plant at Mile 133.45L.

(c) This acreage is segregated as follows: M and T Inc., 913 rice and 1244 general crops: Parrott Investment Co., 2100 rice and 924 general crops.

(d) New Installation in 1951.

(e) Installed in 1949, not previously listed.

(f) This is the combined acreage of this plant and the plant at Mile 150.0L.

(g) See the plant at Mile 149.7L.

(h) Formerly listed as a 10" unit.

(i) Formerly listed as R. E. Jessie.

(j) There was an undetermined amount of water exchanged between this plant and Glenn-Colusa Irrigation District plant at Mile 154.8R.

(k) Formerly listed as 2-30", 1-42", 2-50", 1-54", 2-66", 4-72" and 1-108".

(l) Additional acre-feet diverted: November-1612. Also additional acre-feet diverted by gravity from Stoney Creek: March-840, April-1970, May-1540, June-32, July-29, August-248, September-258 and October-319. There was an undetermined amount of water exchanged between this plant and Jacinto Irrigation District plant at Mile 154.75R. Includes an undetermined amount of water furnished to 150 acres of general crops of the Provident Irrigation District at Mile 124.2R.

(m) Includes the following acreage and water served outside the district: 1530 acres of rice received 12,246 acre-feet, and 142 acres of gun club received 285 acre-feet. Includes 369 acres of rice which received an undetermined amount of water from Provident Irrigation District plant at Mile 124.2R.

(n) See the plant at Mile 124.2R.

(o) See the plant at Mile 112.4R.

(p) Formerly listed as Henry Bear.

TABLE 165

DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Sacramento	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.	Sept.	Oct.		General	Rice
--MILL CREEK--	178.0L												
--ANTELOPE CREEK--	180.7L												
Dutro Brothers (a)	183.4R	1-5"		37	4						41	200	
Los Molinos Mutual Water Co.	187.6L	1-12"			1	113	141	72			327	926	
Henry Tieden	188.5L	1-1½"	3	7		10	7	10	5	3	45	5	
Morris Packer (b)	188.6L	1-8"		1	2	2	2	2	1		10	3	
--RED BLUFF BRIDGE--	193.45												
Dave Singletary	196.5L	1-2½"				NO DIVERSION							
S. and E. Erickson	196.6L	1-5"	4	12	4	20	33	9	10		92	34	
Diamond Match Co. (c)	197.0L	1-8"				42	79	26	17		164	25	
BUTTE CITY TO RED BLUFF Totals Average cubic feet per second Monthly use in per cent of seasonal			3587 58 0.4	115999 1949 14.0	119859 1949 14.4	154188 2591 18.6	162775 2647 19.6	150341 2445 18.1	78880 1326 9.5	44702 727 5.4	830331 1709	51394	58609
--GAGING STATION - SACRAMENTO RIVER NEAR RED BLUFF--	198.6												
--BEND BRIDGE--	207.0												
D. Mills (d)	208.75L	1-8"		4	21	154	5	49	62	12	307	90	
G. Tetzlaff (e)	209.0L	1-3"				2	8	7	8		25	10	
Table Mountain Gun Club	210.0R	1-2½"				1	5	7	8	10	31	10	
J. F. Nunes	213.0R	1-7"						23	36		59	20	
F. L. Jelly	213.5L	1-3"					8	3	4		15	15	
--JELLY FERRY BRIDGE--	215.6												
J. F. Nunes	216.0R	(f)1-5"	3	30	12	24	30	37	46	3	185	40	
W. A. Hunaeus	216.4L	1-3"					9	6	2		17	11	
Haakonson Brothers	217.5L	1-3½"		1	1	50	33	1			86	57	
J. L. Haskins	217.9L	1-6"	34	72		78	96	68	52	22	422	51	
J. L. Haskins	218.0L	1-5"				NO DIVERSION							
Rio Alto Rancho	221.0R	1-10"		38	46	2	65	26	30	20	227	24	
--BATTLE CREEK--	221.5L												
--COTTONWOOD CREEK--	222.2R												
--GAGING STATION - SACRAMENTO RIVER AT BALLS FERRY--	224.5L												
--ANDERSON BRIDGE--	232.9												
--CLEAR CREEK--	237.1R												
William Menzel Company, Inc.	240.2L	1-12"		97	209	80	441	227	200	18	1272	179	
L. Gerard (a)	240.3L	1-2"							17	5	22	7	
W.A. and Lucy Keagy	240.4L	1-4"		1	1	2	3	1	2		10	7	
Anderson-Cottonwood Irrigation District	240.5L	4-16"		2447	1807	3836	3842	3668	3168	760	19528	(g)19320	
--GAGING STATION - SACRAMENTO RIVER NEAR REDDING--	240.7L												
--HIGHWAY 44 BRIDGE--	242.0												
--HIGHWAY 99 BRIDGE--	245.9												
Anderson-Cottonwood Irrigation District	246.0R	Gravity		22335	16155	23784	24773	24121	21460	14606	147234	(h)	
--SOUTHERN PACIFIC RAILROAD CROSSING--	246.25												
I. and M. Diestelhorst	246.3R	1-8"			6	15	33	30	15		99	22	
--OLD REDDING-YREKA BRIDGE--	246.4												
City of Redding	246.7R	3-8"	169	314	357	520	594	569	478	244	(i)3245	Municipal	
--GAGING STATION - SACRAMENTO RIVER AT KESWICK--	250.5												
RED BLUFF TO REDDING Totals Average cubic feet per second Monthly use in per cent of seasonal			206 3 0.1	25339 426 14.7	18615 303 10.8	28548 480 16.5	29945 487 17.3	28843 469 16.7	25588 430 14.8	15700 255 9.1	172784 356	19863	
SACRAMENTO TO REDDING Totals Average cubic feet per second Monthly use in per cent of seasonal			6356 103 0.3	252680 4247 12.8	303045 4928 15.4	380961 6402 19.3	409062 6653 20.7	373947 6082 19.0	177260 2979 9.0	69993 1138 3.5	1973304 4061	162233	140835

(a) New Installation in 1951.
(b) Formerly listed as Henry Tieden.
(c) Formerly listed as S. J. Williams
(d) Formerly listed as C. C. Budd (J. E. Breeden).
(e) Formerly listed as Emil E. Johnson.
(f) The 5" unit replaces a 3" unit formerly listed at this location.
(g) This is the combined acreage of this plant and the plant at Mile 246.0R.
(h) See the plant at Mile 240.5L.
(i) Additional acre-feet diverted: January-154, February-139, November-167 and December-171.

TABLE 166

DIVERSIONS AND ACREAGES IRRIGATED - COLUSA TROUGH* - 1951

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.	Sept.	Oct.		General	Rice
--GAGING STATION - COLUSA TROUGH AT COLUSA-WILLIAMS HIGHWAY--	0.0												
I. G. Zumwalt	2.2L	4-20"		484	76	578	133	51		770	(a)2092	(b)3160	(b)400
F.Buffum and L.W.Seavers	3.0L	2-16"	255	605	733	810	735	729	809	461	5137	614	
J.H. Cave (c)	3.5R	1-14"			409	258	241	242	147	233	(d)1530		130
Lloyd W.Seavers and F.J. Byington	4.5L	3-16"		228	1334	997	1470	1607	538		6174		955
Coffman and Camel	5.6L	1-16"				NO DIVERSION							
Watt Brothers	6.4R	1-12"			171	51	183	172	74		651		104
S. Ash	8.0L	1-16"		206	310	374	266	249	70		1475		200
Compton Water District (e)	8.0R	1-15" 1-16"				NO DIVERSION							
El Dorado Sportsmans Club	9.5R	(f)1-16"		83	520	439	645	660	257	214	(g)2818	40	(h)150
I. G. Zumwalt	9.75L	1-24"		582	634	750	867	928	337		4098		427
Lloyd Kahn	10.5L(0.5E)	2-16"		320	395	376	399	370	39		(i)1899		(j)320
Compton Water District (e)	11.7L(0.3E)	1-12"			372	387	431	345	293		1828		(k)
Compton Water District (e)	11.7R(0.8W)	1-14" 1-16" 2-20"		1687	2683	1984	2849	2798	838		12839		(l)2210
Del Valley Farms, Inc. (m)	12.1R	1-10"			42	51	17	28	31	107	(n)276	(o)75	
Lynn and Bohne	12.58L(0.9E)	1-10" 1-12"		105	772	684	901	826	205		3493		(p)389
Lynn and Bohne	12.59R	1-10"			186	214	223	235	211		(q)1069		(o)97
Helphstine Rice Lands	12.69L	1-16"			439	294	317	293	117		1460		140
E.Butler, E.Meyer and J.Jones	12.7L	1-14"		189	352	255	312	297	168	74	(r)1647	15	123
Manuel Barrett	(s)Opp.16.6R	1-12"		87	18	124	205	97			(t)531		180
--LATERAL HIGHWAY - BUTTE CITY TO WEST SIDE--	20.5												
Provident Irrigation District (Willow Creek Plant)	(u)Opp.20.5R	1-24" 1-36"		470	531	855	420	285			2561	(v)	(v)
Walter McGowan	(w)21.4L	2-16"		227	512	519	540	534	321		2653		400
Joe Navarro	22.0R	1-18"		553	608	576	586	573	116	50	(x)3062	89	300
Provident Irrigation District (Drain #55)	(y)Opp.24.2R	Gravity		4036	5059	4938	5717	6235	4681	1636	32302	(v)	(v)
J. Azevedo	(z)27.1L	1-12" 1-14"	22	109	314	309	325	319	220	33	1651	60	115
Provident Irrigation District (Colusa Drain)	(aa)27.2R	1-20" 1-24"		2025	928	2720	3190	3144	1958	101	14066	(v)	(v)
Provident Irrigation District (Drain #13)	(bb)Opp.27.2R	1-20" 1-24"		2920	4473	4196	4686	4815	3313	455	(cc)24858	(v)	(v)
Totals			277	14916	21871	22739	25658	25832	14743	4134	130170	4053	6640
Average cubic feet per second			5	251	356	382	417	420	248	67	268		
Monthly use in per cent of seasonal			0.2	11.5	16.8	17.5	19.7	19.8	11.3	3.2			

* Main Drain of Reclamation District #2047.
** Mileage along Colusa Trough above Colusa-Williams Highway.
(a) Additional acre-feet diverted: November-88.
(b) This acreage also received an undetermined amount of water from controlled drainage.
(c) New Installation in 1951.
(d) Additional acre-feet diverted: November-34.
(e) Formerly listed as Charles Welch.
(f) This unit replaces a 15" unit formerly listed at this location.
(g) Additional acre-feet diverted: January-103, November-258.
(h) This acreage was reused for gun club.
(i) Additional acre-feet diverted: November-55.
(j) Of this figure 20 acres was reused for gun club.
(k) See the plant on the Sacramento River at Mile 103.7R.
(l) Of this figure 960 acres also received an undetermined amount of water from Stone Corral Creek.
(m) Formerly listed as Del Valley Farms Company.
(n) Additional acre-feet diverted: November 115.
(o) This acreage was reused for duck club lands.
(p) Includes 124 acres of Helphstine lands.
(q) Additional acre-feet diverted: January-180, November-51.
(r) Additional acre-feet diverted: January-5, November-40.
(s) Plant is on Willow Creek.
(t) Additional acre-feet diverted: January-1.
(u) Plant is on Willow Creek and is in the NW¼ SE¼ of projected Section 33, T 19 N R 2 W.
(v) See the plant on the Sacramento River at Mile 124.2R.
(w) Formerly listed as Opp.21.4R.
(x) Additional acre-feet diverted: February-19.
(y) Plant is on Drain #55 and is in the SW¼ NW¼ Section 86, Glenn Ranch Survey.
(z) Formerly listed as Mile 27.1L (1.0E).
(aa) Formerly listed as Mile 27.2R (1.0E).
(bb) Plant is on Drain #13 and is in the NW¼ NE¼ Section 50, Glenn Ranch Survey.
(cc) Additional acre-feet diverted: November-5.

TABLE 167

DIVERSIONS AND ACREAGES IRRIGATED - BACK BORROW PIT* - 1951

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.	Sept.	Oct.		General	Rice
--GAGING STATION - COLUSA BASIN DRAIN AT KNIGHTS LANDING (KNIGHTS LANDING OUTFALL GATES)--	0.0												
E. E. Nuttal	0.2L	1-6"		19		5	7	3			34	20	
River Farms Company	0.3L	1-10"		759							(a)759	(b)	(b)
--KNIGHTS LANDING RIDGE CUT JUNCTION--	0.4R												
John J. Anderson	1.45R	2-16"				NO DIVERSION							
--COUNTY ROAD BRIDGE--	3.1												
B. C. and T. D. Tolson	3.4R	1-16"				NO DIVERSION							
John C. Cooling	3.8R	1-16"		333	613	829	839	809	120		3543		301
W. Crawford	4.35R	1-20"		116	1285	1340	1099	1156	505		(c)5501		820
Cornelia Walker (Heidrick Brothers)	7.2R	1-8" 2-16"			423	435	414	398	215		1885		400
George E. Youngmark	8.8R	1-14" 1-16"		211	910	610	662	484	142		3019		500
Hershey Estate	11.15R	1-14" 1-16"		367	1104	1062	1070	1037	159		4799		320
Hershey Estate	13.75R	1-16"			554	531	702	471	67	62	2387		300
C.M. Mumma	14.75R	1-10"				NO DIVERSION							
--COUNTY LINE BRIDGE--	15.25												
M. T. Emmert	15.75R	1-12"				NO DIVERSION							
Kate West (H. B. West and Son)	18.1R	1-15" 1-20"				NO DIVERSION							
--COUNTY ROAD BRIDGE--	18.5												
William West	20.0R	1-15"		250	435	426	442	346	11		1910		253
--RECLAMATION DISTRICT 108 GRAVITY DRAIN--	20.2L												
Reclamation District 108	20.2L	1-16" 1-24"		3085	1588						4673	(d)	(d)
B.W. Whitmire and D.S. Adams	21.35R	2-16"		387	514	410	458	371	40	75	(e)2255		(f)250
Bean and Brandenburg	22.15R	1-12"		46	192						238	120	
Aileen B. Armstrong	22.65L	1-16" 1-20"		1144	1355	1594	1892	1778	373		8136		580
--GAGING STATION - BACK BORROW PIT NEAR COLLEGE CITY--	22.7												
Aileen Browning Armstrong	22.75R(.10W)	1-16"		25	282	212	295	291	69		1174		100
--SOUTHERN PACIFIC RAILROAD BRIDGE--	23.0												
Balsdon Ranch (g)	24.6L	2-16" 1-20"		419	985	1187	1608	1207	314	25	(h)5745	1360	980
Balsdon Ranch (i)	24.61R	2-16"		93	73	140	112	130	46	46	640	200	
A.M. Dobrosky and Henry Olin	24.7L	1-12"				NO DIVERSION							
Luta King (j)	25.1R	1-10"				NO DIVERSION							
Gertrude M. Sherer	25.3L	1-16"				NO DIVERSION							
Gertrude M. Sherer	25.5R	1-10"				NO DIVERSION							
--GRIMES - COLLEGE CITY CAUSEWAY--	25.5												
Fred Schutz	25.9L	1-16" 1-20"			934	710	920	1003	229		3796	465	400
Roy E. Kittz	26.4R	1-18"			268	146	328	221	22		985		154
C.W. and M.E. Struckmeyer	27.25L	(k)1-16"			21	262	263	301	119	8	974	290	
William P. Wallace Ranch	28.0R	1-14" 1-16" (l)1-20"			962	1407	1295	1387	998		6049		(m)390
--WALLACE CROSSING (OLD MERIDIAN-WILLIAMS BRIDGE)--	29.8												
Sebia Davis Estate	29.8R	1-16"		339	655	463	450	430	257		2594		190

* 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 gates just above junction of Borrow Pit with Sacramento River at Knights Landing.

(a) The total diversion for this plant in 1948, shown as 26,014 in the 1948 Water Supervision Report, should be 2602 acre-feet with the monthly diversion in acre-feet as follows: March-440, April-85, May-885, June-179, July-511, August-159 and September-343.

(b) See the Plant on the Sacramento River at Mile 34.5R.

(c) Additional acre-feet diverted: November-672.

(d) See the Plant on the Sacramento River at Mile 63.2R.

(e) Additional acre-feet diverted: November-173.

(f) Of this figure 80 acres were re-used for duck club lands.

(g) Formerly listed as H. H. Balsdon.

(h) Additional acre-feet diverted: November-13.

(i) Formerly listed as Yates, Traynham, Balsdon.

(j) Formerly listed as Alya King.

(k) A 20" unit formerly listed at this location was installed in 1951.

(l) The 20" unit was installed in 1951.

(m) This acreage includes 190 acres of Struckmeyer lands and 20 acres of Meyers Brothers lands.

TABLE 167

DIVERSIONS AND ACREAGES IRRIGATED - BACK BORROW PIT* - 1951 (Cont'd)

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.	Sept.	Oct.		General	Rice
A. Davis Estate	31.5L	1-24"				NO DIVERSION							
A. Davis Estate	32.1R	(a)1-16"		107	762	596	689	695	106		2955		285
--WILLIAMS - SYCAMORE HIGHWAY BRIDGE--	32.1												
Federal Fish and Wildlife	32.6R	1-16"		191	344	426	393	140	280	477	(b)2251	(c)150	(c)130
J. G. Olvey	32.7L	1-14"		65	402	244	9	91	64	37	(d)912		110
Arata Brothers (e)	32.9L	1-8"									(f)	(g)10	
Richard Moore (h)	33.5L	1-16" 1-18"				NO DIVERSION							
Federal Fish and Wildlife Service	36.65R	1-15" 1-20"		297	1253	738	893	922	1003	1192	(i)6298	(c)240	(c)510
Federal Fish and Wildlife Service	37.0L	1-15"				NO DIVERSION							
--GAGING STATION - COLUSA TROUGH AT COLUSA-WILLIAMS HIGHWAY--	37.0												
Totals			0	8253	15914	13773	14840	13671	5139	1922	73512	2855	6973
Average cubic feet per second			0	139	259	231	241	222	86	31	151		
Monthly use in per cent of seasonal			0	11.2	21.7	18.7	20.2	18.6	7.0	2.6			

* 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 gates just above junction of Borrow Pit with Sacramento River at Knights Landing.
(a) The 16" unit replaced an 18" unit formerly listed at this location.
(b) Additional acre-feet diverted: January-33, November-220.
(c) All duck refuge lands.
(d) Additional acre-feet diverted: November-9.
(e) New Installation in 1951.
(f) Acre-feet diverted November-32, December-22.
(g) All duck club lands.
(h) Formerly listed as Andrew Arata and Fred Wilkins.
(i) Additional acre-feet diverted: November-126, December-207.

TABLE 168

DIVERSIONS AND ACREAGES IRRIGATED - KNIGHTS LANDING RIDGE CUT - 1951

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.	Sept.	Oct.		General	Rice
E. L. Wallace	0.8R	1-16" 1-20"		1348	1486	1508	1971	1980	631		8926	750	500
M. R. Richardson	0.82L	1-14"		113	543	530	644	578	337		2745		220
Ralph W. Pollock	3.5L	(a)Gravity				57	121	130	67		375	130	
--RECLAMATION DISTRICT 730 DRAIN PLANT #2--	3.8												
Ralph W. Pollock	4.55L	1-12"				NO DIVERSION							
Robert Bacchini	4.7R	1-6"			8	30	18	4			60	22	
Layton D. Knaggs	5.25R	1-16"				NO DIVERSION							
--WEST LEVEE YOLO BY-PASS--	6.3												
Henry Rich	(b)6.3L	Gravity		207	3090	1667	1416	2225	889		(c,d)9494	(e)2272	(e)650
E. L. Wallace	6.3R	Gravity		154	1200	882	1176	1024	364		(c)4800		600
Totals			0	1822	6329	4674	5346	5941	2288	0	26400	3174	1970
Average cubic feet per second			0	31	103	79	87	97	38	0	54		
Monthly use in per cent of seasonal			0	6.9	24.0	17.7	20.2	22.5	8.7	0			

* Mileage downstream from head on Back Borrow Pit near Knights Landing. 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 50.
(a) Formerly listed as a 12" unit.
(b) Weirs and gates at the mouth of Knights Landing Ridge Cut force the water upstream into the West Borrow Pit of Yolo By-Pass from which it is rediverted by means of booster plants. (See Yolo By-Pass Diversions, Table 169.)
(c) This figure is partially estimated.
(d) An undetermined amount of water is served to lands outside the Yolo By-Pass in Reclamation District 1600.
(e) Includes 990 acres general crops and 150 acres rice served on lands in Reclamation District 1600.

TABLE 169

DIVERSIONS AND ACREAGES IRRIGATED - YOLO BY-PASS (EAST BORROW PIT OR TULE CANAL) - 1951

Water User	Mile and Bank (a)	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.	Sept.	Oct.		General	Rice
Robert Swanston	*1.8S	1-16" 1-18"		170	320	290	300	290	130		(b)1500	(c)30	(c)410
Robert Swanston	*1.1S	1-18" 1-20"	NO DIVERSION										
Robert Swanston	*0.7S	1-16"		265	468	447	450	417	220		(b)2267		280
Robert Swanston	(d)*0.5S	1-16"		172	334	487	454	439	210		2096	(e)	(e)
--NORTH LEVEE SACRAMENTO BY-PASS RECORDING GAGE--	0.0												
Robert Swanston	*1.8N	(f)1-20"			1099	1492	1650	1509	1035		6785		700
Ensher, Alexander and Barsoom	2.4N	1-20"		171	153	341	464	486	20	3	1638	445	
--SACRAMENTO-WOODLAND HIGHWAY--	6.1SN												
--SACRAMENTO-WOODLAND RAILROAD BRIDGE--	6.2N												
--CACHE CREEK--	7.0N												
Frank Newman	7.0N	1-16"	PLANT REMOVED										
--KNIGHTS LANDING RIDGE CUT--	(g)9.6N												
--RECLAMATION DISTRICT 1600 DRAINAGE PLANT--	10.0N												
Fisher and Rich	(h)*10.0N	1-14" 1-16"									(h)	(h)	(h)
Henry Rich	(h)*10.3N	2-12"									(h)	(h)	(h)
Totals			0	778	2374	3057	3318	3141	1615	3	14286	475	1390
Average cubic feet per second			0	13	39	51	54	51	27	0	29		
Monthly use in per cent of seasonal			0	5.5	16.6	21.4	23.2	22.0	11.3	0			

* Asterisk indicates that land irrigated is within By-Pass Area.
(a) Mileage is given northerly or southerly from North Levee of Sacramento By-Pass. Diversions from East Borrow Pit of Yolo By-Pass are primarily from water diverted through Knights Landing Ridge Cut. See Table 168.
(b) This figure is partially estimated.
(c) This is the combined acreage of this plant and the Plant at Mile 0.5S.
(d) Formerly listed as Mile 0.1S.
(e) See plant at Mile 1.8S.
(f) One 20" unit removed in 1951.
(g) Formerly listed as Mile 10.1N.
(h) This is a booster plant located on the west side of the Yolo By-Pass which pumps water diverted via the West Borrow Pit from the Knights Landing Ridge Cut at Mile 6.3L. Weirs and gates at the mouth of Knights Landing Ridge Cut force water from this source upstream into the West Borrow Pit. See Knights Landing Ridge Cut Diversions, Table 168, for diversion and acreage data.

TABLE 170

DIVERSIONS AND ACREAGES IRRIGATED - DELTA UPLANDS FROM CACHE SLOUGH - 1951

Water User	Location	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.	Sept.	Oct.		General	Rice
Reclamation District #2068	SW¼ NE¼ Sec. 34 T6N, R1E	2-30" 1-36"	1506	3677	4619	6463	8346	8012	6391	3920	(a)42934	9913	
Totals			1506	3677	4619	6463	8346	8012	6391	3920	42934	9913	
Average cubic feet per second			24	62	75	109	136	130	107	64	88		
Monthly use in per cent of seasonal			3.5	8.6	10.8	15.0	19.4	18.7	14.9	9.1			

(a) Additional acre-feet diverted: November-1314.

TABLE 171

DIVERSIONS AND ACREAGES IRRIGATED - LOWER BUTTE CREEK AND BUTTE SLOUGH - 1951

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.	Sept.	Oct.		General	Rice
	*					Lower Butte Creek							
Reclamation District #833	3.3L	1-16"				320	680	519			1519	625	
West Butte Farms Company	4.25L	1-18"			53	13	304	241			611	600	
Reclamation District #1004	4.3R	1-20" 1-24"		777	2293	1970	2100	1673	438	1096	10347	(a)	(a)
El Anzar, Inc. (b)	5.7L	1-12"			669	637	1135	916	264		3621		(c)400
Field and Tule	7.5L	1-8" 1-16"			418	491	797	766	417		2889		(d)
Reclamation District #1004	11.8R	Gravity		948	1825	3500	3319	2292	3073	2630	17587	(e)	(e)
White Mallard Duck Club	11.8R	1-36" Gravity				NO DIVERSION							
White Mallard Duck Club	11.8R	1-12" 1-16"		157	307	349	440	377	115		1745		150
Reclamation District #1004	14.4R	Gravity		9	27						36	(e)	(e)
Murdock Land Company	14.4R	1-14"		33	55	115	35	35	69		342	225	
--GRIDLEY ROAD BRIDGE--	15.4												
Butte Basin Gun Clubs	(f)15.6L	Gravity									(g)	(h)4000	
Murdock Land Company	19.3R	(i)1-16"		59	73	30	90	91	88	17	448	125	
--BIGGS-AFTON ROAD BRIDGE--	19.4												
Murdock Land Company (j)	Opp.19.6R	1-14"							20	41	61	(k)20	
Baker and Kemper (l)	Opp.20.7R	1-16"			455	473	505	451	114	26	2024	30	170
McGowan Brothers	Opp.20.9R	1-16"				NO DIVERSION							
McGowan Brothers	21.0R	1-20"				NO DIVERSION							
R. H. Hulen Estate	Opp.21.4R	1-16"			534	450	457	407	116		1964		177
McGowan Brothers (j)	Opp.22.4R	1-16"			171	357	327	461	149		1465		130
--RICHVALE-BUTTE CITY ROAD BRIDGE--	22.5												
McGowan Brothers	23.0R	(m)2-16"		582	484	708	1114	1241	249		4378		395
McGowan Brothers (j)	Opp.23.0R(0.75W)	1-14" 1-16"		101	431	453	382	379	85		1831		280
	**					Butte Slough							
--SACRAMENTO RIVER JUNCTION--	0.0												
Butte Slough Irrigation Company, Ltd.	0.0	Gravity									(n)	(o)	(o)
M. Marty	0.3W	1-12"			19	73	159	107	76		434	258	
--BUTTE CREEK--	0.6E												
George Smith Estate (p)	0.9E	1-7"		1	64	60	95	68			288	(q)248	
Joe Marty (r)	1.0W	1-7"				35	45	44			124	25	
George Smith Estate (p)	1.4E	1-8"				38	117	90			245	(s)	
--MAWSON BRIDGE--	2.1												
C. W. Rawley	2.5W	1-14"		5	25	42	99	74	23		268	(t)186	
J. E. Smith	3.0W	1-10"				69	140	112	15		336	102	
Pearl Clark and Alice Brewer	3.5W	1-10"		13	16	31	46	25	32		163	107	
P. A. Reische	3.7W	1-10"				6	3	3			12	26	
Granniman and Fieth	4.08W	1-6"				2	3				5	7	
P. A. Reische	4.1W	1-10"				5	65	38			108	99	
W. J. Hankins	4.8W	1-10"		18		59	22	30	8		137	120	
P. B. Hensen	5.1W	1-12"		88	31	29	160	76	46		430	(u)181	
--LONG BRIDGE--	8.3												
--GAGING STATION - BUTTE SLOUGH TO SUTTER BY-PASS--	8.3												
Totals			0	2791	7950	10315	12639	10516	5397	3810	53418	6984	1702
Average cubic feet per second			0	47	129	173	206	171	91	62	110		
Monthly use in per cent of seasonal			0	5.2	14.9	19.3	23.7	19.7	10.1	7.1			

* Mileage on Butte Creek is the approximate mileage from the junction of Butte Slough with the Sacramento River. Butte Creek joins Butte Slough at Mile 0.6E.

** Mileage on Butte Slough is from its junction with the Sacramento River at Mile 84.0L.

(a) See the plant on the Sacramento River at Mile 89.25L.

(b) Formerly listed as El Anzar Duck Club.

(c) This is the combined acreage of this plant and the plant at Mile 7.5L.

(d) See the plant at Mile 5.7L

(e) See the plant on the Sacramento River at Mile 112.1L.

(f) Formerly listed as Mile 11.7L.

(g) Estimated acre-feet diverted: November-3000 and December-3000.

(h) All gun club lands, this acreage is partially estimated.

(i) A 14" unit formerly listed at this location was removed in 1951.

(j) New installation in 1951.

(k) All duck club lands.

(l) Formerly listed as Glenn Rice Farms.

(m) One 16" unit installed in 1951.

(n) Flow in Butte Slough, derived from Butte Creek, is controlled by Outfall Gates at its junction with Sacramento River and is thereby retained in Butte Slough to discharge into East and West Borrow Pits of Sutter By-Pass near "Long Bridge". The Outfall Gates are maintained by the Division of Water Resources and are cooperatively operated with the Butte Slough Irrigation Company. See Sutter By-Pass Diversions, Table 172.

(o) See acreages under rediversion--West Borrow Pit Sutter By-Pass, Table 172.

(p) Formerly listed as George Smith.

(q) This is the combined acreage of this plant and the plant at Mile 1.4E.

(r) Installed prior to 1951, not previously listed.

(s) See the plant at Mile 0.9E.

(t) Includes 40 acres of A.Miller lands and 40 acres of C.H.Straub lands.

(u) Includes 125 acres of W.J. Hankins lands.

TABLE 172

DIVERSIONS AND ACREAGES IRRIGATED - SUTTER BY-PASS AND SACRAMENTO SLOUGH - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
	(a)		West Borrow Pit of Sutter By-Pass**										
--SOUTHERN PACIFIC RAILROAD CROSSING--	2.5												
C. Fred Holmes	8.0R	1-18"	NO DIVERSION										
--KNIGHTS LANDING-MARYSVILLE CAUSEWAY--	12.7												
Sutter Basin Corporation, Ltd.	18.5R	1-18"				414					414	292	
--SOUTH LEVEE TISDALE BY-PASS--	18.9												
--RECLAMATION DISTRICT 1660 GRAVITY DRAIN--	19.3												
G. Guisti and Sons	23.7R	1-24"		778	248	257	965	1311	887	42	4488	(b)897	(c)499
Butte Slough Irrigation Company, Ltd. (d)	25.0R	Gravity		473	578	575	615	578	367		3186	(e)4835	(e)212
Butte Slough Irrigation Company, Ltd. (d)	28.4R	Gravity		1867	1171	1588	2162	2177	1157		10122	(f)	(f)
Fred Tarke	28.6R	1-12"	NO DIVERSION										
Frye Brothers	29.0R	1-7"	NO DIVERSION										
--NEW COLUSA-MARYSVILLE HIGHWAY--	29.1												
--NORTHERN ELECTRIC RAILROAD CROSSING--	29.15												
Fred Tarke	29.2R	1-10"				8	12				20	32	
	(g)		East Borrow Pit of Sutter By-Pass**										
R. E. Hughes #8	*0.9S	(h)1-16"					250	208	135	8	(i)601	650	
T. H. Richards (j)	0.5S	1-18"				1007	2066	2270	1678	333	7354	(k)	(k)
--WILLOW SLOUGH--	0.0												
R. E. Hughes #7	*0.5N	1-16"		58	263	227	258	288	73	70	1237	380	
--RECLAMATION BOARD DRAINAGE PLANT #1--	1.4N												
Cliff P. Childers	(l)(0.3)	1-16"		114	348	580	618	600	380		2640		(m)540
Cliff P. Childers	(l)(1.3)	1-16"		197	432	570	631	602	277		2709		(n)
E. H. Christensen and Sons	(l)(1.3)	1-16"		55	588	470	463	415	205		2196		320
E. H. Christensen and Sons	(l)(1.75)	1-16"			493	359	804	569	235		2460		400
E. H. Christensen	(l)(3.3)	1-16"		550	560	739	788	562	90		3289	40	240
E. H. Christensen	(l)(3.3)	1-12"	NO DIVERSION										
E. H. Christensen	(l)(4.0)	1-18"		362	931	758	857	763	193		3864		320
R. E. Hughes #6	*1.5N	1-14"		218	603	584	679	664	278		3026		415
R. E. Hughes #5	*2.9N	1-14"		209	362	434	457	426	136		2024	75	160
Leona Hughes (o)	*4.0N	1-14"		184	368	534	557	558	271		2472	175	175
--SUTTER CAUSEWAY--	4.3N												
R. E. Hughes #3	*4.5N	1-14"			172	42	385	577	266		1442	200	
Ira Mulligan	(p)5.7N	1-16"		456	620	749	776	832	575		4008		(q)392
R. J. Hughes #2	*5.9N	1-14"				90	653	470			1213	445	
O. O. Orrick	*7.1N	2-16"			413	165	643	547			1768	400	
Ira Mulligan	7.1N	1-16"		251	50	485	751	160			1697	455	
--GILSIZER SLOUGH--	7.5N												
Leona Hughes (r)	*8.0N	1-6"	NO DIVERSION										
Crepps and Middleton	*8.4N	1-12" 1-16"	NO DIVERSION										
Crepps and Middleton	(s)*9.9N	1-15"		20	295	414	497	97			1323	(t,u)150	(t)230
--RECLAMATION BOARD DRAINAGE PLANT #2--	10.0N												

* Asterisk indicates area irrigated is within By-Pass Area.
** Water used for irrigation in the Sutter By-Pass is mainly Feather River return water which enters the East and West Borrow Pits via Butte Creek, Butte Slough and Wadsworth Canal.
(a) Mileages of West Borrow Pit are given northerly from drainage plant of Reclamation District 1500. Mile 9.15 West Borrow Pit is opposite Chandler.
(b) Includes 40 acres on Cornell University Lands.
(c) This acreage also received an undetermined amount of water from drains.
(d) See note for Butte Slough Irrigation Company, Ltd., under Butte Slough diversions, Mile 0.0.
(e) This is the combined acreage of this plant and the plant at Mile 28.4R.
(f) See the plant at Mile 25.0R.
(g) Mileages of East Borrow Pit are given northerly or southerly from Chandler.
(h) One 16" unit was removed in 1951.
(i) Additional acre-feet diverted: November-25.
(j) New Installation in 1951.
(k) See the plant on the Feather River at Mile 9.75R.
(l) Plant is on main drain canal for Drainage Plant #1 that joins East Borrow Pit at Mile 1.4N. Figure in () indicates miles along drain from By-Pass.
(m) This is the combined acreage of this plant and the plant at Mile (1.3).
(n) See the plant at Mile (0.3).
(o) Formerly listed as R. E. Hughes #4.
(p) This plant was listed as Mile 4.1N in 1950.
(q) Includes 160 acres on Ham lands.
(r) Formerly listed as R. E. Hughes.
(s) Formerly listed as 10.0N.
(t) This is the combined acreage for this plant and the plant at Mile 10.0N.
(u) All gun club lands.

TABLE 172

DIVERSIONS AND ACREAGES IRRIGATED - SUTTER BY-PASS AND SACRAMENTO SLOUGH - 1951 (Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
	(a)		East Borrow Pit of Sutter By-Pass** (Cont'd)										
Crepps and Middleton	*10.0N	1-16"		170	606	681	700	687	483	324	3651	(b)	(b)
Crepps and Middleton	(c)(0.5)	1-12"		29	117	178	163	163	103		753		69
Dettling Brothers	(c)(0.9)	1-20"	NO DIVERSION										
Bridge Investment Company	(c)(2.6)	1-16" 1-20"		254	81	61	150	124	87		757	254	
Bridge Investment Company	(c)(2.65)	1-14" 1-20"		277	110	247	424	585	338		1981	(d)354	
Bridge Investment Company	(c)(3.0)	1-12"		86	76	127	177	147	83		696	111	
Sutter Home Investment Company	*11.5N	1-15"		104	347	355	355	375	135		1671		200
Sutter Home Investment Company	*12.0N	1-15"		87	135	135	136	135	87		715	25	65
Federal Fish and Wildlife Service	*16.3N	1-20"		500	750	1000	1000	750	120	150	(e)4270	(f)175	(f)340
R. A. Schnabel (g)	*16.4N	1-12"					70	83	38	30	(h)221	35	
--WADSWORTH CANAL--	16.5N												
Fred S. Betty	(i)(1.0R)	1-10"		51	40	57	55	43	52	2	300	65	
H. T. and H. D. Brown (j)	(i)(1.35R)	1-12"		124	211	61	329	333	159		1217	(k)16	(k)237
A. H. Muns	(i)(1.36R)	1-12"		173	412	412	502	493	229		2221		(l)
Vesper Kellogg	(i)(1.5L)	1-14"		181	354	388	415	381	104		1823		106
Epperson, Kennedy and Joaquin	(i)(2.5R)	2-10" 1-14"		213	791	619	873	810	269		3575		(m)265
Youill Joaquin	(i)(3.0L)	1-14"		209	344	195	197	139	30	3	(n)1117		100
Gilbert Williamson	(i)(3.6R)	1-16"		104	151	141	222	210	142	44	1014	(o)165	45
--RECLAMATION BOARD DRAINAGE PLANT #3--	16.7N												
Fred S. Betty	(p)(0.9)	1-8"		28		54	48	25			155	35	
Fred S. Betty (q)	(p)(1.3)	1-14"		194	211	231	224	233	88		1181		100
Phillip Niesen	(p)(1.5)	1-20"			157						157		(r)458
H.C. and C.H. Epperson	(p)(1.5)	1-16"		468	151	626	881	727	275		3128		(s)
Myers, Niesen, Stohlman and Epperson	(p)(1.6)	1-16"		254	595	814	924	849	421		3857		(s)
Elden Tarke	(p)(3.0)	1-14"		200	278	374	363	342	89		1646		126
Edward Dean	*16.7N	1-12"		7		99	39	39	26	48	(t)258	100	
Edward Dean	*16.75N	(u)1-16"		26	93	242	233	236	93		923		100
Epperson, Myers, DeWitt and Middleton	19.1N	1-14"		240	458	554	563	413	105	4	2337	757	
--NEW COLUSA MARYSVILLE HIGHWAY--	19.98N												
--NORTHERN ELECTRIC RAILROAD CROSSING--	20.0W												
	(v)		Sacramento Slough										
C. Fred Holmes	1.4R	1-12"				NO DIVERSION							
Totals			0	9771	14963	18700	24930	22996	10759	1058	103177	11118	6114
Average cubic feet per second			0	164	243	314	405	374	181	17	212		
Monthly use in per cent of seasonal			0	9.5	14.5	18.1	24.2	22.3	10.4	1.0			

* Asterisk indicates area irrigated is within By-Pass area.

** Water used for irrigation in the Sutter By-Pass is mainly Feather River return water which enters the East and West Borrow Pits via Butte Creek, Butte Slough and Wadsworth Canal.

(a) Mileages of East Borrow Pit are given northerly or southerly from Chandler.

(b) See plant at Mile 9.9N.

(c) Plant is on main drain canal for Drainage Plant #2 of East Borrow Pit Sutter By-Pass that joins East Borrow Pit at Mile 10.0N. Figure in () is distance along drain from East Borrow Pit.

(d) This acreage also received an undetermined amount of well water.

(e) Additional acre-feet diverted: November-150.

(f) All duck refuge lands.

(g) Installed prior to 1951, not previously listed.

(h) Additional acre-feet diverted: November-12.

(i) Plant is on Wadsworth Canal which joins East Borrow Pit-Sutter By-Pass at Mile 16.5N. Figure in () is distance along Wadsworth Canal from By-Pass.

(j) Formerly listed as H. T. Brown.

(k) This is the combined acreage of this plant and the plant at Mile 1.36R. This acreage includes 17 acres of V. Kellogg lands and 140 acres of Clements Estate lands.

(l) See plant at Mile (1.35R).

(m) This acreage includes 155 acres of Kennedy lands, 55 acres of Padgett and Berger lands, 30 acres of C. C. Epperson lands and 25 acres of Joaquin lands.

(n) Additional acre-feet diverted: November-67.

(o) Includes 68 acres of Joaquin lands.

(p) Plant is on Poodle Creek which joins East Borrow Pit-Sutter By-Pass at Mile 16.7N. This mileage was formerly listed as 16.5N. Figure in () indicates distance along Poodle Creek from By-Pass.

(q) New Installation in 1951.

(r) This is the combined acreage of this plant and the plants at Miles (1.5) and (1.6).

(s) See plant at Mile (1.5) Phillip Niesen.

(t) Additional acre-feet diverted: November-68.

(u) This unit replaced a 12" unit formerly listed at this location.

(v) Mileages of Sacramento Slough are given easterly from drainage plant of Reclamation District 1500 which is at head of Slough.

TABLE 173

DIVERSIONS AND ACREAGES IRRIGATED - FEATHER RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
Walter Raymond	0.6R	1-20"				NO DIVERSION							
Walter Raymond	2.6R	2-20"					696	26			722	550	
White Oak Ranch (a)	5.6L	1-14"		8			48	17	71	20	164	51	
A. L. Haymore	6.44L	1-10"		57	54	134	124	141	10	58	578	152	
M. Scheiber	7.7L	1-10"		16	137	146	180	186	90	104	859	164	
--GAGING STATION-FEATHER RIVER AT NICOLAUS--	9.3												
--NICOLAUS BRIDGE--	9.4												
T. H. Richards	9.75R	1-20"			74	167					241	(b)515	(b)275
--MOUTH OF BEAR RIVER--	12.0L												
Garden Highway Mutual Water Company	13.1R	(c)2-20" 2-24"		892	2720	2654	2917	2661	2220	166	14230	1463	1009
Farm Lands Company	17.5L	1-15" 1-20"		1241	1929	2045	2048	1616	1529	324	(d)10732	799	591
Oswald Water District	21.4R	2-16"		301	564	771	792	789	789	554	4560	851	
--GAGING STATION-FEATHER RIVER BELOW SHANGHAI BEND--	23.0												
Alfred Montna (e)	25.2R	1-10"				50	86	18	6		160	122	
--GAGING STATION-FEATHER RIVER BELOW YUBA RIVER--	27.0R												
--MOUTH OF YUBA RIVER--	27.3L												
--5TH STREET HIGHWAY BRIDGE--	28.0												
--10TH STREET HIGHWAY BRIDGE--	28.2												
A. C. Rackerby	32.3R	1-10"				28	44	56	61	8	197	45	
G. D. Prindiville	33.3R	1-10"			8	118	85	60			271	127	
A. A. Sligar and Son (f)	33.5L	1-3"					2	22			24	75	
J. L. Sullivan, Jr.	33.9R	1-10"		50		168	101	145	53		517	202	
Sutter Extension Water District	38.1R	1-26" 2-42"		417		197	1509	2282			4405	(g)3128	(g)7554
La Finca Orchard (h)	38.5L	1-4"				5	4				9	12	
W. R. Madsen	43.5R	1-7"				3	16				19	30	
--HONCUT SLOUGH--	43.7L												
Mathews, Sullivan and Prindiville	*(0.4L)	1-18"			48	310	239	258	11		866	280	
Jesse Frakes (i)	*(1.2L)	1-8"			15	56	43	33			147	66	
Ray Washburn	*(1.25L)	1-8"			7	61	37	46	67		218	108	
W. Earl Willey	44.5R	1-7"				4	12	10	7		33	27	
Arnold Christenson	46.3L	1-20" 1-24"		372	82	691	1911	909	682	198	4845	1345	
A. P. Barba	47.4L	1-7"					58	5	32		95	50	
A. P. Barba	47.9L	1-12"				19	103	71	50		243	187	
Robert S. Biggs	48.0L	1-7"				236	264	178	1		679	(j)380	
Robert S. Biggs	48.3L	1-10"					168	14			182	(k)	
Edward Dunning	49.0L	1-8"		12	13	43	47	6			121	85	
--GRIDLEY BRIDGE-GAGING STATION FEATHER RIVER NEAR GRIDLEY--	49.7												
S. T. Machado (l)	50.7R	1-8" 1-10"			4	170	209	126			509	215	
Frank E. Norton	51.0R	1-6"			10	31	41	41			123	24	
M. A. Pedroza and Sons	51.1L	1-6"	18	41	32	60	73	59	52	32	367	86	
Steadman Orchards	51.4R	1-10"		8	8	51	49	6	4		126	85	
A. E. Bettencourt	51.6L	1-6"		13	10	12	18	15	7		75	35	
Chester L. Hoar	51.6R	1-6"				NO DIVERSION							
S.J. and J.R. Fratus	52.1L	1-10"				21	139	53			213	160	

* Honcut Slough - Plant diverts Feather River water backer into Slough. Mouth of Slough at Mile 43.7L. Distance from Feather River and bank is shown in ().

(a) Formerly listed as Marie Van Antwerp.

(b) This is the combined acreage of this plant and the plant on Sutter By-Pass - East Borrow Pit at Mile 0.5S.

(c) One 20" unit installed in 1951.

(d) Additional acre-feet diverted: November 7.

(e) Formerly listed as Broberg and Stewart.

(f) Formerly listed as Francis Hall Ranch.

(g) This is the combined acreage of this plant and the Sutter Extension Water District diversion at Mile 58.1R.

(h) Installed prior to 1951, not previously listed.

(i) Formerly listed as W. J. Fairey.

(j) This is the combined acreage of this plant and the plant at Mile 48.3L.

(k) See the plant at Mile 48.0L.

(l) Installed in 1948, not previously listed.

TABLE 173

DIVERSIONS AND ACREAGES IRRIGATED - FEATHER RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
Mart Butler (a)	52.5L	1-10"		2	6	46	71	32	27	5	189	72	
R. K. Johnson (b)	52.7L	1-8"				20	20	11		16	67	44	
Hearst Magazines, Inc.	55.1L	1-14"		11	143	242	235	240	175	87	1133	290	
Henry Haselbusch	57.9R	1-9"			4	28	27	4			63	48	
--SUTTER BUTTE CANAL COMPANY DAM--	57.9												
Sutter Butte Canal Company	(c)58.1R	Gravity		19727	27167	26901	25669	21925	12503	7189	(d)141081	13880	3117
Biggs-West Gridley Water District	(c)58.1R	Gravity		20962	28868	28586	27277	23297	13286	7639	(e)149915	3851	7987
Richvale Irrigation District	(c)58.1R	Gravity		19951	27477	27208	25961	22174	12646	7270	(d)142687	552	13475
Sutter Extension Water District (f)	(c)58.1R	Gravity		14224	19589	19398	18509	15809	9016	5183	(g)101728	(h)	(h)
--WESTERN CANAL COMPANY DAM--	61.1												
Western Canal Company	(i)61.2R	Gravity		16064	22387	30930	32787	30694	7045	4022	(j)143929	1029	22495
--OROVILLE-RICHVALE HIGHWAY BRIDGE--	62.6												
--OROVILLE HIGHWAY - CHICO HIGHWAY BRIDGE--	65.0												
--U.S.G.S. GAGING STATION- FEATHER RIVER NEAR OROVILLE--	71.0												
Totals			18	94369	131356	141610	142619	124035	60440	32875	727322	31185	56503
Average cubic feet per second			0	1586	2136	2380	2319	2017	1016	535	1497		
Monthly use in per cent of seasonal			0	13.0	18.1	19.5	19.6	17.0	8.3	4.5			

(a) Formerly listed as Arthur Starr.
(b) Formerly listed as F. L. Morris.
(c) This is a common point of diversion for the Sutter Butte Canal Company, Richvale Irrigation District, Biggs-West Gridley Water District and the Sutter Extension Water District. Diversions are reported separately. There is included in the total diversions 27,907 acre-feet purchased from the P.G.& E. Company, however, no segregation was made between the company and districts in this table.
(d) Additional acre-feet diverted: November-55.
(e) Additional acre-feet diverted: November-58.
(f) Not previously listed.
(g) Additional acre-feet diverted: November-40.
(h) See the plant at Mile 38.1R.
(i) Formerly listed as Mile 59.7R.
(j) Includes 3550 acre-feet in October for gun club. Additional acre-feet diverted: November-1823 for gun club.

TABLE 174

DIVERSIONS AND ACREAGES IRRIGATED - YUBA RIVER - 1951

Water User	Mile*	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.	Sept.	Oct.		General	Rice
--HIGHWAY 99E BRIDGE (D STREET BRIDGE)--	0.0												
--GAGING STATION - YUBA RIVER AT MARYSVILLE (SIMPSON LANE BRIDGE)--	0.9												
C. Wesley Reed	0.9L	1-10"		7	4	39	38	20	27		135	60	
Ben Williams	1.4R	1-4"				2	3	3	2		10	2	
M. Lively	1.6L	1-10"				NO DIVERSION							
W. B. Harrington	1.8R	1-6"				9	29	41	36		115	60	
W. B. Harrington	2.6L	1-4" 1-5"				NO DIVERSION							
River Bend Ranch (a)	3.0L	1-10"				NO DIVERSION							
E. O. Rubke	4.1L	1-14"		37		106	139	141	187		610	(b)200	
E. O. Rubke	4.3L	1-10"		15		78	86	78	158	2	417	(c)	
Di Giorgio Fruit Corporation	4.75L	1-6"			40	77	15				132	66	
Scott Hendricks	6.2L	1-16"				NO DIVERSION							
--DAGUERRE POINT DAM--	11.0												
Hallwood Irrigation Company	11.0R	Gravity		8762	12545	12888	12130	11105	7496	3500	(d)68426	5248	1190
Cordua Irrigation District	11.0R	Gravity		4404	7924	6686	6826	6368	4571	3700	(e)40479	3999	2225
Yuba Consolidated Gold Field Company	14.5L	Gravity				NO AGRICULTURAL USE							
Totals			0	13225	20513	19885	19266	17756	12477	7202	110324	9635	3415
Average cubic feet per second			0	222	334	334	313	289	210	117	227		
Monthly use in per cent of seasonal			0	12.0	18.6	18.0	17.5	16.1	11.3	6.5			

* Mileages listed are miles above Highway 99E (D Street Bridge).
(a) Formerly listed as Bill Wolfe.
(b) This is the combined acreage of this plant and the plant at Mile 4.3L.
(c) See the plant at Mile 4.1L.
(d) Additional acre-feet diverted: November-3000.
(e) Additional acre-feet diverted: November-3700, December-3000.

TABLE 175

DIVERSIONS AND ACREAGES IRRIGATED - BEAR RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
--MARYSVILLE - NICOLAUS COUNTY ROAD BRIDGE--	5.5												
--TROW BRIDGE - WHEATLAND COUNTY ROAD BRIDGE--	8.4												
Whitney Warren	9.2R	1-6"			17						17	(a)60	
W. H. Gilbert	10.0R	1-6"		15		12	7		8		42	(a)100	
California Packing Corporation	11.1L	1-10"		6	26	58	35	23			148	(a,b)480	
C. W. Stineman	11.4R	1-6"				8	24	21			53	85	
California Packing Corporation	12.4L	1-10"				49	65	15			129	(c)	
--HIGHWAY 99E BRIDGE--	13.0												
--GAGING STATION - BEAR RIVER NEAR WHEATLAND--	13.0												
--S. P. RAILROAD BRIDGE--	13.05												
Totals			0	21	43	127	131	59	8	0	389	725	
Average cubic feet per second			0	0	1	2	2	1	0	0	1		
Monthly use in per cent of seasonal			0	5.4	11.0	32.6	33.7	15.2	2.1	0			

(a) This acreage also received an undetermined amount of well water.
(b) This is the combined acreage of this plant and the plant at Mile 12.4L.
(c) See the plant at Mile 11.1L.

TABLE 176

DIVERSIONS AND ACREAGES IRRIGATED - AMERICAN RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
--GARDEN HIGHWAY BRIDGE--	0.2												
--HIGHWAY 40 AND 99E BRIDGE (16TH STREET)--	1.9												
--SACRAMENTO - NORTHERN RAILROAD BRIDGE--	2.0												
--WESTERN PACIFIC RAILROAD BRIDGE--	2.1												
Joe Gomez	2.4L	1-5"			1	19	5	4	3		32	7	
North Sacramento Lands Company	2.65R	1-7"				NO DIVERSION							
North Sacramento Lands Company	2.75R	1-5"				8	11	7	6		32	22	
--SOUTHERN PACIFIC RAILROAD BRIDGE--	3.5												
C. Swanston and Sons	4.2R	1-10"				NO DIVERSION							
C. Swanston and Sons	5.3R	1-10"				NO DIVERSION							
--GAGING STATION (H STREET) AMERICAN RIVER AT SACRAMENTO--	6.0												
E. Clemens Horst Company	6.5R	1-6"			20	45	23				88	(a,b)445	
E. Clemens Horst Company	7.5R	1-8"			49	76	42				167	(c)	
J. I. Haas, Inc.	(d)7.7R	1-4"				73	105	40			218	83	
T. A. Farrell	8.95R	1-4"				NO DIVERSION							
J. H. Kerby	9.0L	1-6"				40	33	63			136	40	
G. L. Browning	9.05R	(e)1-5"		1	8	2	6	7	6	4	34	12	
J.G. and F.F. Dauenhauer	9.2L	1-8"			8	35	27	17	5	2	94	(b)72	
Ruth Coleman (f)	9.4L	1-5"				36	65	66	69	21	257	(b)100	
Sweem Brothers	10.2R	1-8"	1	39	47	62	105	54	64	77	449	90	
Gold Nugget Orchard Company	10.4R	1-5"		2	8	12	13	7	2		44	17	
Mucke Sand and Gravel Company	11.2L	1-6"	3	10	9	14	18	18	17	14	103	25	
J. T. Gore	11.5L	1-4"			17	19	15	19	14		84	50	
William A. Meyer	11.7L	1-4"				19	11	26	10	3	69	27	

(a) This is the combined acreage of this plant and the plant at Mile 7.5R.
(b) This acreage also received an undetermined amount of well water.
(c) See the plant at Mile 6.5R.
(d) Plant moved to this location from Mile 7.8R in 1951.
(e) Formerly listed as a 6" unit.
(f) New Installation in 1951.

TABLE 176

DIVERSIONS AND ACREAGES IRRIGATED - AMERICAN RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
Knapp Corporation	13.3R	1-4"				PLANT REMOVED							
C. W. Deterding and Mrs. May McDonnell	13.9R	1-6"				NO DIVERSION							
J. R. Deterding	15.1R	1-4"			23	39	54	56	30		202	44	
Carmichael Irrigation District	16.0R	1-6" 2-12"			260	695	764	1020	603	96	3438	(a)3800	
--GAGING STATION - AMERICAN RIVER AT FAIROAKS--	19.2												
Totals			4	52	450	1194	1297	1404	829	217	5447	4834	
Average cubic feet per second			0	1	7	20	21	23	14	4	11		
Monthly use in per cent of seasonal			0.1	0.9	8.3	21.9	23.8	25.8	15.2	4.0			

(a) Includes approximately 500 acres irrigated outside of District. District is suburban land and no segregation of irrigated acreage is available. This acreage also received an undetermined amount of well water.

TABLE 177

DIVERSIONS AND ACREAGES IRRIGATED - COSUMNES RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
--U.S. 50 AND 99 HIGHWAY BRIDGE--	11.8												
--GAGING STATION - COSUMNES RIVER AT McCONNELL--	11.8												
Alvin Bartholamew	14.3R	1-6"				NO DIVERSION							
Oliver A. Roden	14.9R	1-6"				NO DIVERSION							
J. C. Carli	15.1R	1-10"			6	28	14	3			51	20	
J. C. Carli	15.3R	1-12"				NO DIVERSION							
D. M. Doyle	15.5R	1-6" 1-8"				NO DIVERSION							
William R. Saxon	16.0R	1-10"				NO DIVERSION							
Harvey Blodgett	16.4R	1-8" 1-12"				NO DIVERSION							
--CENTRAL CALIFORNIA TRACTION COMPANY RAILROAD BRIDGE--	17.8												
Joseph Audisio	20.5R	1-12"				NO DIVERSION							
Bright Estate (Mike Marinelli)	21.1R	1-15"				114	190	152	76		532	220	
J. I. Haas	22.0R	1-12"				62	80				142	(a)72	
Rooney Brothers	24.6R	1-12"				97	114				211	133	
W. Jared Sheldon	25.1R	1-8"			18	115	111	86	75	28	433	(a)174	
P. Westerberg (b)	26.5R	1-14"			30	76	70	15			191	120	
R.F. and R.M. Grimshaw (c)	26.9R	1-8"			5	12	14	7			38	25	
A.V. Signorotti	27.1R	1-6"				6	7	8			21	16	
F. Morse Grimshaw	27.5R	1-6"				4	6	2			12	8	
G. C. Johnson (d)	28.1R	1-5"				26	40	20			86	(e)230	
G. C. Johnson	29.4L	1-6"				13	14				27	(f)	
G. C. Johnson	29.9L	1-6"			5	88	104	81	12		290	(f)	
--STATE HIGHWAY 16 BRIDGE--	32.2												
A. Grandlee (b)	33.1R	1-3"			7	20	26	24	24	6	107	20	
Cosumnes River Water District	33.5	Gravity		61	303	444	505	404	202	100	(g)2019	673	
--GAGING STATION - COSUMNES RIVER AT MICHIGAN BAR--	34.3												
Totals			0	61	374	1105	1295	802	389	134	4160	1711	
Average cubic feet per second			0	1	6	19	21	13	7	2	9		
Monthly use in per cent of seasonal			0	1.5	9.0	26.6	31.1	19.3	9.3	3.2			

(a) This acreage also received an undetermined amount of well water.
(b) Plant installed prior to 1951. Not previously listed.
(c) Formerly listed as F. Morse Grimshaw.
(d) New Installation in 1951.
(e) This is the combined acreage of this plant and the plants at Miles 29.4L and 29.9L. This acreage also received an undetermined amount of well water.
(f) See the plant at Mile 28.1L.
(g) This figure is partially estimated.

TABLE 178

DIVERSIONS AND ACREAGES IRRIGATED - MOKELUMNE RIVER - 1951

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.	Sept.	Oct.		General	Rice
--GALT-THORNTON HIGHWAY BRIDGE--	7.0												
--COSUMNES RIVER--	7.5R												
S. and J. Frandy	10.4L	1-12"		13	11	27	32	19	16		118	50	
M. R. Steffans (a)	10.6R	1-12"				44	109	90	72	38	353	120	
A. Taddei	15.6R	1-6"			4	19	30	34	19		106	53	
R. J. Lange	16.8R	1-6"		1		27	50	29			107	106	
W. and E. Selles	18.2R	1-6"				PLANT REMOVED							
B. M. Durrell	19.0R	1-6"				PLANT REMOVED							
--GAGING STATION - MOKELUMNE RIVER AT WOODBRIDGE--	19.2												
B. M. Durrell	19.4R	1-6"				PLANT REMOVED							
--SACRAMENTO ROAD BRIDGE--	19.8												
--WOODBRIDGE IRRIGATION DISTRICT DAM--	19.9												
Woodbridge Irrigation District	19.9L	Gravity		15220	18050	22380	15470	15950	14870	11340	(b)113280	14424	1645
LeMoin Beckman	21.1L	1-5"			9	18	15	12	7		61	30	
LeMoin Beckman	21.3L	1-5"				NO DIVERSION							
Lewis D. Bridge	21.85R	1-6"			3	30	41	20			94	33	
E. and M. Mayer	22.5R	1-5"				6	16	8			30	18	
J. R. Benty	22.9R	1-6"				NO DIVERSION							
L. R. Sangueniti	23.4L	1-6"				6	4	1			11	7	
--SOUTHERN PACIFIC RAILROAD BRIDGE--	23.5												
J. and M. Mumbert	23.4R	1-4"		6	4	10	7	7			34	13	
M. M. Bender	23.6R	1-4"				DOMESTIC USE ONLY							
Ben Bechthold	24.0L	1-4"		19		15	5	3	1	1	44	13	
--HIGHWAY 99 BRIDGE--	24.2												
Matt Barr	24.45L	1-6"			7	6	5	4			22	9	
Lawrence Ranch	24.5L	1-8" 1-18"	55	225	201	117	47	33			678	177	
S. and M. Miller	24.6L	1-6"		4	7	8	7	8	7	2	43	12	
T. and M. Kirschenman	25.2R	1-6"		45	52	27	8	6			138	63	
M. and M. Palmer	25.5L	1-4"					15	4			19	33	
--CENTRAL CALIFORNIA TRACTION COMPANY BRIDGE--	25.6												
F. Carey	27.5L	1-5"			2	30	51	2			85	26	
R. J. Linde	27.6L	1-8"			12	7	4	7			30	21	
A. E. Jones	27.9L	1-10"	117	150	20						287	125	
P. T. Nakagawa, et al	28.6R	1-3" 1-6"				50	85	77	31		243	66	
L. M. Peterson	28.9L	1-4"					15	10	4		29	15	
W. E. Mehlhoff	29.9R	1-8"		18	32	27	7	3			87	35	
E. Bender	30.0L	1-10"	3	4	4	10	11	13	11	8	64	9	
--COUNTY ROAD BRIDGE--	30.0												
V. and E. Hoffman	30.15R	1-5"		27	42	34	29	18	14		164	59	
N. H. Davis	30.35R	1-7"		11	17	19	22	20	8	5	102	54	
J. J. Schmiedt	30.95L	1-8"				17	23	26			66	60	
L. Kirshemann	31.0L	1-12"		112	143	4	67	30	3	1	(c)360	155	
Rosa D. Soucie	31.7L	1-4"				14	16				30	40	
L. M. Peterson	32.5L	1-5"		3	7	12	18	15	11	8	74	22	
J. Langford	32.75R	1-6"		52	57	10	14	16	10		159	(d)106	
C. Locke	33.25L	1-10"		3	4	63	63	66	9		208	130	
Campo Vineyards	33.45R	1-8"			2	11	13	7			33	22	
Campo Vineyards	33.6R	1-8"		21	58	56	97	64	20		316	138	
Neil C. Locke	33.7L	1-12"		80	120	160	150	100	20		630	417	
C. G. Patman	33.75L	1-10"			40	20	35	30			125	75	

* Mileage listed is approximate mileage above New Hope Bridge landing.
(a) Formerly listed as Carolyn M. Brovelli.
(b) Additional acre-feet diverted: November-3870.
(c) Additional acre-feet diverted: November-3.
(d) This acreage also received an undetermined amount of well water.

TABLE 178

DIVERSIONS AND ACREAGES IRRIGATED - MOKELUMNE RIVER - 1951 (Cont'd)

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.	Sept.	Oct.		General	Rice
T. and E. Schmierer	33.8R	1-4"		5	7	10	12	12	9	4	59	15	
C. J. Seibel	34.05R	1-4"		8	8	8	9	10		2	45	14	
A. and M. Knoll	34.1R	1-4"		16	9	19	37	15			96	23	
N.D. and D.D. Knoll	34.3R	1-4"	1	11	34	7	8	6	5	3	75	24	
--COUNTY ROAD BRIDGE--	34.35												
J. B. Ward	34.5R	1-4"				12	8	8	6	6	40	16	
C. G. Patman	34.55L	1-8"	1	7	70	85	119	65	77	24	(a)448	120	
C. G. Patman	34.75L	1-12"		9	46	43	97	86	12	13	306	125	
E. R. Thomas	35.15R	1-7"			128	118	144	79	82	25	576	(b)330	
E. M. Locke	35.2L	1-8"			17	53	59	46	30	15	(c)220	95	
J. N. Borroughs	35.4L	1-10"			7	19	40	33	17		116	(d)104	
E. R. Thomas	35.5R	1-8"				54	45	33			132	(e)	
C. L. Allen	35.7L	1-8"			1	31	24	35	22		113	70	
P. Montgomery	35.9L	1-12"				57	14	43	16		130	71	
W. S. Montgomery	36.0L	1-8"		7	7	24	55	43	14		150	(d)90	
E. R. Thomas	36.2R	1-8"				86	134	73	12	8	313	(e)	
O. Parker	36.45L	1-12"				51	88	59			198	125	
W. L. Moffat	36.95R	1-10"		14	29	38	46	42	18	10	(f)197	58	
J. R. Wiederrich	37.15L	1-10"				NO DIVERSION							
W. L. Moffat	37.45R	1-10"				13	6	18	3		40	27	
W. L. Moffat	37.65L	1-10"				36		60	14		110	85	
Marie Costa	37.7R	1-12"			10	12	15	9	4		50	35	
M.G. and H.L. Thompson	38.0L	1-8"				48	16	51	13		128	(d)90	
P.L. and V.A. Stabel	38.3L	1-8"				17	7	27	6		57	35	
Gertrude W. Christman	38.5L	1-12"		31							31	80	
Clements Estate	39.0L	1-12"	66	162	195	242	303	277	264	143	1652	325	
R. S. Featherston	39.3R	1-14"			24	20	15				59	25	
--GAGING STATION - MOKELUMNE RIVER NEAR CLEMENTS--	39.35												
Totals			243	16284	19500	24387	17882	17862	15757	11656	123571	18718	1645
Average cubic feet per second			4	274	317	410	291	290	265	190	254		
Monthly use in per cent of seasonal			0.2	13.2	15.8	19.7	14.5	14.5	12.7	9.4			

* Mileage listed is approximate mileage above New Hope Bridge landing.
(a) Additional acre-feet diverted: November-28.
(b) This is the combined acreage of this plant and the plants at Miles 35.5R and 36.2R.
(c) Additional acre-feet diverted: November-1.
(d) This acreage also received an undetermined amount of well water.
(e) See the plant at Mile 35.15R.
(f) Additional acre-feet diverted: November-2.

TABLE 179

DIVERSIONS AND ACREAGES IRRIGATED - CALAVERAS RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
--WESTERN PACIFIC RAILROAD BRIDGE--	4.9												
--SOUTHERN PACIFIC RAILROAD BRIDGE--	5.3												
--STOCKTON DIVERTING CANAL--	5.3L												
--U.S. 50 AND 99 HIGHWAY BRIDGE--	6.8												
--CENTRAL CALIFORNIA TRACTION COMPANY RAILROAD BRIDGE--	7.9												
--GAGING STATION - CALAVERAS RIVER NEAR STOCKTON--	8.9												
Pezzi Dam	11.8	Gravity		50	80	90	80				(a)300	(b)150	
Murphy Dam	12.4	Gravity		60	110	90	60				(a)320	(b)194	

(a) This figure is partially estimated.
(b) This acreage also received an undetermined amount of well water.

TABLE 179

DIVERSIONS AND ACREAGES IRRIGATED - CALAVERAS RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
--STATE HIGHWAY 88 BRIDGE--	12.7												
J. Tone	15.6L	1-8"			23	39	31	19	3		115	(a)145	
T. Cademartori	15.7L	1-6"			19	31	12				62	(a)64	
C. Paoletti (b)	16.6L	1-5"			12	20	8				40	34	
Lawrence Zolezzi	16.8L	(c)1-6"			35	39	20	10			104	49	
John Boggiano (b)	17.3L	1-6"			21	38	18				77	75	
Steve Solari (b)	18.4L	1-10"				110	76				186	(a)225	
W. E. Lynch (b)	19.8L	1-4"				6	9				15	6	
L. Vaccarezza	20.1L	1-7"		8	2	23					33	(a)23	
Frank G. Rossi	20.9L	1-5"		6	9						15	(a)20	
G. Arboco	21.0L	1-4"		1	5	22	16				44	(a)38	
Clements Road Dam	21.1	Gravity		23	20	51	17				111	98	
Mailand Ferrill (d)	21.3L	1-5"				17					17	20	
Domonick Figone	21.4L	1-4"			11	8	10				29	(a)30	
Ralph Houston	21.9R	1-8"		18		19	32	5			74	(a)80	
Andrew Cuneo	21.9L	1-12"		28	56	244	206				534	(a)220	
Nick Genetti	22.1L	1-4"	10	15	10	11	3				49	(a)17	
J. DeMartini (b)	22.2R	1-8"			24	29	41	10			104	79	
Carroll and Anderson	22.3L	1-8"			20	43	39				102	(a)102	
John Boggiano	22.4R	1-5"				NO DIVERSION							
C. DeMartini	22.6R	(e)1-12"			24	68	78				170	(a)126	
Pine Ranch	22.9R	1-6"			3	10	21				34	33	
DeBenedetti and Toscano	23.1L	1-7"		15	31	26	19				91	(a)78	
Fred Podesta	23.8L	1-10"				NO DIVERSION							
Fred Podesta (b)	24.4L	1-14"			82	172	120				374	(a)375	
--STATE HIGHWAY 8 BRIDGE--	25.2												
--GAGING STATION - CALAVERAS RIVER AT BELLOTA--	25.25												
Armaninio Brothers	25.3R	1-10"		39	53	70	109	44			315	(a)120	
--MORMON SLOUGH--	25.3L												
--FARMINGTON-BELLOTA COUNTY ROAD BRIDGE--	*(0.2)												
--GAGING STATION - MORMON SLOUGH AT BELLOTA--	*(0.25)												
J. G. Watkins	*(0.3R)	1-8"			20	36	17				73	(a)60	
A. Solari	*(0.5L)	1-8"			13	76	54				143	(a)100	
Fred Casella	*(0.9L)	1-6"		13	27	27	49	38			154	(a)89	
Linden Orchard	*(1.4R)	1-12"			101	163	118	55			437	(a)319	
Sadaki Higashi (f)	*(1.5L)	1-8"		12	20	29	16				77	(a)80	
E. Maurigliano	*(1.8R)	1-10"		17	14	6	24	16			77	(a)42	
C. and F. Sanguinetti	*(2.0L)	1-8"				47	34				81	(a)84	
C. DeMartini (b)	*(3.4R)	1-10"				28	26	5			59	43	
V. Lagorio	*(3.6R)	1-6"				8	14				22	(a)32	
C. and F. Sanguinetti	(6.1L)	1-6"				NO DIVERSION							
A. and R. Lagorio	*(6.9L)	1-8"			33	35	36				104	(g)172	
A. and R. Lagoric	*(7.1L)	1-8"			40	38	31				109	(h)	
--END OF MORMON SLOUGH - BEGINNING OF STOCKTON DIVERTING CANAL--	*(13.0)												
Homer D. Riddle	*(13.3R)	1-6"		17	17	38	41				113	(a)67	
--STATE HIGHWAY 8 BRIDGE--	*(14.9)												
--U.S. 50 AND 99 HIGHWAY (FREEWAY) BRIDGE--	*(16.0)												
--U.S. 50 AND 99 HIGHWAY BRIDGE--	*(17.2)												

* Mormon Slough - Mormon Slough diverts from Calaveras River at Mile 25.3L, and rejoins the river through the Stockton Diverting Canal. Distance from Calaveras River and the bank is shown in ().

(a) This acreage also received an undetermined amount of well water.

(b) New Installation in 1951.

(c) Formerly listed as an 8" unit.

(d) Formerly listed as Frank Box.

(e) The 12" unit replaced an 8" unit formerly listed at this location.

(f) Formerly listed as C. and F. Sanguinetti.

(g) This is the combined acreage of this plant and the plant at Mile *(7.1L). This acreage also received an undetermined amount of well water.

(h) See the plant at Mile *(6.9L).

TABLE 179

DIVERSIONS AND ACREAGES IRRIGATED - CALAVERAS RIVER - 1951 (Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
--GAGING STATION - STOCKTON DIVERTING CANAL AT STOCKTON--	*(17.6)												
Albert A. Anderson	25.5L	1-12"		12	62	80					154	(a)115	
L. F. Grimsley	25.9L	1-14"				154	70	57			281	(a)203	
Vignolo and Pallavicino	26.3R	1-10"		58	76	91	106	60			391	(a)127	
Field Brothers	26.8L	1-6"		20	16	96	56	5			193	120	
McGurk Ranch	26.8R	1-8"		4	20	51	50	25			150	(a)140	
Saverio Nogare (b)	27.5L	1-10"			10	94	23	55			182	100	
E. E. Cady	28.3L	1-6"			41	65	39	18			163	88	
L. and A. V. Lagorio	28.9L	1-12"				30	29				59	(a)50	
Garavano and Maffeo	29.0L	1-6"				15	13				28	(a)46	
O. R. Shelley	29.3L	1-8"			15	38	36	68	13	12	182	(a)90	
O. R. Shelley	29.3R	1-5"			6	34	15	20			75	65	
M. N. Yocum	29.4L	1-8"		1	12	53	27	13			106	(a)90	
A. G. Watkins	30.1R	1-10"				17	83	35			135	(a)135	
L. and D. Hoag	30.6R	1-14"			42	69	31	105			247	(a)156	
Lynn Barnett	30.7R	1-7"				22		10			32	25	
Lois E. Hunt	31.1R	1-8"			25	57	43	25			150	68	
S. M. Gregory	31.3R	1-10"		23	21	89	70	73	4		280	(c)128	
S. M. Gregory	31.6R	1-6"			8	14	16	13			51	(d)	
Eva Hunt (b)	32.5R	1-6"		4	5	8	9	11	7	4	48	10	
Eva Hunt	32.6L	1-6"					72	19	32	5	128	55	
--GAGING STATION - CALAVERAS RIVER AT JENNY LIND--	36.9												
Totals			10	444	1294	2884	2273	814	59	21	7799	5300	0
Average cubic feet per second			0	7	21	48	37	13	1	0	16		
Monthly use in per cent of seasonal			0.1	5.7	16.6	37.0	29.1	10.4	0.8	0.3			

* Mormon Slough - Mormon Slough diverts from Calaveras River at Mile 25.3L, and rejoins the river through the Stockton Diverting Canal. Distance from Calaveras River and the bank is shown in ().

(a) This acreage also received an undetermined amount of well water.

(b) New Installation in 1951.

(c) This is the combined acreage of this plant and the plant at Mile 31.6R. This acreage also received an undetermined amount of well water.

(d) See the plant at Mile 31.3R.

TABLE 180

DIVERSIONS AND ACREAGES IRRIGATED - OLD SAN JOAQUIN RIVER DELTA UPLANDS - 1951

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.	Sept.	Oct.		General	Rice
Contra Costa Canal	(a)30.5L	2-30" 2-42"	1099	2209	1983	3981	3860	4828	3786	2492	(b)24238	(c)4701	
Leo Fallman	(d)36.5L	1-16"	49	71	138	217	236	190	178	54	1133	240	
East Contra Costa Irrigation District	(d)36.5L	2-18" 2-24" 2-30"		1404	5617	7259	6698	4950	2399	210	28537	(e)16125	
Augustus Sarija	(d)36.5L	2-6"	1	32	43	64	53	63	125	14	395	81	
--STATE HIGHWAY 4 BRIDGE--	38.8												
Byron-Bethany Irrigation District	(f)40.9L	1-24" 1-30"	152	2835	4620	5598	5734	5823	3535	1806	30103	8981	
--CLIFTON COURT FERRY--	43.8												
--DELTA-MENDOTA CANAL--	44.6L												
M. R. Furtado	(g)44.6L	1-14"		121	133	247	224	206	91	31	(h)1053	322	

* Distance from mouth of San Joaquin River 4⅛ miles below Antioch (mileage as established by War Department Survey of 1913-15).

(a) This is the point of diversion of the U.S.Bureau of Reclamation Contra Costa Canal at head of Rock Slough.

(b) Additional acre-feet diverted: January-1109, February-940, November-2011 and December-1934.

(c) In addition to this acreage, also served Industrial and Municipality.

(d) Indian Slough joins the Old San Joaquin River at this mile. Pumping plant is located on intake canal which joins Indian Slough.

(e) This acreage also received 3314 acre-feet of well water.

(f) Italian Slough joins the Old San Joaquin River at this mile. Pumping Plant is located on intake canal which joins Italian Slough.

(g) Formerly listed as Mile 44.8L.

(h) Additional acre-feet diverted: November-24.

TABLE 180

DIVERSIONS AND ACREAGES IRRIGATED - OLD SAN JOAQUIN RIVER DELTA UPLANDS - 1951 (Cont'd)

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.	Sept.	Oct.		General	Rice
H. Lindeman (a)	47.2L	1-12"			234	95	89	154	90		(b)662	245	
Lucio J. Costa (c)	47.2L	(d)1-14"			47		44	72	3		166	75	
West Side Irrigation District	(e)47.65L	7-15"		4186	5813	5660	6084	6232	3576	948	32499	(f)10586	
Vance Brown	48.4L	1-12"		42	28						70	140	
Salles Brothers	49.5L	1-4"			1			1			2	4	
Naglee Burke Irrigation District	50.4L	1-16" 1-18"		776	1332	1392	1442	1652	1036	627	8257	2455	
Freemont Irrigation Assn.	50.9L	1-16"		202	160	405	391	357	233	10	(g)1758	607	
Joe M. Freitas	51.0L	1-8"		1	13	25	61	27	24		151	36	
Attilio Casserini	51.2L	1-10"							5		5	36	
Excelsior Ranch #2	52.4L	1-10"		44	35	35	51	37	22	1	225	120	
--TRACY ROAD BRIDGE--	52.7												
A. L. Galli	53.0L	1-8"		32	35	25	23	20	12	5	152	57	
--RECORDING GAGE--	53.0												
--MOUTH OF TOM PAINE SLOUGH--	54.3												
Totals Average cubic feet per second Monthly use in per cent of seasonal			1301 21 1.0	11955 201 9.3	20232 329 15.6	25003 420 19.3	24990 406 19.3	24612 400 19.0	15115 254 11.7	6198 101 4.8	129406 266	44811	
Delta Mendota Canal (h)	44.6L					6740	33451	69134	54390	22641	(i)186356		

* Distance from mouth of San Joaquin River 4½ Miles below Antioch (mileage as established by War Department Survey of 1913-15).
(a) Formerly listed as H. Lindeman and Son.
(b) Additional acre-feet diverted: November-73.
(c) Formerly listed as G. Lindeman.
(d) The 14" unit replaced a 10" unit formerly listed at this location.
(e) Pumping plant is located on intake canal which joins the Old San Joaquin River at this mile.
(f) Of this figure 700 acres was double cropped.
(g) Additional acre-feet diverted: November-13 and December-1.
(h) New Installation in 1951.
(i) Furnished 2003 acre-feet to West Stanislaus Irrigation District and 130 acre-feet to Del Puerto Water District in August. The remainder of this water was spilled into the San Joaquin River at Mile 208.63 and was rediverted from Mendota Pool.

TABLE 181

DIVERSIONS AND ACREAGES IRRIGATED - TOM PAINE SLOUGH DELTA UPLANDS - 1951

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.	Sept.	Oct.		General	Rice
Independent Mutual Water Corporation and Company	0.7S	2-18"		366	389	603	783	785	468	83	3477	1059	
Independent Mutual Water Corporation and Company	1.5S	1-18"			196	73	81	171	64		585	207	
--HOLLY SUGAR CORPORATION DREDGER CUT--	2.1S												
George J. Lake	**(0.5W)	1-10"			8	84	175	83	2	5	(a)357	170	
Holly Sugar Corporation	**(1.2W)	1-12" 1-14"		236	321	201	344	334	327	338	(b)2101	608	
--RECORDING GAGE--	2.2S												
Pescadero Reclamation District #2058 #1	2.9S	1-12"	16	131	126	89	152	144	77	27	762	219	
Pescadero Reclamation District #2058 #3	6.3S	1-12" 1-20" 1-24"	65	1394	2187	2266	2469	2723	2135	363	13602	(c)2029	411
Pescadero Reclamation District #2058 #5	8.3S	1-12"		132	97	150	183	176	113	38	889	177	
--RECORDING GAGE--	8.7S												
Pescadero Reclamation District #2058 #5A	9.0S	1-12"		62	110	115	184	237	75	32	815	276	
Totals Average cubic feet per second Monthly use in per cent of seasonal			81 1 0.4	2321 39 10.3	3434 56 15.2	3581 60 15.9	4371 71 19.3	4653 76 20.6	3261 55 14.4	886 14 3.9	22588 46	4745	411

* 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).
** Holly Sugar Corporation dredger cut joins Tom Paine Slough at Mile 2.1S. Distance along dredger cut and bank is shown in ().
(a) Additional acre-feet diverted: November-1.
(b) Additional acre-feet diverted: November-290. Includes an undetermined amount of water used for Industrial purposes.
(c) Of this figure 83 acres was double cropped.

TABLE 182

DIVERSIONS AND ACREAGES IRRIGATED - SAN JOAQUIN RIVER DELTA UPLANDS - 1951
(Stockton to Vernalis)

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.	Sept.	Oct.		General	Rice
--GARWOOD BRIDGE--	45.3												
Carolyn Weston	46.1R	1-4"				NO DIVERSION							
Carolyn Weston	46.2R	1-6"				19	20	16	3	1	59	35	
Carolyn Weston	46.3R	1-12"		1	100	27	157	136	73	16	(a)510	225	
Ivy Ranney	46.65R	1-10"				47		43	32		122	80	
Frank West	46.85R	1-10"		24	54	103	46	80	107	4	(b)418	160	
F. Asano	47.2R	1-6"		8	17	13	27	21	4	3	93	40	
Wolfinger Brothers	47.3R	1-10"		4	6		1	1	51		63	47	
C. C. Long	47.55R	1-10"						180			180	110	
Waldo C. Haack	48.0R	1-14"		37	54	41	63	147			342	365	
Chow L. Young (c)	48.3R	1-4½"			11	6	14	12	3		46	30	
Chow L. Young (c)	48.5R	1-3"				NO DIVERSION							
Joe Calcagno	48.5R	1-6"			6	23	8	37	14		88	85	
Beulah L. Carr (d)	48.55R	1-6"			11	6	12	9	2		40	25	
Calcagno Brothers	48.66R	1-8"		15	67	18	67	36	17	8	228	(e)73	
Minna M. & Ema J.C.Ott (f)	49.0R	1-12"			21	43	46	54	26	8	198	75	
Herbert Spangenberg and S. B. Chapman	49.3R	1-14"		53	87	106	134	142	78	84	684	185	
Herbert Spangenberg and S. B. Chapman	49.5R	1-12"				NO DIVERSION							
A. A. Rodgers	50.1R	1-10"		9	17	4	6	8		1	45	80	
--BRANDT BRIDGE- RECORDING GAGE--	50.2												
A. Hirata	50.4R	1-10"		3	14	27	29	41	8	1	123	40	
K.R. and F.Watanabe (g)	50.6R	1-6"		5	34	35	33	34	1	29	171	53	
D. Toscano	50.8R	1-6"	2	10	19	22	29	26	13	16	137	42	
Pastorino Brothers (h)	50.9R	1-12"					88	119		74	281	(i)150	
Pastorino Brothers	51.0R	1-6" 1-10"		10	51	41	14	9	2		127	(j)	
Felipe Esteban (k)	51.2R	1-12"			1	4	83	4			92	98	
J. Burchel	52.1R	1-10"				NO DIVERSION							
G. Santini	52.4R	1-5"		3	3	4	2	14	2		28	17	
D. J. Macedo	52.65R	1-10"		39	57	45	108	109	16		374	96	
J. Widmer	53.2R	1-12"		16	66	106	189	142	62		581	354	
William Nishimura	53.4R	1-8"		1	8	10	16	14	11		60	32	
John Domingo (h)	53.6R	1-4"			4	9	19	17	2	1	52	26	
John Domingo (l)	53.7R	1-12" (m)1-14"	6	7	168	102	160	135	66	6	(n)650	187	
I. N. Robinson, Jr. (h)	53.8R	1-14"			20	111	149	114	110	88	592	(o)338	
R. E. Albertson	54.9R	1-10"			61	75	56	114	12	57	(p)375	136	
--JUNCTION WITH MIDDLE RIVER--	56.2L												
Oakwood Stock Farm	57.0R	1-14"		141	69	221	447	156	97	24	(q)1155	365	
James Tobin	57.15R	1-7"				12	25	16	1		54	45	
Frank Dewar, et al	57.38R	1-4"					5	1			6	7	
G. Gardella and Company	57.5R	1-4"	1	5	1	3	3	3	1	1	18	20	
A. Queirolo	57.65R	1-3"				NO DIVERSION							
A. Queirolo	58.6R	1-3"		1		1	1	1			4	36	
R. Mauro	58.7R	1-4"						2			2	2	
--SOUTHERN PACIFIC RAILROAD BRIDGE--	58.8												
--MOSSDALE BRIDGE (U.S. HIGHWAY 50) - RECORDING GAGE--	58.9												

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

(a) Additional acre-feet diverted: November-2.
(b) Additional acre-feet diverted: November-1.
(c) Formerly listed as Lee Young.
(d) Formerly listed as Dr. J. M. Carr.
(e) Of this figure, 20 acres was double cropped.
(f) Formerly listed as M. O. Cooper Estate.
(g) Formerly listed as R. K. and F. Watanabe.
(h) New Installation in 1951.
(i) This is the combined acreage of this plant and the plant at Mile 51.0R.
(j) See the plant at Mile 50.9R.
(k) Formerly listed as Philip Esteban.
(l) Formerly listed as I. N. Robinson, Jr. and John Domingo.
(m) The 14" unit was installed in 1951.
(n) This plant furnished an undetermined amount of water to plant at Mile 53.8R. Additional acre-feet diverted: November-2.
(o) This acreage also received an undetermined amount of water from plant at Mile 53.7R.
(p) Additional acre-feet diverted: November-26.
(q) Additional acre-feet diverted: November-5.

TABLE 182

DIVERSIONS AND ACREAGES IRRIGATED - SAN JOAQUIN RIVER DELTA UPLANDS - 1951
(Stockton to Vernalis)
(Cont'd)

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.	Sept.	Oct.		General	Rice
Mertle Abersold (a)	59.25R	1-6"	1	9	24	16	34	29	12	5	(b)130	50	
M. H. Madruga (c)	59.3R	1-15"		49	97	84	152	140	97		619	160	
Eugene J. Rossi, et al (d)	59.5L	1-14"			122	139	76	119	23		479	195	
--WESTERN PACIFIC RAILROAD BRIDGE--	59.5												
M. H. Madruga (c)	60.1R	1-6"		10	20	21	27	19	14	8	119	37	
James and Leslie Little (e)	60.4L	1-4"		3	3	3	6	5	4	3	(b)27	7	
A. F. Windeler (f)	60.5L	1-12"				25					25	87	
E. Pecchi and Son (g)	60.5R	(h)1-6" 1-8"		19	4	28	50	63			164	63	
E. Pecchi and Son (g)	61.3R	1-12"		12	4	98	69	98	41		(i)322	231	
A. F. Windeler (f)	61.5L	1-8"				28	8				36	65	
Bernice Von Sosten (j)	62.0L	1-12"		16	54	65	69	83			287	130	
--PARADISE DAM (HEAD OF PARADISE CUT)--	62.2L												
Paradise Mutual Water Company	(k)62.2L	1-14" 1-20"	11	514	284	269	326	295	144	43	(l)1886	803	
H. H. Grimes (m)	62.6R	2-4"		28	2						30	(n)	
Dethlefsen Brothers	62.75L	1-10"				PLANT REMOVED							
Dethlefsen Brothers	63.0L	2-20"		325	153	322	679	505	796	371	3151	1490	
H. H. Grimes (g)	63.6R	1-12"			22	57	38	62	18		197	(o)241	
Dethlefsen Brothers (p)	64.6L	1-10"			36		29	31	13		109	56	
Manuel Brazil	66.7L	1-8"		63	45	115	76	90	51	44	484	164	
Banta-Carbona Irrigation District	67.5L	2-10" 2-16" 2-20" 3-24" 1-36"	238	10452	8768	9799	10139	7810	4398	2164	(q)53768	(r)17191	
Bradford S. Crittenden	70.0L	1-6"			89	103	126	156	92	26	(s)592	50	
Richard Burnley	70.5R	1-10"				NO DIVERSION							
Reclamation District #2075	71.0R	(t)1-10" (u)2-16"		106	562	645	650	852	183	2	3000	1146	
E. Filippini	71.0R	1-4"				NO DIVERSION							
H. J. Mortensen and Barker (v)	73.2R	1-8" 1-12"		105	144	164	125	212	133	1	884	410	
San Joaquin River Club	74.7L	(w)1-6"	20	135	20	13	1	1	1	50	(x)241	50	
E. A. Tassi	75.6R	1-16"		1	5	68	123	86	6	42	331	(y)324	
--DURHAM FERRY BRIDGE- U.S.G.S. GAGING STATION- SAN JOAQUIN RIVER NEAR VERNALIS--	76.7												
STOCKTON TO VERNALIS													
Totals			279	12239	11485	13346	14860	12649	6840	3181	74879	26609	
Average cubic feet per second			5	206	187	224	242	206	115	52	154		
Monthly use in per cent of seasonal			0.4	16.3	15.3	17.8	19.9	16.9	9.1	4.3			

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

(a) Formerly listed as C. C. Abersold.
(b) Additional acre-feet diverted: November-1.
(c) Formerly listed as H. A. Neistrath.
(d) Formerly listed as G. Giovacchini.
(e) Formerly listed as Stanley Shelton.
(f) Formerly listed as A. F. Wendler.
(g) New Installation in 1951.
(h) The 6" unit was a temporary Installation for 1951.
(i) This acreage also received an undetermined amount of water from a temporary Installation on Walthal Slough.
(j) Formerly listed as A. A. Jensen.
(k) Plant is located on South side of Paradise Cut, 0.9 Mile from junction with San Joaquin River.
(l) Additional acre-feet diverted: December-96.
(m) Temporary Installation for 1951.
(n) See the plant at Mile 63.6R.
(o) This is the combined acreage of this plant and the plant at Mile 62.6R. This acreage also received an undetermined amount of water from a plant located on Walthal Slough.
(p) Plant was moved to this location from Mile 64.5L in 1951.
(q) Additional acre-feet diverted: November-206.
(r) This figure includes the following acreages outside the district: Banta Farms 599, Kassen District 589 and outside contracts 1177. Of this figure 38 acres was double cropped in district. This acreage also receives an undetermined amount of controlled drainage water.
(s) Additional acre-feet diverted: November-9.
(t) The 10" unit was a temporary Installation in 1951.
(u) The 2-16" units replace 1-16" unit formerly listed at this location.
(v) Formerly listed as H. J. Mortensen, Borges and Barker.
(w) One 6" unit removed in 1951.
(x) Additional acre-feet diverted: November-84, December-2.
(y) This acreage also received an undetermined amount of controlled drainage water.

TABLE 183

DIVERSIONS AND ACREAGES IRRIGATED - SAN JOAQUIN RIVER - 1951
(Vernalis to Fremont Ford Bridge)

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.	Sept.	Oct.		General	Rice
--DURHAM FERRY BRIDGE - U.S.G.S. GAGING STATION - SAN JOAQUIN RIVER NEAR VERNALIS--	76.7												
A. J. Chisholm	78.9R	1-10"					27	20			47	60	
Cruze, Kirby and Genova	79.4R	1-20"		9	251	35	98	143	46		582	138	
W. C. Blewett Estate (a)	80.7L	1-12"							171	4	175	225	
W. C. Blewett Estate (a)	81.8L	2-12"					181	182	27		(b)390	190	
--STANISLAUS RIVER--	79.7R												
--GAGING STATION - SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE--	81.85												
Blewett Mutual Water Company (c)	81.95L	3-12"	12	812	939	682	823	878	402	58	4606	1130	
El Solyo Water Company	82.0L	1-10" 3-18"	268	3302	2747	2570	3528	3430	1982	1322	(d)19149	(e)3707	
--GAGING STATION - SAN JOAQUIN RIVER AT HETCH HETCHY WATER SUPPLY CROSSING--	81.85												
E. T. Mapes (a)	89.9R	1-4"		61	42	78	103	64	82	30	460	300	
--TUOLUMNE RIVER--	91.0R												
--RECORDING GAGE--	91.8L												
--WEST STANISLAUS IRRIGATION DISTRICT INTAKE CANAL--	91.8L												
West Stanislaus Irrigation District	91.8L	1-12" 1-24" 6-26"	2479	13837	11111	11702	15100	13351	6975	1428	(f)75983	(g)23041	
J.B. Erkenbrecher #1	**(0.6S)	1-14"				43	183	27			253	100	
Frank Sarmento #1	**(0.7N)	2-16"		416	183	354	460	423	91	30	1957	(h)911	
Frank Sarmento #2	**(1.1N)	1-14" 1-16"		129	62	373	313	444	91	73	1485	(i)	
J.B. Erkenbrecher #2	**(2.2S)	1-16"	NO DIVERSION										
Frank Sarmento #3	**(2.3N)	2-16"			128		112	185	53		478	140	
Rancho Dos Rios (#3RB)	94.7R	1-12"		287	235	334	267	316	276	188	(j)1903	295	
Rancho Dos Rios (#2LB)	95.2L	1-10"	PLANT REMOVED										
Rancho Dos Rios (#2RB)	95.5R	1-10"		215	187	319	250	281	251	109	(k)1612	(l)345	
Rancho Dos Rios (#1RB)	95.8R	1-10"		55	64	41	94	75	55	55	439	75	
W. F. Cook (m)	96.0L	1-18"				173	169	200	55		(n)597	378	
--LAIRD SLOUGH BRIDGE- GAGING STATION-SAN JOAQUIN RIVER AT GRAYSON--	96.05												
Rancho El Pescadero	98.9L	1-18"	1	239	58	101	225	156	104		884	(o)942	
--PATTERSON BRIDGE- RECORDING GAGE--	104.4												
Patterson Water Company	104.4L	1-14" (p)2-18" 3-20" 1-36"	1021	8492	6202	7970	10110	7532	4512	247	(q)46086	(r)13730	180
Chase Brothers	104.5R	1-10"		153	244	83	173	157	143		953	(s)150	
M. L. Simmons	104.52L	1-5"		4		5	3				12	11	
Harry Black	104.7L	1-4"		1	2	2	2	2	1		10	3	
Chase Brothers	106.5R	1-10"			286	321	315	336	168	142	1568	410	
Tony Spinelli	109.1R	1-6"			16	16	24	19	23	18	116	38	

* Mileage along San Joaquin River from its mouth 4⅝ miles below Antioch. (Mileage established by War Department Survey of 1913-15).

** West Stanislaus Irrigation District Intake Canal - The Intake Canal joins the San Joaquin River at Mile 91.8L. Distance from the San Joaquin River and the bank is shown in ().

(a) New Installation in 1951.
(b) Additional acre-feet diverted: December-1.
(c) Formerly listed as W. C. Blewett Estate.
(d) Additional acre-feet diverted: January-22, February-6, November-442 and December-21.
(e) This acreage also received an undetermined amount of controlled drainage water.
(f) Additional acre-feet diverted: November-235.
(g) This acreage also received 2003 acre-feet of Delta Mendota Canal water in August. Of this figure, 1830 acres was double cropped. This figure includes 2035 acres irrigated outside of district.
(h) This is the combined acreage of this plant and the plant at Mile **(1.1N).
(i) See the plant at Mile **(0.7N).
(j) Additional acre-feet diverted: November-28.
(k) Additional acre-feet diverted: November-16.
(l) This acreage also received an undetermined amount of Turlock Irrigation District water.
(m) New Installation in 1951 to replace formerly listed plant of Rancho Dos Rios #1LB at Mile 95.9L.
(n) Additional acre-feet diverted: December-5.
(o) This acreage also received an undetermined amount of well water.
(p) One 18" unit installed in 1951.
(q) Includes an undetermined amount of water furnished to plant at Mile 109.8L.
(r) Of this figure 1287 acres was double cropped.
(s) This acreage was double cropped.

TABLE 183

DIVERSIONS AND ACREAGES IRRIGATED - SAN JOAQUIN RIVER - 1951
(Vernalis to Fremont Ford Bridge)
(Cont'd)

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.	Sept.	Oct.		General	Rice
Twin Oaks Irrigation Company	109.8L	1-12" 3-16"	61	1526	1093	1332	1516	1402	772	491	(a)8193	986	(b)550
T. J. Henderson (c)	109.9R	1-8"			14	43	65	53		10	(d)185	(e)110	
Roy Ustick	112.55R	1-16"	9	226	146	247	234	264	305	20	(d)1451	(e)376	
Frank C. Mosier	113.4R	1-10"	7	33	46	40	68	48	18		260	110	
--CROWS LANDING BRIDGE - RECORDING GAGE--	113.5												
A. J. Silveria	113.85R	1-6"		6	3	3	9	9	3		33	15	
A. J. Silveria	114.35R	1-7"	10	11	20	15	19	20	9	2	106	30	
Frank C. Mosier	114.63R	1-8"	22	39	36	46	41	69	33	34	320	83	
G. L. Dutcher	114.9R	1-10"	11	38	56	43	64	33	21	18	284	50	
Hazel D. Crow (f)	115.0L	1-10"		12	6	26	20	28	17	6	115	33	
Roy F. Crow	115.8L	1-10"	46	188			154			1	389	160	
L. B. Crow	116.05L	1-14"	40	126	90	126	169	123	84	47	805	210	
John W. Greer (c)	116.5R	1-10"		63		62	125	125	104		479	200	
D. L. McCoy (g)	116.95R	1-12"	64	30	53	52	38	27	27		291	(h)63	
--MERCED RIVER SLOUGH--	122.2R												
--U.S.G.S. GAGING STATION- SAN JOAQUIN RIVER NEAR NEWMAN--	123.7												
--MERCED RIVER--	123.75R												
Emil Giovannoni	123.9L	1-4"				NO DIVERSION							
--GAGING STATION - SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE--	129.5												
VERNALIS TO FREMONT FORD BRIDGE													
Totals			4051	30310	24320	27237	35082	30422	16901	4333	172656	48745	730
Average cubic feet per second			66	509	396	458	571	495	284	70	355	745	
Monthly use in per cent of seasonal			2.3	17.6	14.1	15.8	20.3	17.6	9.8	2.5			

* Mileage along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage established by War Department Survey of 1913-15).
(a) Additional acre-feet diverted: November-62.
(b) An undetermined amount of water received from plant at Mile 104.4L on 70 acres of this land.
(c) New Installation in 1951.
(d) Additional acre-feet diverted: November-2.
(e) This acreage also received an undetermined amount of Turlock Irrigation District water.
(f) Formerly listed as Glenn H. Crow Estate.
(g) Formerly listed as Howard Bell.
(h) This acreage also received an undetermined amount of controlled drainage water.

TABLE 184

DIVERSIONS AND ACREAGES IRRIGATED - SAN JOAQUIN RIVER - 1951
(Fremont Ford to Gravelly Ford)

Water User	Mile and Bank *	Number and Size of Pump	Monthly Diversions in Acre-Feet												Total Diversion January to December Acre-Feet	Acreage Irrigated	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		General	Rice
Arch Stevinson	133.76R	1-5"						PLANT REMOVED									
Erreca Farms	161.9R	1-20"	27							60	2				89	(a)174	
Erreca Farms	**(0.3)	Gravity						NO DIVERSION									
Dye Farms (b)	163.2R	1-12"							80	80					160	(a)320	
D. L. McNamara	**(1.4)	1-16"				48	113	76	37	91	20				385	(a)130	
--GAGING STATION - SAN JOAQUIN RIVER NEAR DOS PALOS--	186.0																
San Luis Canal Company	(c)186.6L	Gravity			10005	17899	13720	18194	24234	23034	11373	9346	5669	3060	136534	(d)42582	397
--FIREBAUGH BRIDGE--	198.4																
Ivan N. Zaninovich (e)	205.59L	1-6"						PLANT REMOVED									
Antone Zaninovich	206.02R	1-4"				7			19	24	9				59	20	
--GAGING STATION - SAN JOAQUIN RIVER NEAR MENDOTA--	206.2																
--MENDOTA DAM--	208.63																
--DELTA-MENDOTA CANAL--	208.63																

* Distance along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage as established by War Department Survey 1913-15).
** Plant is located on East Side Canal which leaves the San Joaquin River at Mile 163.6R. Distance from the river along East Side Canal is shown in ().
(a) This acreage also receives an undetermined amount of well water.
(b) New Installation in 1951.
(c) Point of diversion is at head of Temple Slough.
(d) This acreage also received an undetermined amount of well water and controlled drainage.
(e) Pertinent data furnished by U. S. Bureau of Reclamation.

TABLE 184

DIVERSIONS AND ACREAGE IRRIGATED - SAN JOAQUIN RIVER - 1951
(Fremont Ford to Gravelly Ford)
(Cont'd)

Water User	Mile and Bank *	Number and Size of Pump	Monthly Diversions in Acre-Feet												Total Diversion January to December Acre-Feet	Acreage Irrigated	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		General	Rice
San Joaquin Canal Company	(a)208.63	Gravity	10706	9652	39816	72670	69212	75985	82641	76497	46049	8116	7543	3821	(b)502708	(c)126972	5481
Firebaugh Canal Company	(a)208.63	2-24" 2-36" 2-42"		454	7841	8160	7148	8150	11070	12228	6202	2822	1097	196	65368	(d)19697	(d)2165
Grass Lands Water Assn.(e)	(a)208.63	Gravity										25966	4925	2102	32993		
Panoche Water Distribution Assn.(e)	(f)208.63	Gravity	1331	4413	2618	677	370	1087	2868						(g)13364	(h)28972	230
Sam Hamburg (e)	(i)208.63	Gravity	211	159											(j)370		
--FRESNO SLOUGH--	208.93L																
Farmers Water District W. B. Myers	215.25L	1-8"						14	143	76					233		
W. B. Myers (e)	(k)	1-6"	NO DIVERSION														
W. B. Myers (e)	(l)	1-8"				11	19	46	101	47					224		
Raymond Yearout (e)	(l)	2-12"			10	242		171	178	158	106				865		
J. W. Jones (e)	217.03L	Gravity	122	24		49		14	196	57					462		
Z. R. Fultz (e)	218.91L	Gravity				151			104	82	81				418		
A. R. Brown (e)	219.01L	1-4"	PLANT REMOVED														
--LONE WILLOW SLOUGH--	219.8R																
Columbia Canal Company	219.8R	Gravity		83	4877	7198	5050	5496	7468	7133	4338	3598	3245	149	(m)48635	(d)13805	(d)1120
Breakwater Duck Club (e)	219.8R	Gravity	DIVERSION DISCONTINUED														
Ray Flanagan (e)	219.8R	Gravity													(n)		
--GAGING STATION - SAN JOAQUIN RIVER AT WHITEHOUSE--	219.83																
A. R. Brown (e)			415												415		
Rose Campbell	232.55L	1-4"				4		2	6	7					19	10	
R. E. Jones	232.65L	1-5"	PLANT REMOVED														
Gravelly Ford Water Assn.(e)	232.8R	Gravity				464									464	3545	100
--HEAD OF GRAVELLY FORD CANAL--	232.8R																
FREMONT FORD TO GRAVELLY FORD Totals			12812	14785	65167	107580	95632	109235	129145	119574	68180	49848	22479	9328	803765	(o)236227	(o)9493
Average cubic feet per second			208	266	1060	1808	1555	1836	2100	1945	1146	811	378	152	1110		
Monthly use in per cent of seasonal			1.6	1.8	8.1	13.4	11.9	13.6	16.1	14.9	8.5	6.2	2.8	1.1			

* Distance along San Joaquin River from its mouth 4½ miles below Antioch. (Mileage as established by War Department Survey 1913-15).
(a) Point of diversion is considered to be Mendota Pool.
(b) Includes Main Canal, Outside Canal, Helm Canal and Helm Ditch. Excludes diversions through Outside Canal to Dr. E. L. Mott and Panoche Water Distribution Assn. Also excludes diversions through the various canals to the Grass Lands Water Assn.
(c) Includes some double cropping and interplanting.
(d) This acreage also received an undetermined amount of well water.
(e) Pertinent data furnished by U. S. Bureau of Reclamation.
(f) Rediverted from Outside Canal by 3-20" and 2-24" pumps at Mile 23.58L below head.
(g) Conveyance losses plus demand charge amounted to 535 acre-feet. Net of 12,829 acre-feet diverted through pumps.
(h) This acreage also received 9679 acre-feet of water from the Delta Mendota Canal as follows: June-1632, July-1648, August-4300, September-568, November-997 and December-534.
(i) Rediverted from Outside Canal by 2-16" and 1-24" pumps at Mile 25.75L.
(j) Conveyance losses amounted to 15 acre-feet. Net of 355 acre-feet diverted through pumps.
(k) Pump operates at various locations along river and Mowry Canal.
(l) Pump operates at various locations along river.
(m) Includes gravity diversion in Lone Willow Slough and Mowry Canal diversion.
(n) Surplus water deliveries only. None requested during 1951 season.
(o) This is the total acreage available. Does not include acreage of the Grass Lands Water Assn., Sam Hamburg, Farmers Water District and A.R.Brown.

TABLE 185

DIVERSIONS AND ACREAGES IRRIGATED - UPPER SAN JOAQUIN RIVER - 1951
(Gravelly Ford to Friant Dam)

Water User	Mile and Bank *	Number and Size of Pump	Monthly Diversions in Acre-Feet												Total Diversion January to December Acre-Feet	Acreage Irrigated	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		General	Rice
--HEAD OF GRAVELLY FORD CANAL--	232.80R																
Roland Betzer	233.66R	1-6"			23			20	31	38	10				122	60	
W. A. Kochergen	234.00R	1-6"	NO DIVERSION														
M. Nazaroff	234.62L	1-5"	PLANT REMOVED														
Ernest D. Hart	235.03L	1-3"	NO DIVERSION														
E. F. Carlson	235.33R	1-5"			27	25	23	50	63	78	47	14	4		331	(a)93	
William Tolmosoff	236.28R	1-6"							13	15	10				38	(a)35	
Morello Winery	237.33L	1-8"			29	200	40	118	174	104					665	(b)255	

* Distance along San Joaquin River from its mouth 4½ miles below Antioch.
(a) This acreage also received an undetermined amount of well water.
(b) This acreage also received an undetermined amount of Fresno Irrigation District Water.

TABLE 185

DIVERSIONS AND ACREAGES IRRIGATED - UPPER SAN JOAQUIN RIVER - 1951
(Gravelly Ford to Friant Dam)
(Cont'd)

Water User	Mile and Bank *	Number and Size of Pump	Monthly Diversions in Acre-Feet												Total Diversion January to December Acre-Feet	Acreage Irrigated	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		General	Rice
Lorraine Beatty	237.43L	1-6"				3	3	2	4	7	2				21	3	
Milton A. Peterson (a)	237.98R	1-6"				16	15	46	76	80	13				246	79	
--SKAGGS BRIDGE--	238.18																
--BOWSER RECORDING GAGE--	242.41L																
Anderson and Thurman	243.84R	1-5" 1-6"				16	48	81	67	78	53	16	4		363	139	
C. B. Hines	244.03L	1-5"				1	2	1	3	2	1				(b)10	(b)5	
Y. H. Donny and Martin Avakian (c)	244.86L	1-7"	8		13	29	61	43	12	114					280	(d)145	
C. L. Hammar	245.36R	1-6"				65	84	90	82	60	35	16			432	70	
George Mordeca (e)	245.63R	1-1½"					1		1		1				3	1	
Y. H. Donny and Martin Avakian (c)	245.81L	1-6"			12	11	10	6	9	17	7				72	35	
Jasper Ranch	246.15L	1-5"			3	4	4	11	12	10	7		4		55	15	
Jasper Ranch	246.34L	1-8"				12			1				30	8	51	(f)137	
H. W. Valentine	246.73L	1-5"				24	6	21							51	(f)153	
Vincent Jura	246.98L	1-4"						NO DIVERSION									
--U. S. 99 HIGHWAY BRIDGE--	247.38																
--SOUTHERN PACIFIC RAILROAD BRIDGE--	247.40																
Sam Deanda	247.50R	1-5"						NO DIVERSION									
Frank, James and Adolph Oberti	247.64R	1-5"				13	23	9	27	39	34	8	12		165	(g)125	
Frank, James and Adolph Oberti	247.65R	1-4"						NO DIVERSION									
San Joaquin Light and Power Company	247.82R	1-3"				13	13	15	23	20	17	3			104	25	
--HERNDON RECORDING GAGE--	248.31L																
Bud Bradburn	248.51L	1-3"			1	8	8	16	13	10	2	1			59	14	
John Danisi	248.72L	1-5"						PLANT REMOVED									
--SANTA FE RAILROAD BRIDGE--	249.23																
Moosios, Moosios and Vlahos	249.51R	1-4"			10	16									26	(g)25	
Moosios, Moosios and Vlahos	250.56R	1-6"				2	86	86	51						225	(g)113	
Moosios, Moosios and Vlahos	250.76R	1-7"					37								37	(g)42	
Sandstone Land and Cattle Company	251.46L	1-5"	17	18	11	33	27	48	63	54	35	29	11	1	347	90	
J. W. Carrell (h)	253.10L	(i)1-6"				10		15	11	14	11				61	19	
J. W. Carrell (h)	253.30L	(j)1-4"				15		17	47	61	23				163	28	
Fred Russell	253.79R	1-6"			1	6	5	26	25	9	9	8	1		90	45	
L. L. Howard (k)	254.57R	1-5"						NO DIVERSION									
L. L. Howard (k)	254.82R	1-5" 1-6"				28		33	76	101	22				260	(l)73	
L. L. Howard (k)	254.93R	1-6"				32		20	44	64					160	(m)	
Mi-Key Ranches	254.98L	1-7"				62	49	26	102	25					264	(g)46	
Edwald A. Larson #6	**255.00	1-3"							7	23		7			37	18	
Fresno State College (n)	255.05L	1-4"						NO DIVERSION									
Edwald A. Larson #5	255.34R	1-6"			20	9	4	49	98	91	4		6		281	52	
Edwald A. Larson #4	**255.84	(o)1-5"			1	20	25	38	24	82	74	53	8		325	31	
Edwald A. Larson #3	(p)255.93R	1-4"						38	23	50					111	27	
Edwald A. Larson #2	256.52R	1-6"				11		20	63	8	6				108	21	
Richard Holland	257.09L	1-7"						PLANT REMOVED									
Holland Ranch and Development Corporation (q)	257.70L	1-7"				5				32					37	17	
L. D. Cobb	258.08R	1-5" 1-7"			8	34	107	81	87	63	84	30		6	500	136	

* Distance along San Joaquin River from its mouth 4⅛ miles below Antioch.
** Point of diversion and place of use is on island in midstream.
(a) Formerly listed as J. Peterson.
(b) This figure is partially estimated.
(c) Formerly listed as Lionel Steinberg.
(d) This acreage also received an undetermined amount of Fresno Irrigation District water.
(e) Plant installed in 1950, not previously listed.
(f) This acreage also received an undetermined amount of Fresno Irrigation District and well water.
(g) This acreage also received an undetermined amount of well water.
(h) Formerly listed as D. M. Folsom.
(i) The 6" unit replaced a 4" unit in 1951.
(j) The 4" unit at this location replaces the 5" unit formerly listed at Mile 254.93R.
(k) Formerly listed as Howard and Epperson.
(l) This is the combined acreage of this plant and the plant at Mile 254.93R.
(m) See the plant at Mile 254.82R.
(n) Formerly listed as War Dads Memorial.
(o) The 5" unit replaced a 6" unit in 1951.
(p) Plant moved to this location in 1951 from Mile 256.40R.
(q) Formerly listed as Richard Holland.

TABLE 185

DIVERSIONS AND ACREAGES IRRIGATED - UPPER SAN JOAQUIN RIVER - 1951
(Gravelly Ford to Friant Dam)
(Cont'd)

Water User	Mile and Bank *	Number and Size of Pump	Monthly Diversions in Acre-Feet												Total Diversion January to December Acre-Feet	Acreage Irrigated	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		General	Rice
--NEW LANES BRIDGE--	258.33																
R. J. Curtis	258.39L	1-7"			6	9	9	27	30	11	7				99	72	
W. E. Roberts	258.50L	1-4"	NO DIVERSION														
W. E. Roberts	258.80L	1-6"						24	46	38	32	22	7	4	173	(a)160	
W. E. Roberts	258.90L	1-12"	13	6	56	106	84	130	135	141	119	67			857	(b)	
J. E. Cobb	259.30R	1-6"	NO DIVERSION														
J. E. Cobb	259.39R	1-6" 1-7"	32			16		28	67	140	20				303	104	
--SITE OF OLD LANES BRIDGE--	259.78																
Marjorie E. Sims (c)	259.80L	1-6"				24	18	50	52	43	20				207	37	
Duane M. Folsom (d)	261.10L	1-2½"				2	7	6	13	15	10	1			54	15	
R. C. Arnold	261.53R	(e)1-4" 1-6"			11	25		36	25	79	22				198	121	
E. G. Rank (f)	**261.90	1-5"						29	29	18					76	(g)70	
Isabel Burnham (f)	262.00R	1-3"						42	46	24					112	45	
E. G. Rank	**262.07	1-6"						38	36	24					98	(h)	
Duane M. Folsom (i)	262.27L	1-7"				43	63	89	167	122	69	15			568	(j)238	
A. Brown	262.43L	1-5"				16		19	18	50	6				109	(k)72	
E. G. Rank	262.48L	1-5"				2	4	24	14	8	7	12			(l)71	36	
--SAMPLE'S RANCH RECORDING GAGE--	262.66L																
Holland Ranch and Development Corporation (m)	262.66L	1-7"	1			18	25	22	29	3			3		101	(n)101	
E. M. Beebe (f)	262.90L	1-7"					2	28	51	24	15				(o)120	54	
Isabel Burnham	263.40R	1-7"				82	70	82	101	79	57	29	21		521	75	
Andrew Jensen	263.76R	1-5"			29	74	76	55	87	90	68	35	5		519	93	
Pacific Coast Aggregate Company	264.00L	1-6" 1-8"	INDUSTRIAL USE ONLY														
H. W. Ball	(p)264.00L	1-6"				14		19	52	55					140	19	
H. W. Ball	(p)264.00L	1-5"				9	12	19	26	51	10				127	(q)39	
H. W. Ball	264.08L	1-6"			7	10	10	17	41	19	24				128	(r)	
W. F. Ball	264.83L	1-4"	3			31	10	45	67	69	44	9	5		283	45	
V. D. Roullard	265.40L	1-5"		2	2	1	21	56	78	89	20	2			271	28	
Durando and Bellin	267.56L	1-6"	6	4	27	36	32	144	156	157	99	10	3		674	242	
--GAGING STATION - SAN JOAQUIN RIVER BELOW FRIANT--	268.13L																
--FRIANT BRIDGE--	268.88																
Wishon-Watson Company	269.18R	1-5"				38	46	59	49	25	3			7	227	42	
--COTTONWOOD CREEK--	269.53R																
--FRIANT DAM--	269.63																
GRAVELLY FORD TO FRIANT DAM Totals			80	30	297	1279	1170	2114	2747	2723	1159	387	124	26	12136	3880	
Average cubic feet per second			1	1	5	21	19	36	45	44	19	6	2	0	17		
Monthly use in per cent of seasonal			0.7	0.3	2.5	10.5	9.6	17.4	22.6	22.4	9.6	3.2	1.0	0.2			
Friant Kern Canal (s)	269.63L	Gravity			23502	37393	11830	65904	107666	86086	35850	14406	8777		391414	(t)	
Madera Canal (s)	269.63R	Gravity			2200	10701	8977	23076	45807	40975	10624		69		142429	(u)	

* Distance along San Joaquin River from its mouth 4⅛ miles below Antioch.
** Point of diversion and place of use is on island in midstream.
(a) This is the combined acreage of this plant and the plant at Mile 258.90L.
(b) See the plant at Mile 258.80L.
(c) Formerly listed as Marjorie E. Simms.
(d) Plant installed in 1958. Not previously listed.
(e) The 4" unit replaced the 6" unit in August 1951.
(f) New Installation in 1951.
(g) This is the combined acreage of this plant and the plant at Mile **262.07.
(h) See the plant at Mile **261.90.
(i) Formerly listed as D. M. Folsom.
(j) This acreage also received an undetermined amount of well water.
(k) This acreage also received an undetermined amount of water from plant at Mile 262.48L.
(l) This plant furnished an undetermined amount of water to plant at Mile 262.43L.
(m) Formerly listed as Richard Holland.
(n) This acreage also received an undetermined amount of water from plant at Mile 262.90L.
(o) This plant furnished an undetermined amount of water to plant at Mile 262.66L.
(p) Pump is located on pond whose major source of water is from the Pacific Coast Aggregate Company, plant located at this mile.
(q) This is the combined acreage of this plant and the plant at Mile 264.08L.
(r) See the plant at Mile 264.00L.
(s) Pertinent data furnished by U.S.Bureau of Reclamation.
(t) This is supplemental water for acreages as follows: Delano-Earlimart Irrigation District-43832, Exeter Irrigation District-10999, Ivanhoe Irrigation District-9584, Lindmore Irrigation District-24210, Lindsay-Strathmore Irrigation District-9295, Lower Tule Irrigation District-72444, Orange Cove Irrigation District-17386, Porterville Irrigation District-14320, Saucelito Irrigation District 14682, South San Joaquin Mutual Utility District-43052, Stone Corral Irrigation District-4540, Terra Bella Irrigation District-3019, Tulare Irrigation District-61549, Wahtoke Water Association-7173, Yettem-Seville Water Association-4592.
(u) This is supplemental water for acreages as follows: Madera Irrigation District-79074, Chowchilla Water Storage Association-48789.

TABLE 186

DIVERSIONS AND ACREAGES IRRIGATED - FRESNO SLOUGH AND JAMES BY-PASS[a] - 1951
(The following table arranged from data furnished by U.S. Bureau of Reclamation)

Water User	Mile and Bank *	Number and Size of Pump	Monthly Diversions in Acre-Feet												Total Diversion January to December Acre-Feet	Acreage Irrigated	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		General	Rice
Farmers Water District W. J. Fortier	2.04R	1-8"					109	46	37				50		242		
E. P. Jennings	2.85L	1-14"	PLANT DISCONTINUED														
E. P. Jennings	2.90L	1-12"	PLANT DISCONTINUED														
P. R. Engleman	6.40R	1-24"	PLANT DISCONTINUED														
Borland Water District	6.45L	1-8"			248	185	279	229	452	458	1221	338			(b)3410	(b)2765	100
Borland Water District	7.10L	1-24"													(c)	(c)	(c)
Borland Water District	8.20L	1-30" 1-36"													(c)	(c)	(c)
Traction Ranch	9.60R	1-20"			79	458	571								(d)1108		
--JAMES BY-PASS--	11.80R																
Traction Ranch	**(0.75)	1-20"															
James Irrigation District "P" Booster	**(4.4)	1-14" 1-16"		297	2327	927		847	1934	2286	355	108			(f)9081	(f)14416	
Kerman Cattle Company	**(4.5)	1-12"	NO DIVERSION														
James Irrigation District "N" Booster	13.25R	1-14" 1-20" 1-24"													(g)	(g)	
J. W. Wilson	13.50L	1-12"			114			162	155	179					610		
Tranquillity Irrigation District Lift #1	14.10L	1-24" 1-20"			2875	908	3813	4608	6608	7481	1183				(h)27476	(h)6356	1600
Tranquillity Irrigation District Lift #2	15.90L	2-24" 2-30"													(i)	(i)	
Totals			0	297	5643	2478	4772	5892	9186	10404	2759	446	50	0	41927	23537	1700
Average cubic feet per second			0	5	91	41	77	98	149	168	46	7	1	0	58		
Monthly use in per cent of seasonal			0	.7	13.4	5.9	11.4	14.1	21.9	24.8	6.6	1.1	.1	0			

* Mileages listed are miles above the mouth of Fresno Slough. Mouth of Fresno Slough is at Mile 208.93 above mouth of San Joaquin River.

** Plant diverts Fresno Slough water at this mile. Figure in () indicates mileage along James By-Pass from Fresno Slough.

(a) Formerly listed as Fresno Slough and Fresno Slough By-Pass. The water in Fresno Slough and James By-Pass is mainly derived from the San Joaquin River by the Mendota Pool backwater created by Mendota Dam, and is occasionally augmented by Kings River via James By-Pass.

(b) Combined acreage and diversions of this plant and plants at Miles 7.1L and 8.2L

(c) See the plant at Mile 6.45L.

(d) Combined diversion of this plant and the plant at Mile *(0.75)

(e) See the plant at Mile 9.6L.

(f) Combined acreage and diversion of this plant and the plant at Mile 13.25R. Additional water received from Kings River through James Main Canal.

(g) See the plant at Mile *(4.4).

(h) Combined acreage and diversion of this plant and the plant at Mile 15.9L. Additional water obtained from wells and from Kings River through Beta Main Canal.

(i) See the plant at Mile 14.1L.

TABLE 187

DIVERSIONS AND ACREAGES IRRIGATED - MERCED RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
--HILLS FERRY BRIDGE--	1.1												
Stevinson Water District #1	1.8R	1-16"			60	124	80	84	91		439	200	
Stevinson Water District #2	3.8R	1-20"		93	469	538	387	310	304	320	2421	600	
Milton Gordon	4.3L	1-10"	2	24	34	35	36	40	26	15	212	66	
--GAGING STATION - MERCED RIVER NEAR STEVINSON--	4.6												
Salvador De Angelis	4.8L	1-12"			15	13	7	12	6		53	33	
Maria De Angelis	5.8L	1-12"			56	62	39	35	30		222	93	
Lydell Peck	6.1L	1-15"		1	151	125	188	255	55	59	834	260	
Stevinson Water District #3	7.7L	1-20"	33	223	17	91	473	189	103		1129	(a)1121	
Manuel Clemintino	8.5L	1-12"			9	39	35	35	23		141	100	
Manuel Clemintino	8.9L	1-12"		13	67	84	35	30	33		262	100	
Samuel B. McCullagh	9.4L	1-12"		95	140	142	108	136	79	61	761	229	
J. R. Jacinto	9.6L	1-12"		48	46	64	72	77	64	4	375	113	
R. W. Adams and Mrs. J. B. Silva	10.35L	1-8" 1-10"		150	153	266	237	282	185	28	1301	404	
R. E. Prusso	10.8R	1-6"				10	8	2	8	3	31	25	
Manuel Freitas	10.9L	1-12"		12	172	114	125	207	110		740	80	

(a) This acreage also received an undetermined amount of East Side Canal water.

TABLE 187

DIVERSIONS AND ACREAGES IRRIGATED - MERCED RIVER - 1951
(Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
R. E. Prusso and John Vierra	10.9L	1-5" 1-12"	34	34	59	139	179	78	25	4	552	219	
Tony Vierra	11.6L	1-6" 1-8"	53	44	143	121	83	173	99		716	122	
J. Regello	11.6L	1-12"		30	14	58	79	46	20		247	133	
--MILLIKEN BRIDGE--	11.65												
M. Turner	11.7R	(a)1-4"						3			3	30	
E. and J. Gallo Winery Ranch	12.35L	1-10"		27	49	63	56	21			(b)216	(c)140	
Soren Husman	12.4L	1-6"	5	5	7	22	4	17	9	4	73	26	
M. Turner	12.8R	(a)1-4"				5	2				7	35	
E. and J. Gallo Winery Ranch	12.85L	1-10"	12	53	132	215	182	142			(d)736	(c)240	
M. Turner	13.4R	(a)1-4"				NO DIVERSION							
Leonard Sward	14.3R	1-6"		11	6	10	12	16	7	2	64	45	
J. M. Souza	14.5L	1-10"			72	41	64	39	16	16	248	81	
Leonard Sward	14.8R	2-6"				NO DIVERSION							
Conie Koehn	14.8L	1-5"				NO DIVERSION							
Leonard Sward	15.4R	2-6"				NO DIVERSION							
Frank Cole	16.2R	1-7"		11	17	18	21	20	17	5	109	25	
E. and J. Gallo Winery Ranch	16.5L	1-10"	3	50	18	209	199	74			(e)553	150	
C. J. Carpenter	17.05L	1-7"			11	11	21	8	20	1	72	35	
--RECORDING GAGE--	17.1												
Ervey Schmidt	17.7L	1-5"			5	9	13	11	6		44	14	
J. H. Thomas	17.85L	1-6"	1	11	9	21	18	24	18	8	110	27	
John Francis	18.1R	(f)1-5" 1-6"		3	25	6	22				56	22	
C. P. Hockett	18.5L	1-4"		2	2	3	8	6	3	3	27	14	
John Francis	18.6R	(f)1-5" 1-6"		5		9	27	28			69	14	
S. P. Magsalay	19.8L	1-6"	9	16	25	12	10	5	7	4	88	20	
Howard A. Jones	19.8L	1-6"	3	6	15	9	16	6	3	3	61	20	
John Francis	20.3R	(f)1-5" 1-6"				12	4	3			19	18	
H. P. Juneman (g)	20.4L	(h)1-7"		7		24	47	58	11		147	80	
G. L. Carlson	20.6R	1-6"		7	16	23	26	25	12	32	141	31	
G. L. Carlson	20.65R	1-4"				NO DIVERSION							
--HIGHWAY 99 BRIDGE--	21.04												
--SOUTHERN PACIFIC RAILROAD BRIDGE (MAIN LINE)--	21.05												
A. C. Jorgensen #1	21.05R	1-6"			8	11	12	2	8		41	27	
Ben Bartlett	21.5L	1-6"					21				21	50	
A. C. Jorgensen #2	22.2R	1-16"		144	128	151	127	135	69		754	287	
A. C. Jorgensen #3	22.8R	(i)1-12" 1-15"		115	111	43	107	122	58		556	265	
A. C. Jorgensen #4	23.6R	1-8"				15	15	20			50	70	
C. H. Passadori, Jr. (j)	24.2R	1-6"				26	34	28	6	2	96	40	
Warren F. McConnell	24.2L	1-5"				NO DIVERSION							
T. Nishihara	24.3R	1-5"				NO DIVERSION							
Warren F. McConnell	24.5L	1-6"			26	5	53		6		90	42	
T. Nishihara	24.6R	1-6"				2	1			1	4	26	
T. Nishihara	25.0R	1-5"				NO DIVERSION							
T. Nishihara	25.5R	1-6"		10	10	16	11	9			56	67	
Merced River Farms Association	26.3R	1-8"		91	114	122	162	156	115	43	803	101	
W. C. Magneson	26.55R	1-5" 1-6"		3	6	10	8	9	10	1	(k)47	13	
Carl Cunningham	26.8L	1-8"				NO DIVERSION							
--SANTA FE RAILROAD BRIDGE--	27.05												

(a) This is a portable unit which diverts water at Miles 11.7R, 12.8R and 13.4R.
(b) Additional acre-feet diverted: November 5.
(c) This acreage also received an undetermined amount of well water.
(d) Additional acre-feet diverted: November 55.
(e) Additional acre-feet diverted: November 134.
(f) These are portable units which divert water at Miles 18.1R, 18.6R and 20.3R.
(g) Formerly listed as Rudolph Reininghaus.
(h) The 7" unit replaced a 6" unit formerly listed at this location.
(i) A 6" unit formerly listed at this location was removed in 1951.
(j) Formerly listed as Manuel A. Bettencourt.
(k) Additional acre-feet diverted: November 1.

TABLE 187

DIVERSIONS AND ACREAGES IRRIGATED - MERCED RIVER - 1951
(Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
W. C. Magneson	27.5R	1-10"				73	79	49	106	57	364	135	
--GAGING STATION - MERCED RIVER AT CRESSY BRIDGE--	27.6												
T. Nishihara	27.8R	1-4" 1-6"		4	1	20	10	17	4	6	62	30	
M. Uyekubo	28.1R	1-5"		7	6	7	10	6	2	1	39	20	
John Farie	28.4R	1-5"		6	4	4	3	4	1	1	23	18	
J. Campadonica	28.6R	1-6"				6	6	4	6		22	12	
Oliver Alves	28.6R	1-8"				38	32	19			89	86	
Anthony Demchille	29.1R	1-7"				8	27	39			74	38	
Anthony Demchille	29.75R	1-6"				3	21	13	7		44	47	
Manuel Silva (High Lift)	29.9R	1-6"				NO DIVERSION							
Manuel Silva (Low Lift)	29.9R	1-6"			10	4	90	19	27		150	70	
Rose and Shaffer	30.7L	1-6"	6	39	56	40	21	38	40	21	261	60	
Manuel Silva	30.95R	1-12"			12	212	99	157	19		499	185	
Rose and Shaffer	31.1L	1-8"			18	92	17	65	41	9	242	80	
Manuel Silva	31.5R	1-6"				NO DIVERSION							
--SOUTHERN PACIFIC RAILROAD BRIDGE (OAKDALE BRANCH)--	32.52												
Jack Pretzer	33.1R	1-6"		32	75	59	109	121	96	24	(a)516	87	
A. L. Felling	33.2L	1-2" 1-4"			1	2	2	2	1	1	9	6	
Jack Pretzer	33.55R	1-6"		39	11	94	47				191	142	
W. F. Bettencourt, P. Halaris and Cowel Land and Cement Company	36.9L	Gravity		119	736	712	736	736	665		3704	1069	
Reinero Brothers	39.2L	1-24"				NO DIVERSION							
E. M. Davis	40.2L	1-4"				50	42	31	1		124	50	
--GAGING STATION - MERCED RIVER BELOW SNELLING--	42.1												
Totals			161	1590	3347	4572	4825	4298	2678	739	22210	8088	
Average cubic feet per second			3	27	54	77	78	70	45	12	46		
Monthly use in per cent of seasonal			0.7	7.2	15.1	20.6	21.7	19.3	12.1	3.3			
Merced Irrigation District	(b)46.0	Gravity											
Totals - Main Canal			11921	75325	75369	94809	100317	86054	64121		507916	108432	4520
Average cubic feet per second			194	1266	1226	1593	1631	1399	1078		1045		
Monthly use in per cent of seasonal			2.4	14.8	14.8	18.7	19.8	16.9	12.6				
Totals - Northside Canal			286	3679	2902	4608	4758	4195	3352	401	(c)24181	(d)	(d)
Average cubic feet per second			5	62	47	77	77	68	56	7	50		
Monthly use in per cent of seasonal			1.2	15.2	12.0	19.0	19.7	17.3	13.9	1.7			

(a) Additional acre-feet diverted: November-43.
(b) This is the approximate mileage of the Crocker-Hoffman Diversion Dam.
(c) Additional acre-feet diverted: November-208 and December-315.
(d) No acreage figures available.

TABLE 188

DIVERSIONS AND ACREAGES IRRIGATED - TUOLUMNE RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
E. T. Mapes	1.9R	1-20"	56	156	81	138	72	104	38	22	(a)667	(b)2650	
J. DeSouza and J. B. Silva	2.2R	1-6"			1	12	8	13	6		40	16	
Katheiser Brothers	3.1R	1-16"				PLANT REMOVED							
--GAGING STATION - TUOLUMNE RIVER AT TUOLUMNE CITY--	3.35												
Russel Murray	3.4L	1-5"				26		38	14	9	87	20	
Bancroft Fruit Farms	4.1R	1-12"		26	4	39	41	32	32	3	177	76	
Bancroft Fruit Farms	5.0R	1-10"	10	22	66	93	82	98	31	27	(c)429	183	

(a) Additional acre-feet diverted: November-28.
(b) This acreage also received an undetermined amount of controlled drainage water from the Modesto Irrigation District.
(c) Additional acre-feet diverted: November-31 and December-1.

TABLE 168

DIVERSIONS AND ACREAGES IRRIGATED - TUOLUMNE RIVER - 1951
(Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
R. L. Maxfield	6.9R	1-7"		2	1	16	13	6	7	5	50	17	
Eugene Boone, Galen Hartwich and Tony Lemos (a)	7.1R	1-10"			12	17	12	27	14		82	45	
W. F. Duffy	7.2R	1-7"		3	2	12	13	6	11	2	49	49	
Ella T. Rahilly	7.6L	1-10"				NO DIVERSION							
W. F. Duffy	8.4R	1-10"		26	13	75	70	58	40		(b)282	63	
A. C. Watkins	9.4L	1-12"				NO DIVERSION							
Tuolumne Cooperative Farms, Inc.	10.2R	1-10" 1-14"		17	47	53	71	93	38	17	(c)336	98	
G. B. and L. D. Podesto	15.75R	1-3"		2	2	3	4	4			15	20	
--SOUTHERN PACIFIC RAILROAD BRIDGE (MAIN LINE)--	15.8												
--GAGING STATION - TUOLUMNE RIVER AT MODESTO--	15.92												
--HIGHWAY 99 BRIDGE--	16.05												
--DRY CREEK CONFLUENCE--	16.5R												
Modesto Terminal Company	20.1R	1-8"				NO DIVERSION							
James H. Wayland	20.3R	1-10"		27	35	56	60	48	40	19	285	70	
L. J. Foit (d)	20.4L	1-5"			7	20	20	20			67	18	
R. L. Heimann	20.5R	1-12"		15	25	15	26	33	23	3	140	83	
--SANTA FE RAILROAD BRIDGE--	21.6												
G. R. Trent	23.5R	1-6"			10	15	8	19	9	1	62	38	
C. S. Blakesley	23.6R	1-6"	1	6	3	8	10	4	5		37	16	
M. A. Goodman and Sons	25.6R	1-2"			1	6	3	3	6		19	14	
H. W. Low	27.0L	1-4"		30	29	27	29	30	30	10	185	50	
George H. Johnson	27.1R	1-8"				NO DIVERSION							
Paul J. Ferguson	27.3R	1-10"			3	19		18			40	20	
B. and L. Ranch	27.9R	1-12"				47	60	11			118	40	
Ronald R. Painter	28.3R	1-7"				11	15	2	5		33	28	
J. W. and Lola May Short	28.7L	1-7"				PLANT REMOVED							
Michel Investment Company	28.8R	1-12"	84	39	100	52	48	41	10		374	(e)150	
J. W. and Lola May Short	29.4L	1-7"				NO DIVERSION							
Firpo Ranch	30.2L	1-10"		29	35	107	85	26	21		303	105	
Oscar Jones	30.4R	1-4"			1	2	2	1			6	4	
--SOUTHERN PACIFIC RAILROAD BRIDGE (OAKDALE BRANCH)--	31.5												
--GAGING STATION - TUOLUMNE RIVER AT HICKMAN BRIDGE--	31.7												
A. G. Laughlin	34.2R	1-6"			5	7	5	2	3		22	17	
Donald Ketcham	38.4R	1-5"		4	5	2	2	1	5		19	5	
A. E. Ketcham	39.4R	1-8"		23	22	48	39	44	29	10	215	100	
George H. Sawyer	39.8L	1-6"		22	46	5	23	58	52	18	224	(f)452	
--GAGING STATION - TUOLUMNE RIVER AT ROBERTS FERRY BRIDGE--	39.9												
Dolling Brothers	46.3R	1-8"	3	28	30	48	45	50	34	14	252	50	
--GAGING STATION - TUOLUMNE RIVER AT LA GRANGE BRIDGE--	50.5												
Totals			154	477	586	979	866	890	503	160	4615	4497	
Average cubic feet per second			3	8	10	16	14	14	8	3	9		
Monthly use in per cent of seasonal			3.3	10.3	12.7	21.2	18.8	19.3	10.9	3.5			
TURLOCK IRRIGATION DISTRICT (g)	53.5L	Gravity											
Totals			3380	98868	83845	99590	76933	75744	71024	12470	(h)521859	163725	
Average cubic feet per second			55	1662	1364	1674	1251	1232	1194	203	1074		
Monthly use in per cent of seasonal			0.7	18.9	16.1	19.1	14.7	14.5	13.6	2.4			
MODESTO IRRIGATION DISTRICT (g)	53.5R	Gravity											
Totals			10421	50978	55930	54999	39707	36718	29190	12342	(i)290285	70531	507
Average cubic feet per second			169	857	910	924	646	597	491	201	597		
Monthly use in per cent of seasonal			3.6	17.6	19.3	18.9	13.7	12.6	10.1	4.2			
WATERFORD IRRIGATION DISTRICT (g)	53.5R	Gravity											
Totals			831	5858	6257	7296	7035	6371	4588	3379	41615	(j)6700	
Average cubic feet per second			14	98	102	123	114	104	77	55	86		
Monthly use in per cent of seasonal			2.0	14.1	15.1	17.5	16.9	15.3	11.0	8.1			

(a) Formerly listed as Eugene Boone, Galen Hartwich and William Podesto.
(b) Additional acre-fest diverted: November-2.
(c) Additional acre-feet diverted: November-20.
(d) Installed prior to 1951, not previously listed.
(e) Of this figure 75 acres were double cropped.
(f) This acreage also received an undetermined amount of well water.
(g) This is the approximate mileage of La Grange Dam.
(h) Additional acre-feet diverted: January-2723, February-16140, November-3463 and December-23841.
(i) Additional acre-feet diverted: January-106, February-3568, November-9584 and December-1756.
(j) Of this figure 246 acres were double cropped or interplanted.

TABLE 189

DIVERSIONS AND ACREAGES IRRIGATED - DRY CREEK - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
Podesto and Arata	0.4R	1-6"			3	13	10	8	4		38	(a)125	
--MODESTO EMPIRE TRACTION COMPANY RAILROAD BRIDGE--	0.7												
--HIGHWAY 132 BRIDGE (YOSEMITE BOULEVARD)--	0.8												
--LA LOMA BOULEVARD BRIDGE--	1.2												
James L. Melrose #1	5.0L	1-3"		1	2	1	4		2		10	7	
James L. Melrose #2	5.3L	1-6"	NO DIVERSION										
--GAGING STATION - DRY CREEK NEAR MODESTO (CLAUSS ROAD BRIDGE)--	5.4												
--SANTA FE RAILROAD BRIDGE--	6.4												
--CHURCH STREET BRIDGE--	7.2												
--WELLS FORD ROAD BRIDGE--	8.7												
Roy Brant	10.6R	1-5"	2	2			4	4			12	(b)23	
--ALBERS ROAD BRIDGE--	11.0												
--MODESTO IRRIGATION DISTRICT CANAL CROSSING--	11.1												
Lucksinger Brothers	12.1R	1-6"				9	10	1			20	12	
John Lewis	12.6R	1-4"			10	5	24	36	38	41	154	(c)100	
Lucksinger Brothers	12.7R	1-6"			3		18	7	12	11	51	(c)34	
W. C. Hopper	12.9L	1-4"	NO DIVERSION										
Harold D. Carver	14.4L	1-4"		1	3	3	3	3	3		16	(d)16	
Joe Fagundes	14.7R	1-10"	64	89	138	142	131	114	94	59	831	(d)90	
H. H. French	17.2R	1-8"		4	7	6	7	13	4	3	44	22	
--SOUTHERN PACIFIC RAILROAD BRIDGE (OAKDALE BRANCH)	17.3												
--OAKDALE WATERFORD HIGHWAY BRIDGE--	17.4												
Totals			66	97	166	179	211	186	157	114	1176	429	
Average cubic feet per second			1	2	3	3	3	3	3	2	2		
Monthly use in per cent of seasonal			5.6	8.3	14.1	15.2	17.9	15.8	13.4	9.7			

(a) This acreage also received an undetermined amount of controlled drainage water from Modesto Irrigation District.
(b) This acreage also received an undetermined amount of Modesto Irrigation District water.
(c) This acreage also received an undetermined amount of Oakdale Irrigation District water.
(d) This acreage also received an undetermined amount of Waterford Irrigation District water.

TABLE 190

DIVERSIONS AND ACREAGES IRRIGATED - STANISLAUS RIVER - 1951

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
A. S. Machado	1.1R	1-6"			12		13	10			35	29	
E. W. Hawkins	1.8R	1-6"						17			17	35	
A. J. Chisholm	2.9R	1-8"		16		28	12	32	9		97	40	
--GAGING STATION - STANISLAUS RIVER NEAR MOUTH--	(a)2.9												
C. M. Carroll	3.0R	1-6"		20	28	32	25	27	11	22	165	35	
A. Bianchi	4.4R	1-18"		7	155	162	87	117	1	75	604	(b)340	
N. Smallwood	4.7R	1-5"	PLANT REMOVED										
Overton Ranch (D.F.Koetitz)	5.25L	2-12"		137	174	187	265	276	192	119	1350	435	
Reclamation District #2064	5.9R	1-14" 1-16" 1-20"	283	987	949	1340	1448	1288	891	404	(c)7590	1593	
Reclamation District #2075	5.95R	2-16" 1-20"	775	1605	2338	2495	2238	2266	1742	752	(d)14211	2315	
Henry Pelucca	6.7L	1-15"			77	25	33	29	24	20	208	62	

(a) Station installed at this mile in August, 1951. The former station, listed at Mile 4.3, was destroyed in the flood of November, 1950.
(b) Includes 40 acres which also received an undetermined amount of water from Plant at Mile 5.9R.
(c) This plant furnished an undetermined amount of water to 40 acres of general crops of Plant at Mile 4.4R.
(d) Additional acre-feet diverted: November-21.

TABLE 190

DIVERSIONS AND ACREAGES IRRIGATED - STANISLAUS RIVER - 1951
(Cont'd)

Water User	Mile and Bank above Mouth	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.	Sept.	Oct.		General	Rice
C. C. Updike	8.2L	1-12"				NO DIVERSION							
Ekelund Ripon Ranch (a)	9.8R	1-16"	41	170	311	248	286	282	218	69	1625	392	
N. E. Cannon	10.0R	1-10"	59	164	201	246	269	227	153	150	(b)1469	215	
D. F. Koetitz	10.1L	1-10"		133	184	274	271	291	216	107	(c)1476	368	
--RECORDING GAGE--	10.2												
Joseph Hertle	10.5L	1-10"			11	20	48	25			104	100	
G. S. Tornell	13.1R	1-12"		11	1	8	67	45			132	40	
R. V. Konenyburg	13.9R	1-8"			36	50	32	36	20	12	186	54	
--SOUTHERN PACIFIC RAILROAD BRIDGE (MAIN LINE)--	15.9												
--GAGING STATION - STANISLAUS RIVER NEAR RIPON--	16.0												
--HIGHWAY 99 BRIDGE--	16.0												
A. Girardi	17.0L	1-16"	3	73	21	106	144	265	37		649	(d)229	
Edward B. Regan	18.8R	1-14"		1		102	160	184	25		472	209	
Edward B. Regan	19.4R	1-6"				5		4	2		11	15	
Allen Ranch	20.75R	1-14"		269	277	338	228	328	470	174	(e)2084	250	
Heath Ranch	20.9L	1-5"				16	14	12	12		54	10	
B. Bonora	21.6R	1-6"		8	11	5	11	5			40	22	
B. Bonora	21.75R	1-10"		4		33	17	15	4		73	40	
John Birdwell	22.5L	1-7"			39	40	1	27	24		131	30	
Ruth M. Ladd	23.4L	1-4"		16				2			18	70	
George Dahlgren	24.8R	1-5"					PLANT REMOVED						
George Dahlgren	25.5R	1-5" (f)1-10"		28	48	23	23	18	9		149	(g)53	
--MODESTO ESCALON HIGHWAY BRIDGE--	28.1S												
--SANTA FE RAILROAD BRIDGE--	31.8S												
--GAGING STATION - STANISLAUS RIVER AT RIVERBANK--	32.0												
O. B. Trette	32.1R	1-2" 1-4"					NO DIVERSION						
R. P. Barton	34.1R	1-6"						1			1	(h)	
R. P. Barton	34.6R	1-7"			2	36	25	21			84	(i)162	
Oakdale Irrigation District (Crawford Pump)	(j)35.9L	1-14"		51	106	158	188	325	90	20	938	(k)546	
Oakdale Irrigation District	(j)37.0L	1-12"		12	29	75	122	121	57	28	444	(l)575	
--OAKDALE STOCKTON HIGHWAY BRIDGE--	38.9												
--SOUTHERN PACIFIC RAILROAD BRIDGE (OAKDALE BRANCH)--	39.0												
--GAGING STATION - STANISLAUS RIVER AT ORANGE BLOSSOM BRIDGE--	44.7												
Harry Himes	46.1L	1-6"		2	8	12	15	14	6	1	58	25	
William R. Williamson	46.8L	1-6"	2	5	13	22	24	9	11	5	91	20	
Walter B. Wilms	47.5L	1-10"		14	12	15	10	14	16	12	93	27	
Totals Average cubic feet per second Monthly use in per cent of seasonal			1163 19 3.4	3733 63 10.8	5043 82 14.5	6101 103 17.6	6076 99 17.5	6333 103 18.3	4240 71 12.2	1970 32 5.7	34659 71	8336	
SOUTH SAN JOAQUIN I.D. (m)50.2 Totals Average cubic feet per second Monthly use in per cent of seasonal		Gravity	12497 203 5.8	42930 721 20.1	33711 548 15.7	45483 764 21.3	37894 616 17.7	32466 528 15.2	8904 150 4.2	0 0 0	(n)213885 440	(o)63652	190
OAKDALE IRRIGATION DISTRICT (m)50.2 Totals - Northside Average cubic feet per second Monthly use in per cent of seasonal		Gravity	1834 30 2.3	16625 279 20.7	16324 265 20.4	16793 282 21.0	13283 216 16.6	11674 190 14.6	3503 59 4.4	0 0 0	80036 165	(p)20984	1494
Totals - Southside Average cubic feet per second Monthly use in per cent of seasonal			2367 38 1.8	25668 431 19.7	22306 363 17.1	29003 487 22.3	24674 401 18.9	20728 337 15.9	5618 94 4.3	0 0	130364 268	(q)33874	566

(a) Formerly listed as Caswell Bros.
(b) Additional acre-feet diverted: November-1.
(c) Additional acre-feet diverted: February-14.
(d) Of this figure, 35 acres also received an undetermined amount of Modesto Irrigation District water.
(e) Additional acre-feet diverted: November-2.
(f) The 10" unit was installed in 1951.
(g) Of this figure, 33 acres also received an undetermined amount of well water.
(h) See the plant at Mile 34.6R.
(i) This is the combined acreage of this plant and the plant at Mile 34.1R.
(j) Oakdale Irrigation District for season of 1951 maintained plants at Miles 35.9L and 37.0L, to supplement District gravity supply.
(k) Of this figure 226 acres was double cropped.
(l) This acreage also received an undetermined amount of well water. Of this figure 100 acres was double cropped.
(m) This is the approximate mileage of Goodwin Dam.
(n) Additional acre-feet diverted in 1950, December-2686, and in 1951, January-3832 and February-9192.
(o) Of this figure 2090 acres was double cropped. Includes 4520 acres served by sub-irrigation. This acreage also received an undetermined amount of water from controlled drainage and deep wells.
(p) Of this figure 165 acres was double cropped.
(q) Of this figure 568 acres was double cropped.

TABLE 191

DIVERSIONS AND ACREAGES IRRIGATED - TULE RIVER - 1951

Water User	Mile and Bank *	Number and Size of Pump	Monthly Diversions in Acre-Feet												(a) Total Diversion January to December Acre-Feet	Acreage Irrigated	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		(b) General	Rice
S. W. Templeton	0.2R	(c)1-2½"				1	2	4	7	3	36	20		4	77	27	
Pioneer Ditch	0.3R	Gravity		14	303	1298	1195	1550	305			16	514	754	5949	(d)1738	
S. W. Templeton	0.4L	1-4"	NO DIVERSION														
Rosedale Water Company	1.5L	2-4"				16	20	24	31	26	22	19			158	172	
--GAGING STATION - TULE RIVER AT WORTH BRIDGE--	2.2																
Campbell-Moreland Ditch	3.2L	Gravity	410	1042	671	636	986	532	126			28	309	1090	(e)5830	872	
Porter Slough	3.2R	Gravity	4941	4402	1874	878	2995	48					24	3695	18857	(f)	
Porter Slough Ditch	(g)3.2R	Gravity	19	513	775	39	489							49	1884	(h)1038	
Vandalia Ditch	3.9L	Gravity	171	422	255	203	307	196					84	415	2053	(i)158	
--SANTA FE RAILROAD BRIDGE--	5.9																
Poplar Ditch	6.6L	Gravity	493	1534	2636	2062	2409	383						8	9525	(j)4908	
--HIGHWAY 65 BRIDGE--	6.7																
--SOUTHERN PACIFIC RAILROAD BRIDGE--	6.8																
Hubbs-Miner Ditch	7.2R	Gravity	451	561	632	556	851	516						143	(k)3710	(l)2118	
Rhodes-Fine Ditch	9.2L	Gravity		99	413	206	478	145							1341	1034	
--OLIVE AVENUE BRIDGE--	10.7																
--FRIANT KERN CANAL CROSSING--	11.3																
Woods-Central Ditch	11.8L	Gravity	REMOVED														
--ROCKFORD AVENUE BRIDGE--	12.6																
--HUBBS-MINER SPILL--	12.9R																
--GAGING STATION - TULE RIVER ABOVE LITTLE PIONEER DITCH--	14.4																
Little Pioneer Ditch	15.0L	Gravity			163	269	23	(m)81	(m)358	581	133				(m,n)1608	209	
--OTTLE BRIDGE--	15.2																
Totals			6485	8587	7722	6164	9755	3479	827	610	191	83	931	6158	50992	12274	
Average cubic feet per second			105	155	126	104	159	58	13	10	3	1	16	100	70		
Monthly use in per cent of seasonal			12.7	16.8	15.2	12.1	19.1	6.8	1.6	1.2	0.4	0.2	1.8	12.1			
Poplar Ditch near Poplar (o)				20	658	305	441	875	2420	3353	586	30			8888		

* Mileage indicated in miles downstream from junction with south fork of Tule River.

(a) By agreement all the flow of the Tule River from March 19th to April 10th each year is for use by those diverters below Ottle Bridge. With a firm water supply, the diversion from the Tule River would extend throughout the entire twelve months of each year. Supplemental diversion from wells becomes total source of water as flows of the Tule River ceases to be available.

(b) The total service areas of the Ditch Companies are as follows: Pioneer Ditch Company-2395 acres, Campbell-Moreland Ditch Company-3400 acres, Porter Slough Ditch Company-2720 acres, Vandalia Irrigation District-1275 acres, Poplar Ditch Company-8640 acres, Hubbs-Miner Ditch Company-1935 acres, Gilliam-McGee Ditch Company-360 acres, Rhodes-Fine Ditch Company-1180 acres and Little Pioneer Ditch-1020 acres.

(c) This unit replaced a 4" unit formerly listed at this location.

(d) This acreage is partially estimated.

(e) Includes an undetermined amount of water served to the Vandalia Irrigation District.

(f) Use other than for replenishing groundwater is negligible.

(g) The point of diversion is on Porter Slough, 4.5 miles from head of Slough.

(h) Includes 713 acres which also received an undetermined amount of water from the Friant-Kern Canal.

(i) This acreage also received an undetermined amount of water from the Campbell-Moreland Ditch. This acreage is pasture land and is also used as a well field by the Vandalia Irrigation District which irrigated an additional 1185 acres in 1951.

(j) This acreage also received an undetermined amount of water from the Friant-Kern Canal and wells. An additional 3400 acres was irrigated by well water.

(k) This figure is measured diversion at head minus measured spill to river at Mile 12.9. Hubbs-Miner Ditch Company receives approximately 71.4 per cent of measured diversion at head while Gilliam-McGee Ditch Company receives approximately 28.6 per cent.

(l) Includes 951 acres which also received an undetermined amount of water from the Friant-Kern Canal. Includes 1810 acres in the Hubbs-Miner Ditch Company and 308 acres in the Gilliam-McGee Ditch Company.

(m) Does not include unrecorded diversions between June 20th to July 11th.

(n) Tule River water was diverted in the following amounts: March-163 acre-feet, April-116 acre-feet, and May 23-acre-feet. All other water was derived from the Friant-Kern Canal and transported via this ditch to the Lower Tule Irrigation District.

(o) This is the amount of water leaving the Porterville Irrigation District via Poplar Ditch and includes Tule River and Friant-Kern Canal water.

TABLE 192

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

	Period of Record	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
SACRAMENTO VALLEY									
Sacramento River - Redding to Sacramento	1941 to 1951	0.5	7.4	17.6	18.7	20.9	19.7	11.3	3.9
Feather River - Oroville to Mouth	1941 to 1951	0.1	5.0	18.0	19.4	20.7	18.9	12.1	5.8
Yuba River - Smartville to Mouth	1941 to 1951	0.2	5.4	14.9	16.9	17.8	17.4	15.0	12.4
American River - Fairoaks to Mouth	1941 to 1951	1.0	1.8	5.9	20.1	27.5	23.2	16.2	4.3
DELTA UPLANDS									
Old San Joaquin River	1941 to 1951	3.0	9.6	16.3	17.1	20.0	17.3	11.4	5.3
Tom Paine Slough	1941 to 1951	1.4	9.5	15.0	16.6	19.6	19.0	14.5	4.4
San Joaquin River - Vernalis to Stockton	1941 to 1951	3.5	13.0	15.6	14.8	21.0	18.4	9.9	3.8
SAN JOAQUIN VALLEY									
San Joaquin River - Fremont Ford Bridge to Vernalis	1941 to 1951	3.7	12.4	15.3	15.3	21.3	18.3	10.9	2.8
San Joaquin River - Friant to Fremont Ford Bridge	1946 to 1951	7.9	12.6	14.0	14.7	17.0	15.1	10.7	8.0
Merced River - Yosemite Valley Railroad Crossing to Mouth	1941 to 1951	1.4	7.1	13.9	18.8	23.3	19.1	12.6	3.8
Tuolumne River - La Grange Dam to Mouth	1941 to 1951	2.7	8.7	14.6	17.4	19.1	19.2	13.3	5.0
Stanislaus River - Goodwin Dam to Mouth	1941 to 1951	2.2	9.2	14.9	17.5	19.4	18.5	12.8	5.5

TABLE 193

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1941 to 1951

SACRAMENTO RIVER - SACRAMENTO TO REDDING

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	1883	5274	157567	228387	265229	259557	177189	55029	1150115
1942	1991	11727	187657	268091	286655	274848	186708	61298	1278975
1943	1769	61409	257673	276759	288930	288024	190456	51915	1416935
1944	3236	155666	310227	305633	338429	318184	180858	65917	1678150
1945	2134	117302	316912	305333	346868	326148	200601	60473	1675771
1946	7968	187267	333991	328508	341952	326956	179671	71666	1777979
1947	2743	167131	346326	313389	344334	326100	170785	36296	1707104
1948	53935	16451	251478	271737	365701	351666	217464	65042	1593474
1949	2389	167438	344764	349497	390112	359905	173367	85391	1872863
1950	3072	187703	336767	321253	365503	333194	172902	73766	1794160
1951	6356	254102	303045	380961	409062	373947	177260	69993	1974726
Average Acre-Feet	7952	121042	286037	304504	340252	321684	184296	63344	1629114
Average c.f.s.	129	2034	4652	5117	5534	5232	3097	1030	3352
Monthly Diversion in per cent of Seasonal	0.5	7.4	17.6	18.7	20.9	19.7	11.3	3.9	

(a) See 1946 Water Supervision Report for prior years.

TABLE 194

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1941 to 1951

FEATHER RIVER - OROVILLE TO MOUTH

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	0	2448	70513	72971	103334	100433	78451	47090	475240
1942	0	0	61352	113416	125530	122146	86814	30435	539693
1943	0	13290	101599	125318	131210	123282	93309	35495	623503
1944	205	43792	130779	126206	142128	133130	85924	50747	712911
1945	0	26056	130729	133918	142224	132832	92953	39682	698394
1946	47	53967	156398	140210	145235	132948	82010	33985	744800
1947	90	30240	152827	130731	138055	124426	77161	20873	674403
1948	3181	5717	66373	127596	140904	120658	85122	36722	586273
1949	0	57396	146342	141278	137822	126739	59327	47400	716304
1950	164	35170	138368	134088	137034	113954	65197	38076	662051
1951	18	94369	131356	141610	142619	124035	60440	32875	727322
Average Acre-Feet	337	32950	116967	126122	135100	123144	78792	37580	650992
Average c.f.s.	5	554	1902	2120	2197	2003	1324	611	1340
Monthly Diversion in per cent of Seasonal	0.1	5.0	18.0	19.4	20.7	18.9	12.1	5.8	

(a) See 1946 Water Supervision Report for prior years.

TABLE 195

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1941 to 1951

YUBA RIVER - SMARTVILLE TO MOUTH

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	0	2624	10589	13076	13574	13419	10672	9576	73530
1942	0	36	5703	14736	14955	14841	13086	11349	74706
1943	0	1903	10622	15237	17203	16972	16610	15252	93799
1944	1665	7327	13857	15601	16786	15532	13311	9185	93264
1945	0	4338	9815	15479	14112	13848	13046	13590	84228
1946	0	7222	15231	15845	17082	16356	13940	13010	98686
1947	0	3820	17316	16339	17364	19152	15577	10517	100085
1948	33	23	12350	13849	17305	17954	16994	14256	92764
1949	0	9062	18933	17288	19416	17890	13338	10920	106847
1950	0	7306	22080	20741	21023	20372	19401	16461	127384
1951	0	13225	20513	19885	19266	17756	12477	7202	110324
Average Acre-Feet	154	5171	14274	16189	17099	16736	14405	11938	95966
Average c.f.s.	3	87	232	272	278	272	242	194	197
Monthly Diversion in per cent of Seasonal	0.2	5.4	14.9	16.9	17.8	17.4	15.0	12.4	

(a) See 1946 Water Supervision Report for prior years.

TABLE 196

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1941 to 1951

AMERICAN RIVER - FAIROAKS TO MOUTH

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	150	253	379	836	1531	1202	673	285	5309
1942	0	0	13	678	1395	1187	789	104	4166
1943	0	0	54	941	1513	1226	753	94	4581
1944	0	6	113	980	1566	1211	790	153	4819
1945	0	8	119	909	1017	894	760	149	3856
1946	0	10	228	1022	1104	889	766	105	4124
1947	308	422	483	1113	1193	1086	1071	237	5913
1948	92	34	209	866	1737	1420	1030	495	5883
1949	0	58	574	1269	1448	1239	724	200	5512
1950	9	128	546	1096	1110	819	584	307	4599
1951	4	52	450	1194	1297	1404	829	217	5447
Average Acre-Feet	51	88	288	991	1356	1143	797	213	4927
Average c.f.s.	1	1	5	17	22	19	13	3	10
Monthly Diversion in per cent of Seasonal	1.0	1.8	5.9	20.1	27.5	23.2	16.2	4.3	

(a) See 1946 Water Supervision Report for prior years.

TABLE 197

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1941 to 1951

OLD SAN JOAQUIN RIVER - DELTA UPLANDS

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	0	447	5492	11541	13087	10009	7382	2909	50867
1942	0	516	7175	11077	13143	11425	6740	2878	52954
1943	0	2048	11293	12463	13745	11945	7568	3104	62166
1944	2921	11827	13918	13224	16911	15667	10753	4694	89915
1945	595	7544	16791	17092	19809	14818	10873	4433	91955
1946	4640	14371	17736	16948	19662	18238	9914	4927	106436
1947	1637	15687	18983	15788	19269	14525	9633	3105	98627
1948	11808	4765	18259	15460	21943	21547	14574	7029	115385
1949	1941	17522	22945	23207	25229	19779	14272	9521	134416
1950	7658	16785	21483	22108	26290	23206	15775	7462	140767
1951	1301	11955	20232	25003	24990	24612	15115	6198	129406
Average Acre-Feet	2955	9406	15846	16719	19462	16888	11145	5115	97536
Average c.f.s.	48	158	258	281	317	275	187	83	201
Monthly Diversion in per cent of Seasonal	3.0	9.6	16.3	17.1	20.0	17.3	11.4	5.3	

(a) See 1946 Water Supervision Report for prior years.

TABLE 198

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1941 to 1951

TOM PAINE SLOUGH - DELTA UPLANDS

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	0	0	1406	1972	2163	1788	1704	529	9562
1942	0	0	1292	1852	2434	1930	1158	278	8944
1943	0	891	2526	2728	2629	2578	2041	589	13982
1944	84	1630	2186	2466	3046	2852	2487	1019	15770
1945	34	539	2527	2792	2891	3153	2144	377	14427
1946	874	2588	2756	3145	3324	3732	2490	798	19707
1947	74	3064	3136	3319	3735	3487	2816	414	20045
1948	629	998	2795	2866	4327	4222	3422	953	20212
1949	155	3534	3114	3570	4324	4017	3226	1362	23302
1950	737	2286	3081	3163	3860	3542	2601	1147	20417
1951	81	2321	3434	3581	4371	4653	3261	886	22588
Average Acre-Feet	243	1623	2568	2859	3373	3269	2486	759	17180
Average c.f.s.	4	27	42	48	55	53	42	12	35
Monthly Diversion in per cent of Seasonal	1.4	9.5	15.0	16.6	19.6	19.0	14.5	4.4	

(a) See 1946 Water Supervision Report for prior years.

TABLE 199

ANNUAL COMPARATIVE MONTHLY DIVERSIONS IN ACRE-FEET 1941 to 1951

SAN JOAQUIN RIVER-DELTA UPLANDS - STOCKTON TO VERNALIS

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	4	1086	6162	5944	12007	8735	4384	1762	40084
1942	188	2232	5210	6602	12203	9651	4014	2085	42185
1943	0	3169	10172	8940	11617	10886	5142	1793	51719
1944	1110	10346	8439	8039	11349	11489	6261	2275	59308
1945	7	6476	12035	9658	13109	12537	7090	1793	62705
1946	5246	13974	10681	9238	15347	13071	6727	2875	77154
1947	5322	13337	14168	11615	15439	14676	7782	2052	84391
1948	6012	4564	9919	8251	13912	13356	7911	2682	66607
1949	1227	13434	11893	13141	14933	12382	7857	3768	78635
1950	5746	13092	12205	11860	17047	13272	7855	3558	84635
1951	279	12239	11485	13346	14860	12649	6840	3181	74879
Average Acre-Feet	2286	8541	10215	9694	13802	12064	6533	2529	65664
Average c.f.s.	37	144	166	163	224	196	110	41	135
Monthly Diversion in per cent of Seasonal	3.5	13.0	15.6	14.8	21.0	18.4	9.9	3.8	

(a) See 1946 Water Supervision Report for prior years.

TABLE 200

ANNUAL COMPARATIVE MONTHLY DIVERSION IN ACRE-FEET 1941 to 1951

SAN JOAQUIN RIVER - VERNALIS TO FREMONT FORD BRIDGE

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversion
1941	0	302	13633	15486	26484	20840	12725	3947	93417
1942	573	2044	14158	17059	28352	25384	12575	4235	104380
1943	0	4417	20849	20115	29913	25046	16595	4789	121724
1944	4790	21177	22013	20102	27066	24430	14554	4128	138260
1945	1327	14036	21325	21383	30463	25540	15202	2087	131363
1946	6967	21399	24961	23751	32002	28792	17026	5144	160042
1947	11658	31645	28072	27725	34079	27812	17318	3049	181358
1948	12902	18449	21647	15487	28830	27888	15926	3398	144527
1949	852	27448	26456	27787	33889	26998	18376	5054	166860
1950	15118	26342	25420	26245	33028	28227	15748	4963	175091
1951	4051	30310	24320	27237	35082	30422	16901	4333	172656
Average Acre-Feet	5294	17961	22078	22034	30835	26489	15722	4102	144515
Average c.f.s.	86	302	359	370	501	431	264	67	297
Monthly Diversion in per cent of Seasonal	3.7	12.4	15.3	15.3	21.3	18.3	10.9	2.8	

(a) See 1946 Water Supervision Report for prior years

TABLE 201

ANNUAL COMPARATIVE MONTHLY DIVERSION IN ACRE-FEET 1941 to 1951

MERCED RIVER - YOSEMITE VALLEY RAILROAD CROSSING TO MOUTH

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversion
1941	0	0	870	1644	1995	1537	1306	236	7588
1942	0	14	475	1619	2716	2005	1207	363	8399
1943	0	198	1782	2249	3077	2258	1680	474	11718
1944	84	1117	1845	2535	2564	2466	2071	820	13501
1945	30	558	1696	2292	3058	2500	1552	132	11818
1946	231	1380	1595	2393	3608	2787	1720	684	14398
1947	228	2863	3128	3420	4322	4077	2499	529	21066
1948	931	328	2321	2634	4899	4162	1953	534	17762
1949	62	2479	3696	5296	5676	3652	2998	1778	25637
1950	676	2086	4050	4793	4809	4336	2673	455	23878
1951	161	1590	3347	4572	4825	4298	2678	739	22210
Average Acre-Feet	218	1147	2255	3041	3777	3098	2031	613	16180
Average c.f.s.	4	19	37	51	61.	50	34	10	33
Monthly Diversion in per cent of Seasonal	1.4	7.1	13.9	18.8	23.3	19.1	12.6	3.8	

(a) See 1946 Water Supervision Report for prior years

TABLE 202

ANNUAL COMPARATIVE MONTHLY DIVERSION IN ACRE-FEET 1941 to 1951

TUOLUMNE RIVER - LA GRANGE DAM TO MOUTH

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	0	122	519	685	603	607	438	173	3147
1942	7	75	443	462	645	683	343	112	2770
1943	0	116	354	541	542	520	360	183	2616
1944	80	304	517	665	778	801	656	300	4101
1945	33	463	535	630	748	723	376	47	3555
1946	216	565	765	734	940	889	559	254	4922
1947	283	893	1132	1112	1245	1135	1229	439	7468
1948	299	280	822	889	1275	1404	1032	233	6234
1949	39	645	962	1255	1137	1173	806	423	6440
1950	305	588	970	1107	1121	1170	580	259	6100
1951	154	477	586	979	866	890	503	160	4615
Average Acre-Feet	129	412	691	824	900	909	626	235	4726
Average c.f.s.	2	7	11	14	15	15	11	4	10
Monthly Diversion in per cent of Seasonal	2.7	8.7	14.6	17.4	19.1	19.2	13.3	5.0	

(a) See 1946 Water Supervision Report for prior years.

TABLE 203

ANNUAL COMPARATIVE MONTHLY DIVERSION IN ACRE-FEET 1941 to 1951

STANISLAUS RIVER - GOODWIN DAM TO MOUTH

Year(a)	March	April	May	June	July	August	September	October	Seasonal Diversions
1941	12	392	2696	3173	3413	3228	2466	1280	16660
1942	240	356	2533	4242	4590	3972	2721	1360	20014
1943	3	873	3439	4241	4458	3935	3518	1598	22065
1944	186	2013	3266	3565	4246	4292	2659	1603	21830
1945	0	2664	3013	3869	4431	4136	2866	681	21660
1946	862	3316	3780	4563	5046	4832	2754	1655	26808
1947	1206	4320	4933	4644	5417	5085	3462	1008	30075
1948	1261	1114	4631	4826	6089	6070	4259	1455	29705
1949	41	4747	4661	6152	6531	5648	4251	1940	33971
1950	1313	3240	5385	5493	6266	6254	4055	1382	33388
1951	1163	3733	5043	6101	6076	6333	4240	1970	34659
Average Acre-Feet	572	2433	3944	4624	5142	4890	3386	1448	26439
Average c.f.s.	9	41	64	78	84	80	57	24	54
Monthly Diversion in per cent of Seasonal	2.2	9.2	14.9	17.5	19.4	18.5	12.8	5.5	

(a) See 1946 Water Supervision Report for prior years.

TABLE 204

COMPARATIVE SEASONAL DIVERSIONS AND ACREAGES IRRIGATED - SACRAMENTO RIVER - 1941-1951

Year	River Sections							Total Reach 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	
1941 Seasonal diversion acre-feet	135305	493667	16903	305187	95969	25970	77114	1150115
Average cubic feet per second	278	1016	35	628	197	53	159	2367
Acreage irrigated - rice	0	40183	530	30716	6786	1013	5968	85196
Acreage irrigated - general	12205	45217	6772	37039	7923	980	8445	118581
1942 Seasonal diversion acre-feet	119216	553834	37714	335431	116200	26820	89760	1278975
Average cubic feet per second	245	1140	78	690	239	55	185	2632
Acreage irrigated - rice	0	49299	2668	39415	8957	660	6664	107663
Acreage irrigated - general	13513	47696	5123	30095	5425	476	7898	111226
1943 Seasonal diversion acre-feet	139086	594046	60963	333715	136688	35934	116503	1416935
Average cubic feet per second	286	1222	125	687	281	74	240	2916
Acreage irrigated - rice	0	55316	4275	35777	9299	1115	9817	115599
Acreage irrigated - general	14362	43763	4765	29580	4594	1250	9052	107366
1944 Seasonal diversion acre-feet	155303	715850	77255	405665	142341	31565	150171	1678150
Average cubic feet per second	320	1473	159	835	293	65	309	3453
Acreage irrigated - rice	0	56620	5743	32161	14459	1573	11687	122243
Acreage irrigated - general	15324	40614	4478	32591	8086	1997	8781	111871
1945 Seasonal diversion acre-feet	143229	690859	85269	409292	162825	21776	162521	1675771
Average cubic feet per second	295	1432	175	842	335	45	334	3449
Acreage irrigated - rice	0	48715	5574	34461	13094	795	12476	115115
Acreage irrigated - general	15390	36103	4680	28843	9757	2506	9266	106545
1946 Seasonal diversion acre-feet	163925	729606	98953	402022	159077	38680	185716	1777979
Average cubic feet per second	337	1501	203	827	327	80	382	3659
Acreage irrigated - rice	0	53195	6445	30828	13995	2485	17187	124135
Acreage irrigated - general	15373	38934	8719	30861	10923	2024	10722	117556
Acre-feet per acre (a)	10.5	7.9	6.5	6.5	6.4	8.6	5.7	7.3
1947 Seasonal diversion acre-feet	138036	704544	103476	405829	140736	56993	157490	1707104
Average cubic feet per second	284	1450	213	835	290	117	324	3513
Acreage irrigated - rice	0	56080	7393	31584	12549	2688	13687	123981
Acreage irrigated - general	17517	38149	4361	33853	11070	2982	13658	121590
Acre-feet per acre (a)	7.7	7.5	8.8	6.2	6.0	10.1	4.7	6.8
1948 Seasonal diversion acre-feet	154758	632230	92661	387490	132701	56342	137292	1593474
Average cubic feet per second	318	1301	191	797	273	116	283	3279
Acreage irrigated - rice	0	53477	8299	33503	12125	1568	15145	124117
Acreage irrigated - general	18421	52944	7860	35760	12685	3947	18117	149734
Acre-feet per acre (a)	8.3	5.9	5.7	5.6	5.3	10.2	3.3	5.7
1949 Seasonal diversion acre-feet	179750	758697	96498	396587	189604	69658	182069	1872863
Average cubic feet per second	370	1561	199	816	390	143	375	3854
Acreage irrigated - rice	0	56207	8080	35148	14891	7337	15606	137269
Acreage irrigated - general	18375	48721	6532	37584	12431	5511	14341	143495
Acre-feet per acre (a)	9.6	7.2	6.6	5.5	6.9	5.4	5.1	6.6
1950 Seasonal diversion acre-feet	180264	751503	87246	370134	186229	60217	158567	1794160
Average cubic feet per second	371	1546	180	762	383	145	326	3692
Acreage irrigated - rice	0	43085	9107	26757	13359	5274	10897	108479
Acreage irrigated - general	19087	50542	11163	39099	12706	4936	15284	152817
Acre-feet per acre (a)	9.3	8.0	4.3	5.6	7.1	5.9	4.9	6.7
1951 Seasonal diversion acre-feet	172784	830331	116568	400587	207624	77772	169060	1974726
Average cubic feet per second	356	1709	240	824	427	160	348	4064
Acreage irrigated - rice	0	58609	14243	32823	15061	3434	16665	140835
Acreage irrigated - general	19863	51394	10307	41097	15151	4905	19516	162233
Acre-feet per acre (a)	8.5	7.5	4.7	5.4	6.9	9.3	3.8	6.4
Average 1941 - 1951								
Seasonal diversion acre-feet	152878	677742	79410	377449	151817	45612	144206	1629114
Average cubic feet per second	315	1395	163	777	312	94	297	3352
Per cent of total reaches	9.4	41.6	4.9	23.2	9.3	2.8	8.8	--
Acreage irrigated - rice	0	51890	6578	33016	12234	2540	12345	118603
Acreage irrigated - general	16312	44916	6796	34218	10068	2956	12280	127546

(a) Excluding such diversions for municipal use as the City of Sacramento and the City of Redding.

TABLE 205

RICE ACREAGE IN CALIFORNIA

A Comparison of Total Rice Acreage in California with Rice Acreage Irrigated from the Sacramento and San Joaquin River Systems covered by Sacramento-San Joaquin Water Supervision

Year	Rice Acreage			Year	Rice Acreage		
	Total in State (a)	Irrigated from Sacramento & San Joaquin River Systems	Ratio in Per Cent (b)		Total in State (a)	Irrigated from Sacramento & San Joaquin River Systems	Ratio in Per Cent (b)
1924	90000	89000	99	1938	125000	95000	76
1925	103000	95000	92	1939	120000	104000	87
1926	149000	129000	87	1940	118000	94000	80
1927	160000	123000	77	1941	153000	120000	78
1928	132000	101000	76	1942	212000	149000	75
1929	95000	74000	78	1943	237000	186000	77
1930	110000	88000	80	1944	246000	200000	81
1931	125000	126000	100	1945	239000	187000	78
1932	110000	91000	83	1946	255000	200000	78
1933	108000	87000	80	1947	250000	215000 (c)	86
1934	108000	92000	85	1948	248000	193000	81
1935	100000	78000	78	1949	298000	236000	79
1936	138000	104000	75	1950	240000	187000	78
1937	149000	109000	73	1951	319000	240000	75
				Average 1924-1951	169000	136000	80

(a) As reported by Federal-State Crop Reporting Service.
(b) Ratio of acreage on Sacramento and San Joaquin River systems to total State acreage.
(c) Prior to 1947 rice acreage on Upper San Joaquin River was not included.

TABLE 206

MAXIMUM RECORDED SALINITY AT PRESENTLY INDICATIVE BAY AND DELTA STATIONS

(Releases of stored water from Shasta Reservoir commenced in 1944.)

YEAR (a)	1931	1934	1938	1939	1944	1945	1946	1947	1948	1949	1950	1951
Sacramento-San Joaquin Runoff in percent of Normal (b)	31	44	172	44	57	87	93	55	80	63	77	125
Station (c)	Maximum Recorded Salinity in Parts of Chlorine per 100,000											
				San Francisco, San Pablo and Suisun Bays								
Point Orient	1870	1840	1700	1920	1730	1800	1740	1880	1740	1770	1760	1770
Point Pinole							1530	1680	1500	1570	1540	1550
Point Davis	1810	1800	*1460	1840	1520	1340	1660	1650	*1420	1510	1440	1460
Grand View	1870				1530	1430	1500	1800	1330	1460	1380	1590
Crockett							1400	1790	1330	1460	1520	1510
Benicia					1390	1230	1200	1510	1130	1240	1250	1220
Martinez (Bulls Head Point)	1690	1640	1160	1640		*1000	1110	1340	1260	1160	1150	1010
West Suisun							1020	1350	1180	1000	1030	1080
Port Chicago							950	1240	930	1060	1010	870
O & A Ferry	1390	1200	256	1180	730	260	350	610	360	400	480	440
Innisfail Ferry	1400	1260	330	1360	790	440	450	820	440	530	470	440
Pittsburg						160	210	500	170	330	220	240
				Sacramento River Delta								
Collinsville	1260	1080	86	1040	470	114	170	450	179	250	280	175
Three Mile Slough Bridge	860	660		590	161	7	8	125	13	20	15	60
Rio Vista Bridge	740	520		405	55	4	5	27	12	15	20	7
Isleton Bridge	635	310		250	5	3	5	5	7	5	5	6
				Mokelumne River Delta								
Terminous	182	52		32					11	11	14	7
Southwest Point	390	107		86					6	(d)6		
				San Joaquin River Delta								
Winter Island						123	133	*490	127	228	230	(d)
Antioch	1240	960	51	920	400	96	109	470	150	192	133	97
Millers Harbor						64	93	300	44	160	139	(d)
Webb Pump	680	*350	8	265	52	5	8	45	10	14	(d)	
Opposite Central Landing	425	*125	10	138	20	5	8	20	9	10	8	8
Dutch Slough	510	280	11	225	69	8	13	84	12	34	23	17
Orwood Bridge	277	107		54					18	16	18	14
East Contra Costa I. D.		73		32	14	11	20	19	32	21	20	19
Victoria (Victoria Island)				35			11	19	20	21	17	14
Clifton Court Ferry	130	40		19				16	23	18	17	12
Empire Bridge (King Island Pump)	261	104		79							23	11
Turner Cut												14
Rindge Pump	198	94	15	62	8						17	(d)
Stockton Country Club	122	44		32					26	17	17	17
Garwood Bridge	92	38							15	18	21	17
South Fabian (Whitehall)	31	12						19	26	21	19	(d)
Williams Bridge	118	43							15	19	17	17
Grant Line Bridge								17	22	19	20	18
Mossdale	12	25	12	16	13	10	12	18	25	18	17	19
Vernalis (Durham Ferry Bridge)								*18	24	17	16	22

(a) For maximum salinities recorded and not shown in this table, see previous reports.
(b) Normal taken as 60-year (1889-1949) mean annual unimpaired flow (Oct.-Sept., Incl.) at foothill stations of major tributaries.
(c) For location and description see Table 207.
(d) Record incomplete.
(*) Estimated.

TABLE 207

DESCRIPTION OF ACTIVE SALINITY OBSERVATION STATIONS - 1951

(Refer to previous Water Supervision Reports for description of stations which have been discontinued.)

STATION	Miles from Golden Gate (a)	Time Interval (b) Hours	Mins.	LOCATION
				SAN FRANCISCO, SAN PABLO AND SUISUN BAYS
Point Orient	12.3	2	20	North end of San Francisco Bay, East Shore, one-half mile south of Point San Pablo Wharf of Standard Oil Company.
Point Pinole	19.0	2	50	South Shore of San Pablo Bay, at Point Pinole on wharf of Atlas Powder Company.
Point Davis	25.2	3	15	East end San Pablo Bay, South Shore, Oleum Wharf of Union Oil Company.
Grand View	25.2	3	15	Northwest shore of San Pablo Bay at mouth of Petaluma Creek.
Crockett	27.7	3	30	West end of Carquinez Strait, South Shore, 0.2 mile east of Carquinez Bridge on wharf of C. and H. Sugar Refining Corporation.
Benicia	32.5	3	50	East end of Carquinez Strait, North Shore, 1.1 mile west of Southern Pacific Company railroad bridge, at Benicia Arsenal.
Martinez	32.7	3	50	East end of Carquinez Strait, South Shore, 1.0 mile west of Southern Pacific Company railroad bridge, at Municipal Ferry Slip. (Bulls Head Point)
West Suisun	37.0	4	10	West end of Suisun Bay, North Shore, 2.5 miles northeast of Southern Pacific railroad bridge at service pier of U. S. Maritime Commission, Reserve Fleet Mooring area.
Port Chicago	41.0	4	20	South Shore of Suisun Bay at U. S. Naval ammunition loading wharf below Port Chicago.
O & 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.
Pittsburg	48.0	5	00	East end of Suisun Bay, South Shore, at Pittsburg Yacht Harbor.
				SACRAMENTO RIVER DELTA
Collinsville	50.8	5	25	Sacramento River, North Bank at junction with San Joaquin River.
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.
Isleton Bridge	68.7	6	30	Sacramento River, one mile upstream from Isleton.
				MOKELUMNE RIVER DELTA
Terminous	83.4	7	50	South Fork Mokelumne River at Terminous.
				SAN JOAQUIN RIVER DELTA
Winter Island	53.1	5	50	Upper end of Winter Island, north shore New York Slough at junction of Broad and New York Sloughs.
Antioch	54.9	5	55	San Joaquin River, at City Water Works pumping plant.
Millers Harbor	58.2	6	10	South Shore San Joaquin River at Antioch Bridge.
Opposite Central Landing	72.0	7	00	Mokelumne River, on Andrus Island directly opposite Central Landing on Bouldin Island.
Dutch Slough	73.0	7	05	At Bethel Island Bridge.
Empire Bridge	84.2	8	00	Honker Cut between Empire Tract and King Island at Empire Bridge.
Turner Cut	85.0	8	10	San Joaquin River, left bank at junction with Turner Cut.
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.
Victoria	89.6	8	35	Old River at Borden Highway Crossing.
Clifton Court Ferry	94.2	9	10	Old River just below junction with Grant Line Canal.
Stockton Country Club	94.8	9	15	Near Head of Stockton Channel at Wharf of California Transportation Company.
Garwood Bridge	95.3	9	15	San Joaquin River, at Drawbridge one mile above Santa Fe Railroad Crossing.
South Fabian	100.0	9	40	Old River, two miles East of Bethany.
Grant Line Bridge	101.0	9	50	Grant Line Canal, 5.5 miles above junction with Old River, at Tracy Road Crossing.
Williams Bridge	101.6	9	55	Middle River, about four miles below Salmon Slough Junction.
Mossdale Bridge	108.5	10	50	San Joaquin River at U. S. 50 Highway Crossing about three miles southwest of Lathrop.
Vernalis (Durham Ferry Bridge)	127.0	11	00	San Joaquin River at Durham Ferry Bridge, above tidal influence.

(a) Mileage measured to station along main channel. For stations off the main channel, the mileage shown is the same 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.

(b) Time interval between high tide at Golden Gate and time for taking samples at station.

TABLE 208

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 - 1951							
	2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient		1250	(b)1190	1010	1030	980	770	880
Point Pinole							370	
Point Davis	(a)520	690	760	390	510	310	160	150
Grand View	380		(b)420	460	370	260	110	180
Crockett	(a)450	700	760		550	270	160	
Benicia	380	410	340	220	450	80	30	(c)280
Martinez	280	230	310	170	370	30	30	80
West Suisun	136		24		120	7	14	30
Innisfail Ferry	(ab)32	32	27	(a)43	45		30	(a)20
Port Chicago	114			6	115		20	30
O & A Ferry	3	6	4	2	4	6	2	2
Pittsburg	3	3	(a)4	4	5	7	5	4
Sacramento River Delta								
Collinsville	2	2		1	3		2	3
Three Mile Slough	2	(a)2	1	(a)2			3	2
Rio Vista Bridge	2	2	3	4	1	2	1	2
Isleton	1	2	2	1	1	2	(a)2	2
Mokelumne River Delta								
Terminous	(a)7	(a)7	6	(a)6	(a)7	5	4	(a)5
San Joaquin River Delta								
Winter Island	3		(a)4	3				
Antioch	4	4	2	3		4	3	4
Millers Harbor	3	4	3	3				
Opposite Central Landing	2	3	(a)5	1	1	(a)2		
Dutch Slough	5	5	4	5	8	8	(a)6	7
Orwood Bridge	(ab)3		7	8	6	3		4
East Contra Costa I. D.	7	(a)5	(a)11	8	9	(a)7	(a)5	6
Victoria		3	7	8		3	3	bkn
Clifton Court Ferry			6	5	4	1	1	2
Empire Bridge	5	6	6	8	7	10	6	5
Rindge Pump	3	3	2	3	3	2	2	3
Turner Cut	(b)3	3	5	4	3	3	(a)1	3
Stockton Country Club	(bd)3	3	(ab)5	2	3	(ae)2	(a)2	
Garwood Bridge	3	5	(a)5		2	(a)3	(a)2	1
Williams Bridge			6					
South Fabian				6				
Grant Line Bridge	2	(a)4	(a)5	4	(a)4	(a)2	(a)3	3
Mossdale	3	(a)4	(a)5	4	(a)3	2	(a)2	3
Vernalis (Durham Ferry Bridge)			(b)6		(b)2		3	3

Station	February - 1951							
San Francisco, San Pablo and Suisun Bays								
Point Orient	960	1250	890	830	940	990	730	
Point Pinole	670	590						
Point Davis	390	420	380	270	250	240	280	
Grand View		190	170		230		320	
Crockett	360	340	230			bkn		
Benicia	280	110	120	50	70	30	120	
Martinez	170	5	6	10	20	20	40	
West Suisun	50	7		10		20		
Innisfail Ferry	40	(b)26	29	14	13		18	
Port Chicago	30	5		3		3	(a)3	
O & A Ferry	3	6	(a)3	2	3	4	(a)3	
Pittsburg	4	4	5	5	3	4	2	
Sacramento River Delta								
Collinsville		2	3	2	3	2	3	
Three Mile Slough	3	1		2	2	2	2	
Rio Vista Bridge	1	3	2	3	3	3	2	
Isleton	2	3	3	2	3	3	2	
Mokelumne River Delta								
Terminous	(a)7	(a)3	5	(a)7	2	5	2	
San Joaquin River Delta								
Antioch	3	(a)4	(a)4	2	4	(a)3	4	
Opposite Central Landing	2	(a)3		2	3	(a)3	2	
Dutch Slough	5	6	(a)6	5	6	5	4	
Orwood Bridge	3	4	3	3		4	6	
East Contra Costa I. D.	7	9	(a)7	6	(b)8	4	5	
Victoria	4	6	4	3		5	4	
Clifton Court Ferry		4	3	4		10	4	
Empire Bridge	5	9	8	5	6	5	5	
Rindge Pump	3	3	3	2	(f)30	20		
Turner Cut	3	3	4	2	3	3	3	
Stockton Country Club	4	(a)3	3	2	2		4	
Garwood Bridge	2	4	(b)4	(b)1	(a)3	(a)4	(b)4	
Williams Bridge							5	
South Fabian								
Grant Line Bridge	4	(a)4	(a)4	2	(a)3	(a)3	3	
Mossdale	3	(a)4	3	2	2	(a)4	5	
Vernalis (Durham Ferry Bridge)		5		1		3	4	

(a) Taken at Low High Tide.
(b) Taken on following day.
(c) Taken 2 days later.
(d) Taken over 1 hour off scheduled time.
(e) Taken on preceding day.
(f) Taken 2 days earlier.

TABLE 208 (CONT'D)

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	March - 1951							
	2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	770	1210	870	*1050	1140	1330	1250	1260
Point Pinole						(a)910		
Point Davis	260	*560	190	560	*580	750		430
Grand View	340	450	390	360		530	460	660
Crockett		470	250	430				410
Benicia		330		170	240		370	160
Martinez	70	190	20	100	270	160	230	90
West Suisun	25	9	20	26	71	47	76	50
Innisfail Ferry	18	24	(*a)30	28	26	(a)50	50	30
Port Chicago		7		16	14	20	87	
O & A Ferry	3	3	(e)3	3	4	(a)4	(a)3	4
Pittsburg	4	4	(a)4	5	5	(a)6	(a)4	5
Sacramento River Delta								
Collinsville	2	2	3	1	3	(a)3	3	3
Three Mile Slough	2	2	3	4	2		2	
Rio Vista Bridge	3	3	3	3	3	3	2	3
Isleton	2	2	3	2	4		2	3
Mokelumne River Delta								
Terminous	*5	(a)5	(a)6	(a)3	(a)4	6	(a)4	(a)4
San Joaquin River Delta								
Antioch	4	4	5	5	5	7	(a)4	5
Opposite Central Landing	2	2	(a)2	2	3	(a)3	3	3
Dutch Slough	5	6	7	7	7	8	*6	8
Orwood Bridge	5	7	6	6	7	6	(a)7	7
East Contra Costa I. D.	6	(a)9	7	7	(b)9	(b)7	9	8
Victoria	6	7	8	6	7	(b)7	6	6
Clifton Court Ferry		(a)5		(a)5			6	6
Empire Bridge	7	9	9	6	6	(a)7	8	6
Turner Cut	4	4	4	6		6	4	6
Stockton Country Club	6	(a)4	4		5	7		6
Garwood Bridge	(b)5	(a)5	5	4	5	6	5	7
Williams Bridge		bkn						
South Fabian								
Grant Line Bridge	(a)6	6	4		(a)5	5	5	(ab)7
Mossdale	4	(a)5	4	5	7	4	5	7
Vernalis (Durham Ferry Bridge)		3		(b)5		(e)5		8
	April - 1951							
San Francisco, San Pablo and Suisun Bays								
Point Orient	1160	1330	1100	1010	1200	1310	1310	(e)1480
Point Pinole								
Point Davis	830	680	560	520	(a)690	770	820	740
Grand View		790	790	750	690	860	890	990
Crockett	610	770	(a)520	470	790			(a)520
Benicia	140	390	410	390	400	470	510	
Martinez	340	240	290	230	280	410	560	(e)270
West Suisun	13	17	184	190	60	90	110	30
Innisfail Ferry	50	(a)29	(a)29	50	(a)27	(a)25	40	(a)30
Port Chicago		(a)43	98	15		42	219	60
O & A Ferry	3	(a)7	(a)5	bkn	(a)5		12	(a)6
Pittsburg	5	(a)4		5	(a)5	(a)5	5	
Sacramento River Delta								
Collinsville	4	(a)4	3	2	(a)3		4	(a)3
Three Mile Slough	3	4	3	2	3	(a)5	2	2
Rio Vista Bridge	3	4	2	2	3	3	1	3
Isleton	(a)3	2	5	4	2	3	2	2
Mokelumne River Delta								
Terminous	(a)4	(a)4	(a)5	5	3	(a)3	3	4
San Joaquin River Delta								
Antioch	4	(a)5	5	4	(a)3	4	4	(a)3
Opposite Central Landing	3	(a)3	5		(a)2	4	4	(a)3
Dutch Slough	6	6	6	5	(a)6	5	5	(a)7
Orwood Bridge	6	8	9	12	13	11	10	(a)10
East Contra Costa I. D.	7	9	8	12	(a)15	12	(b)11	(a)12
Victoria	8	11	12	14	12	11	8	9
Clifton Court Ferry	8	(a)11	12		(a)9		11	
Empire Bridge	6	6	7	3	(a)4	6	7	7
Turner Cut		6	9	11	(a)10	10	8	(a)9
Stockton Country Club		(a)10		(bd)13	(bd)11	(a)9		
Garwood Bridge	9	12	11	(b)14	9	9	7	(a)10
Williams Bridge		(ab)14					11	14
South Fabian								
Grant Line Bridge	(a)9	10	12	14	(a)9	8	9	11
Mossdale	(bd)11		13	8	10	12	8	(a)9
Vernalis (Durham Ferry Bridge)					10		9	

(*) Presumed.
(a) Taken at Low High Tide.
(b) Taken on following day.
(d) Taken over 1 hour off scheduled times.
(e) Taken on preceding day.

TABLE 208 (CONT'D)

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	May - 1951							
	2	6	10	14	18	22	26	30
	San Francisco, San Pablo and Suisun Bays							
Point Orient	1110	1290	1100	930	(e)1310	(b)1420	1300	(e)1330
Point Pinole								
Point Davis	650	660	450	550	(e)980	980	680	(e)790
Grand View	1220	bkn	890	900	(e)890	790	810	
Crockett	(a)470	540	420		(e)820			
Benicia	300	260		(b)460	690	720	300	430
Martinez	270	150	130	130	440	520	160	(e)370
West Suisun	30	40	60	30	360	220	60	(e)40
Innisfail Ferry		(a)40	(a)40	50		(a)60	30	30
Port Chicago	*110	160		(ab)50	330		90	240
O & A Ferry	(a)5	bkn	(a)3	(a)4	(a)10	(a)8	(a)6	(a)30
Pittsburg	(a)4	(a)9	4		(a)4	(a)5	4	(a)70
	Sacramento River Delta							
Collinsville	(a)1	(ab)4	4	(a)3	(a)2	2	3	(a)2
Three Mile Slough	2	4	2	(ab)4	2		2	1
Rio Vista Bridge	1	3	2	(b)2	2	2	2	3
Isleton	2	2	3	(a)2	3	(a)3	4	(a)2
	Mokelumne River Delta							
Terminous	2	(ac)5	(a)4	3	4	(a)2	(ae)2	3
	San Joaquin River Delta							
Antioch	(a)4	(ab)5	4	(a)4	(a)6	(a)4	4	(a)5
Opposite Central Landing	(a)3	(a)3	2			(a)3	2	(a)3
Dutch Slough	(a)5	7	8	(a)7	(a)6	5	5	(a)6
Orwood Bridge	10	8	(ab)5	5	6	6	5	2
East Contra Costa I. D.	(a)11	13	7	(a)5	5	7	6	(ab)3
Victoria		10	4	(b)4	8	(b)8	3	3
Clifton Court Ferry	(a)9	(b)7	4	(a)6	(a)7			
Empire Bridge		6	4	(a)4	(a)5	5	6	3
Turner Cut	(a)8	8	5	(a)5	5	7	5	
Stockton Country Club	(a)9		(bd)5	(e)4	(a)6	7	3	(a)3
Garwood Bridge	5	5	3	(a)6	7	8	2	2
Williams Bridge				(ab)9		8	(b)2	
South Fabian								
Grant Line Bridge	(a)5	(a)6	(a)3	(b)8	8	8	5	2
Mossdale	(a)5	5	5	(a)6	6	5	2	(a)1
Vernalis (Durham Ferry Bridge)		(b)4				4		2
	June - 1951							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	1390	1420	1300	1360	(e)1610	1520	1500	
Point Pinole				(a)1140	(a)1250		1240	
Point Davis	800	980	870	1120	1100	1100	1080	1140
Grand View	850	900	890	(e)850	(b)890	1050	1050	
Crockett	630	800	750		1180	1090		
Benicia	600	610	450	580	(e)980	860	740	(b)1010
Martinez	350	510	420	660	750	730	550	760
West Suisun	105	270	370	(b)410	490	410		710
Innisfail Ferry	(a)40	(a)30	(a)30	26	(a)79	(a)99	108	*104
Port Chicago	182		160		310	(ab)480	(a)250	650
O & A Ferry	(a)6	(a)15	11	20	(a)59	70	(a)34	(a)49
Pittsburg	(a)60	(a)5	7	(a)15	(a)18	(a)21	(a)31	(a)33
	Sacramento River Delta							
Collinsville	(a)2	(b)2	4	(a)4		46		
Three Mile Slough	2	2	2	(b)4	2	3	2	3
Rio Vista Bridge		2	2	(b)3	5	2	(b)2	3
Isleton	2	2	2	(b)2	2	2	(b)2	2
	Mokelumne River Delta							
Terminous	*2	(a)4	3	6	(a)4	(a)3	3	3
	San Joaquin River Delta							
Antioch	(a)3	4	5	(a)4	(a)7	12	(a)8	
Opposite Central Landing			3	(a)2	(a)3	3	(a)5	(a)3
Dutch Slough	(a)5	5	3	(a)4	(a)4	3	(a)4	(a)4
Orwood Bridge	2	2	4	(b)3	4	7	(a)4	6
East Contra Costa I. D.	2	(a)2	6	(a)6	(a)7	(b)7	(b)5	4
Victoria	2	(a)4	5	(b)7	8	6	(b)5	4
Clifton Court Ferry		3			10	4	(a)6	
Empire Bridge	3	6	4	(b)5		6	(b)5	3
Turner Cut	(a)2	2	4	6	5	7	(b)5	(a)4
Stockton Country Club	(a)2	3	6	(a)8	(bd)5	4	(ab)4	
Garwood Bridge	1	4	10	(a)7	3	4	(a)7	8
Williams Bridge			11			(b)8		(ab)10
South Fabian								
Grant Line Bridge	1	(a)6		8			8	10
Mossdale	(a)1	6	6	(a)8	5	5	(a)7	13
Vernalis (Durham Ferry Bridge)		(b)9			3		(b)10	

(*) Presumed
(a) Taken at Low High Tide.
(b) Taken on following day.
(c) Taken 2 days later.
(d) Taken over 1 hour off scheduled time.
(e) Taken on preceding day.

TABLE 208 (CONT'D)

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	July - 1951							
	2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	1610	1650	1580	1630	1660	1680	1610	(e)1670
Point Pinole								(a)1440
Point Davis	(b)1150	bkn	1330		1280	1400	1290	(e)1260
Grand View	(b)1230	1290	(d)1300		(b)1240	1240	1260	(e)1230
Crockett	(a)1050	1130	1120	1300	(a)1180	1310	1320	1280
Benicia	980	920	930	1120	1090	1090	1120	1130
Martinez	860	810	690	920	930	870	880	960
West Suisun	(e)600		467	(a)550	650	670	(a)590	730
Innisfail Ferry	(a)110	(a)114	157		(a)180	(a)273	310	
Port Chicago			350	310	840	660	750	750
O & A Ferry	(a)85	(a)91	(a)104	(a)100	(a)180	250	(a)260	300
Pittsburg	(a)27	(a)29	(a)43	(a)44	(a)129	(a)80	(a)95	(a)80
Sacramento River Delta								
Collinsville	(a)26	(a)29	(a)43	(a)43		106	(a)87	(a)108
Three Mile Slough	3		4			6	(b)4	5
Rio Vista Bridge	3	3	3	(b)4	3	3	(b)3	3
Isleton	3	2	3	(b)3	3	3	(b)3	3
Mokelumne River Delta								
Terminous	(a)4	(a)5	3	4	3	(a)4	3	4
San Joaquin River Delta								
Antioch	(a)12	24	(a)22	(a)18	(a)25	55	(a)32	(a)35
Opposite Central Landing	(a)3		(a)4	(a)4	4	4	(a)4	(a)4
Dutch Slough	(a)5	5	(a)5	(a)5	5	6	(a)7	(a)10
Orwood Bridge	5	6	(a)7	(b)5	5	5	(a)4	5
East Contra Costa I. D.	6	6	(b)7	(a)9	7	(b)8	(b)6	7
Victoria	4	6	(a)8	bkn	6	5	(a)6	
Clifton Court Ferry	8	9	(a)10		6		(a)5	6
Empire Bridge	5	5	(b)6	(b)6	7	5	(b)6	(a)5
Turner Cut	(a)4	7	(a)4	(a)7	6	5	(a)6	
Stockton Country Club	6			(a)6	11	12	(a)12	
Garwood Bridge	7	10	(a)13	(a)15	13	13	(a)14	13
Williams Bridge	(a)13	15	(ab)16		17		(b)5	(a)6
South Fabian								
Grant Line Bridge		15	(a)17	(a)17	17	16	(a)18	16
Mossdale	(a)4	16	(a)15	(a)19	16	18	(a)17	18
Vernalis (Durham Ferry Bridge)				22	(c)17			
	August - 1951							
San Francisco, San Pablo and Suisun Bays								
Point Orient				(e)1660	1700	1650	1600	1630
Point Pinole								
Point Davis	1350	1250	1380	1340	1410	1380	1390	1310
Grand View	1300	1290	1270	1290	1290	1280	1280	1300
Crockett		(a)1290	1480		1450	(a)1120		1290
Benicia	1130	1000	1110	1180	1220	1160	(b)1110	1100
Martinez	1010	(a)690	920	970	830	870	900	920
West Suisun	770	*610	980	760		560	(*b)840	
Innisfail Ferry	(a)310	304	380	320	(a)370	360		
Port Chicago	840	640	(a)490	590	850	860	(ab)760	510
O & A Ferry	280	(a)210	320	(b)400	(a)270	bkn	440	270
Pittsburg	(a)90	(a)90	(a)90		(a)77	(a)129	(a)240	(a)90
Sacramento River Delta								
Collinsville	(a)92	113	(a)86	(a)63	(a)175	(a)160	(a)150	(a)130
Three Mile Slough	4	5	4		7	7	(b)14	6
Rio Vista Bridge	2	2	2	3	3	2	(b)3	2
Isleton	2	2	2	(a)2	2	2	(b)2	2
Mokelumne River Delta								
Terminous	4	4	3	(e)4	(a)4	4	3	(a)4
San Joaquin River Delta								
Antioch	(a)43	53	(a)43	(a)47	97	87	(a)60	(a)61
Opposite Central Landing	5	5		(a)2		(a)5	(a)3	(a)3
Dutch Slough	10	10	9	(a)8	11	(a)12	(a)10	(a)13
Orwood Bridge	6	4	(a)5	5	5		(b)4	6
East Contra Costa I. D.	5	5	(b)6	6	7	(a)7	(ab)7	7
Victoria	5	5			6	5	(b)5	
Clifton Court Ferry	7							5
Empire Bridge	6	7	(b)6	6	6	5	(b)5	5
Turner Cut	7	6		(a)5	6	(a)6	(b)5	(a)7
Stockton Country Club	11		(a)13	(ab)13	(f)11	16	(a)14	13
Garwood Bridge	13	14	(a)14	13	14	(a)16	(a)14	16
Williams Bridge	(b)5	5	(a)7					(a)7
South Fabian								
Grant Line Bridge	16	17	(a)18	16	16	(a)15	(a)15	(a)15
Mossdale	16	17	(a)17	16	16	(a)16	(a)15	14
Vernalis (Durham Ferry Bridge)	(e)15		14		15			(b)13

(*) Presumed.
(a) Taken at Low High Tide.
(b) Taken on following day.
(c) Taken 2 days later.
(d) Taken over 1 hour off scheduled time.
(e) Taken on preceding day.
(f) Taken 2 days earlier.

TABLE 208 (CONT'D)

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	2	6	10	14	18	22	26	30
	September - 1951							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	(*b)1660	1640	(b)1710	1760	1730	1750	(e)1650	1680
Point Pinole							(a)1430	
Point Davis			1430		1350	1180	(e)1260	1320
Grand View	1270		(e)1330			1590	(e)1360	1330
Crockett		1240	1510	1280	1350	1210	(e)1170	
Benicia	1150	1080	1220	1100	1000	1090		1070
Martinez	830	800	970	800	810	960	(e)890	740
West Suisun	840	970	1080	960	790	1000	810	
Innisfail Ferry	360	370	390	(a)410	440	380	(a)260	
Port Chicago	730	420	(a)400	870		680	(a)710	(a)620
O & A Ferry	230		370	bkn	(a)170	180	260	(a)170
Pittsburg	(a)70	(a)82	(a)100	(a)110	90	(a)80	(a)120	80
	Sacramento River Delta							
Collinsville		150			(a)90	80	(a)90	
Three Mile Slough		5	(b)3	60		2	2	2
Rio Vista Bridge	2	3	(b)2	7	3	4	4	3
Isleton	2	2	(b)2	2	2	3	2	2
	Mokelumne River Delta							
Terminous	(a)3	3	4	(a)3	3	2	4	2
	San Joaquin River Delta							
Antioch	82	64	(a)35	(a)35	40	(a)22	(a)26	35
Opposite Central Landing		(a)2	(a)2	(a)4	(a)2	(a)3	(a)5	3
Dutch Slough	10	8	(a)9	(a)9	(a)8	12	(a)17	(a)7
Orwood Bridge	6	4	(a)6	*3	7	7	7	
East Contra Costa I. D.	6	8	(a)7	8	(a)8	(a)9	(a)11	(a)12
Victoria	6		(b)6	(b)8	7	(b)8	6	
Clifton Court Ferry								
Empire Bridge	7	5	(b)6	5	7	6	7	7
Turner Cut	6	8	(a)6	7	7	(a)9		(a)9
Stockton Country Club	13	(a)15	(a)16	16	(bd)16	(a)17	(a)16	(a)16
Garwood Bridge	16	13	(b)15	16	16	17	17	15
Williams Bridge								
South Fabian								
Grant Line Bridge	(a)14	(b)13	12	(a)11	14	14	(a)9	14
Mossdale	13	(a)13	(a)13	(a)13	(a)13	(a)15	13	(a)13
Vernalis		15				5		
	October - 1951							
	San Francisco, San Pablo and Suisun Bays							
Point Orient	1770	1670	1610	(c)1760	1660	1530	1710	1580
Point Pinole			(a)1490		1550	(a)1350		1470
Point Davis	1460	1240	1400	1380	1140	(a)1170		
Grand View		1400	1350	1270	1320	1390	1380	
Crockett			1230				1160	1350
Benicia	990	950	(ae)1090	1020		880		1180
Martinez	970	980	880	840	910	750	750	820
West Suisun		(a)530	780	800	780	660	640	
Innisfail Ferry	(a)370	350	(a)350	340				
Port Chicago	730	590	(b)680	610	(b)670	(a)420	550	810
O & A Ferry	(a)150	240	240	(a)200	bkn	280	(a)160	(a)150
Pittsburg		(a)40	(a)70	80	110	(a)90	60	110
	Sacramento River Delta							
Collinsville		(a)40		130	110	80		80
Three Mile Slough	4	3			4	4		4
Rio Vista Bridge	2	3	(b)3	3	2	3	3	4
Isleton	2	2	(b)2	2	2	2	2	(ab)3
	Mokelumne River Delta							
Terminous	4	5	4	3	5	5	(a)5	(a)6
	San Joaquin River Delta							
Antioch	29	32	(a)20	29	37		14	22
Opposite Central Landing	(a)8	(a)2	(a)2	2	(a)3	(a)2	2	4
Dutch Slough	(a)6	(a)6	(a)5	6	(a)6	(a)5	6	6
Orwood Bridge	7	6	(a)8	11	8	(a)10	9	10
East Contra Costa I. D.	19	(ab)11	(a)15	8	(a)11	(a)11	13	12
Victoria	8		(b)11	10	9	(b)8	10	10
Clifton Court Ferry								
Empire Bridge	6	8	(b)8	8	8	9	8	8
Turner Cut	8	10	(*a)13	12	(a)12	(a)12	12	14
Stockton Country Club	(bd)17	(a)16	(a)13	(a)12	(a)12	(b)11	13	(a)13
Garwood Bridge	16	15	(a)10	11	12	(a)11	13	12
Williams Bridge			(ab)9		10		(b)12	(e)11
South Fabian								
Grant Line Bridge	11	12	9	(a)11	(a)10	(a)11	(a)12	10
Mossdale	(a)12	(a)8	(a)9	(a)10	(a)10	(a)11	13	(a)13
Vernalis (Durham Ferry Bridge)			(b)9		10		(a)12	

(*) Presumed.
(a) Taken at Low High Tide.
(b) Taken on following day.
(c) Taken 2 days later.
(d) Taken over 1 hour off scheduled time.
(e) Taken on preceding day.

TABLE 208 (CONT'D)

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	November - 1951							
	2	6	10	14	18	22	26	30
San Francisco, San Pablo and Suisun Bays								
Point Orient	1710	1690	1730	1520	1610		1580	1530
Point Pinole		(a)1280		1390				1350
Point Davis	1300	1250	1320		1100	1060	1180	1180
Grand View	1240	1240		1300	1220	1300	1120	1100
Crockett	1310	1040			1080		1140	1240
Benicia	1050	910	930		770	690	990	480
Martinez	830		930	780	810	670	620	760
West Suisun		750		(a)630				
Innisfail Ferry		370	260	340	270	(a)310	(a)310	
Port Chicago	660	(a)560	730	580	400	470	610	710
O & A Ferry	(a)110	160	180	150	(a)150	200	110	160
Pittsburg	80	(a)60		80	(a)50	80	80	70
Sacramento River Delta								
Collinsville	(a)100	(a)60	80		100		60	60
Three Mile Slough	3	4	6	3	5	(a)6	4	3
Rio Vista Bridge	3	2	7	4	3	3	6	3
Isleton	2	3	2	(a)2	2	2	3	2
Mokelumne River Delta								
Terminous	4	4	(a)2	5	4	5	(a)4	4
San Joaquin River Delta								
Antioch	18	21		(a)30	60	40	30	*16
Opposite Central Landing	(a)4	4	3	(a)3	(a)2		4	(a)2
Dutch Slough	(a)6	(a)6	7	(a)6	8	8	9	(a)7
Orwood Bridge	(b)10	(a)11	11	13	13	14	14	12
East Contra Costa I. D.	13	(a)15	12	(a)14	(a)15	14	15	(a)14
Victoria	bkn		10	12	13		12	12
Clifton Court Ferry								
Empire Bridge	6	(a)8	*5	8	8	10	8	10
Turner Cut	10	(a)12	11	9	(a)13	14		(a)11
Stockton Country Club	(a)13	(ab)12	13	(ab)14	(a)13	(d)14		(a)10
Garwood Bridge	12	(a)12	(a)13	13	13	11	9	10
Williams Bridge			(a)13	12		13		
South Fabian								
Grant Line Bridge	(a)11	(a)12	12	11	12	12	11	11
Mossdale	(a)10	(a)12	(a)11	(a)13	(a)11	(*b)12	(*a)11	10
Vernalis (Durham Ferry Bridge)	11		11		(b)12			
	December - 1951							
San Francisco. San Pablo and Suisun Bays								
Point Orient	1430	1330	1230	1230	1330	1140	1480	1330
Point Pinole			800					
Point Davis	1130	380		900	730		1190	730
Grand View	1020	970		(b)680	630	630	700	730
Crockett	450		(a)310	680	720		1130	720
Benicia	620	250		400	610		820	560
Martinez	380		260	570	690	510	880	80
West Suisun	370	(a)60		150	260		640	290
Innisfail Ferry	230	(a)240		120	110	(a)120		130
Port Chicago	340	(a)30	110	140		360	720	130
O & A Ferry	(a)160	40	30	50	bkn	30	240	20
Pittsburg	(a)80	2	60	30	(a)10	20	50	50
Sacramento River Delta								
Collinsville		20		10	40	30	20	
Three Mile Slough								
Rio Vista Bridge	4	2	3	3	5	2	2	2
Isleton	2	1	2	2	6	*4	2	1
Mokelumne River Delta								
Terminous	5	(a)4	(a)4	5	6	(a)2	(a)2	3
San Joaquin River Delta								
Antioch		6	bkn	4	30	(ab)10	(a)10	(a)20
Opposite Central Landing	(a)3	2	3	(a)3	(a)3		2	(a)2
Dutch Slough	(a)8	8	9	8	(a)9	9	(a)7	(a)8
Orwood Bridge		14	10	(a)9	8	8	8	
East Contra Costa I. D.	14	15	14	(a)14	(*a)13	11	(a)11	(a)15
Victoria	11	12	10	10		9	9	8
Clifton Court Ferry								
Empire Bridge	6	7	7	8	7	7	9	11
Turner Cut	(a)9	8	6	7	(a)7		6	(a)5
Stockton Country Club		(bd)6		(a)6			6	(a)5
Garwood Bridge	8	7	5	8	8	11	6	4
Williams Bridge			10				10	
Grant Line Bridge	13	8	5	(e)7	10	(a)7	8	8
Mossdale	(a)10	6	(a)5	(a)7	(a)8	6	(a)6	(a)5
Vernalis (Durham Ferry Bridge)		6		7		7		8

(*) Presumed.
(a) Taken at Low High Tide.
(b) Taken on following day.
(d) Taken over 1 hour off scheduled time.
(e) Taken on preceding day.

TABLE 209

COMPARATIVE ANNUAL MINIMUM 10-DAY 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 (b)					Runoff in % of Normal (a)			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 (c)	% of Total	Acres (d)	% of Total	Acres
1920		(e)540		(e)450		53	49	66	15.1	65800	7.7	33500	7.4	32300
1921						119	127	96	2.1	9150	2.0	8715	0.1	435
1922						104	96	125	2.9	12600	2.4	10420	0.5	2180
1923						76	71	90	2.1	9150	2.0	8715	0.1	435
1924	7/14	858	7/26	407	1280	29	31	24	50.0	217500	18.4	80100	31.6	137400
1925	8/7	2860	8/29	743	3730	87	86	89	3.6	15630	3.1	13450	0.5	2180
1926	7/28	1460	8/21	586	2080	61	63	57	18.5	80500	8.5	37000	10.0	43500
1927	8/23	3560	8/23	1300	4850	122	128	106	2.9	12600	2.4	10420	0.5	2180
1928	8/15	2660	8/22	866	3550	85	90	71	5.7	24800	3.7	16100	2.0	8700
1929	7/18	2460	8/12	590	3090	45	45	46	7.1	30900	4.2	18300	2.9	12600
1930	8/5	2500	8/9	735	3230	67	72	53	5.4	23500	3.8	16500	1.6	7000
1931	7/20	-79	7/21	211	131	31	33	27	73.8	321000	30.2	131000	43.6	190000
1932	8/11	1980	9/10	1030	3030	80	70	108	5.7	24800	3.4	14800	2.3	10000
1933	8/21	1450	8/14	607	2070	49	47	55	9.8	42600	5.2	22600	4.6	20000
1934	7/20	1150	8/14	346	1530	44	46	37	37.5	163000	17.8	77500	19.7	85500
1935	8/12	2920	8/12	922	3940	92	88	104	2.9	12600	2.4	10420	0.5	2180
1936	8/20	2540	8/17	1040	3600	96	92	106	2.6	11600	2.2	9840	0.4	1760
1937	8/16	1720	8/24	1020	2820	80	71	106	3.5	15200	2.6	11280	0.9	3920
1938	8/12	5190	8/27	2130	7365	172	169	183	0	0	0	0	0	0
1939	8/5	630	7/25	610	1315	44	44	46	29.0	126000	17.0	74000	12.0	52000
1940	8/12	2550	8/9	1080	3620	116	119	107	4.2	18300	3.0	13000	1.2	5300
1941	8/24	4190	9/14	1480	5800	140	145	129	1.2	5100	1.2	5100	0	0
1942	8/22	3740	8/20	1520	5300	131	134	120	1.2	5100	1.2	5100	0	0
1943	8/17	2600	8/4	1480	4140	114	113	118	2.8	12200	2.2	9600	0.6	2600
1944	8/13	2790	8/9	1033	3830	57	55	63	7.2	31300	4.8	20800	2.4	10500
1945	8/24	6560	8/1	1530	8180	87	80	107	0.2	1000	0.2	1000	0	0
1946	8/7	6460	8/5	1160	7640	93	93	93	0.6	2500	0.6	2500	0	0
1947	7/7	4700	7/21	477	5270	55	55	56	7.5	32400	5.0	21500	2.5	10900
1948	7/24	7550	8/9	(f)606	8260	80	84	68	0.3	1200	0.3	1200	0	0
1949	7/18	6460	8/1	452	6970	63	64	62	2.3	10100	2.0	8500	0.4	1600
1950	8/20	7080	7/31	502	7670	77	77	76	1.1	5000	1.1	4500	0.1	500
1951	7/8	7100	8/5	572	8130	125	126	118	0.4	1800	0.4	1800	0	0

(a) Normal = 60-year (1889-1949)mean annual unimpaired flow (Oct.-Sept.,incl.).
(b) Does not include inflows from Mokelumne and Calaveras rivers, Yolo By-Pass and other minor tributaries.
(c) Delta area taken at 435,000 acres which includes all lands, levees, water surfaces, etc., within Delta boundary.
(d) Sacramento and Mokelumne deltas combined as the Sacramento River contributes a large flow to Mokelumne River Delta through Georgiana and Three Mile sloughs.
(e) No continuous record. Lowest discharge measured.
(f) Figure shown in minimum 10-day flow during summer. Minimum 10-day flow for year occurred March 8 with average flow of 357.

TABLE 210

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS - 1951

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION
(Daylight Saving Time effective April 29 through September 30)

Date of Sample	Time of Sample	Draw Down or G. H.	Depth or c.f.s.	Temperature Degrees	Parts per Million										
					Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
					SACRAMENTO RIVER BELOW SHASTA DAM							T33N, R5W, Sec. 15			
1/8	1500	585.5	8851		11	4.1	6.8	.9	0	64	3.7	1.7		.2	81
2/12	1300	594.0	25128		9.8	4.3	6.1	.9	0	58	4.9	2.1		.1	79
3/12	1305	582.6	5209		11	4.4	6.7	.9	0	62	4.0	3.5		.4	85
4/9	1300	585.4	4000		10	4.4	5.7	1.1	0	65	4.5	2.8		.2	84
5/14	0900	585.4	8891		11	4.2	6.0	1.1	0	63	4.4	2.8		.2	82
6/11	0800	585.9	10832		12	4.2	5.7	1.0	0	61	3.6	3.5		.3	86
7/9	1330	586.1	11465		11	3.9	5.7	1.1	0	62	4.5	2.1		.2	81
8/13	1430	588.5	11089		7.2	6.1	10	1.0	0	60	6.6	6.3		0	120
9/10	1300	586.2	9049		7.0	5.0	7.4	1.0	0	66	1.2			.2	100
10/8	1300	584.3	7200		7.6	5.0	6.6	1.0	0	47	.2	8.6		0	100
11/13	1100	579.6	3703		11	5.5	7.8	1.0	0	71	2.5	4.2		0	140
12/10	1030	579.0	4100		9.3	7.0	8.1	1.2	0	68	4.1	6.3		.2	170
					SACRAMENTO RIVER AT SACRAMENTO WEIR							T9N, R4E, Sec. 29			
1/18	1150	18.98		48			6.0					9.0			105
2/19	1140	25.87		50			4.0					1.0			84
3/19	1140	16.70		53			4.7					5.9			98
4/24	1330	*11.9		59			4.1					7.3			86
5/21	1120	13.65		68			13					13			133
6/19	1140	8.83		75			21					21			189
7/19	1325	8.2		73			16					17			161
8/24	1140	7.48		69			21					18			168
9/21	1105	7.90		70			23					18			182
10/23	1130	6.4		60			11					19			105
11/21	1155	9.9		52			12					13			105
12/20	1115	10.6		45			15					38			168
					AMERICAN RIVER AT FAIR OAKS BRIDGE							T9N, R6E, Sec. 13			
1/18	1040			47			.7					3.1			58
4/24	1030			54			.3					3.5			28
7/19	1210			80			1.2					3.9			62
10/23	1020			59			4.2					8.4	0		44
					SACRAMENTO RIVER AT SACRAMENTO (M STREET BRIDGE)							T9N, R4E, Sec. 35			
1/18	1135	13.7		48			3.7					5.5			77
2/19	1125	20.5		50			3.7					3.8			84
3/19	1120	11.7		52			3.9					4.8			84
4/24	1305	*7.5		57			1.5					4.8			57
5/21	1100	9.4		65			6.2					5.2			84
6/19	1115	5.20		74			12					12			126
7/19	1320	4.0		73½			16					18			168
8/24	1235	3.5		69			23					18			168
9/21	1045	3.8		70			23					19			189
10/23	1115	*2.3		60			11					19			105
11/21	1140	5.8		52			10					18			105
12/20	1045	6.3		45			14					24			126
					SACRAMENTO RIVER AT HEAD OF SNODGRASS SLOUGH							T6N, R4E, Sec. 22			
2/19	1445	14.50		50	11	5.1	6.5	.8	0	59	6.1	3.5		.1	88
5/21	1415	6.8		68	10	5.2	9.4	1.0	0	57	8.3	8.7		.3	88
8/22	0945	6.20		70	16	11	24	1.2	1.2	120	12	16		.4	200
11/23	1045	6.4		50	12	11	10	1.0	0	69	13	20		.2	160
					SACRAMENTO RIVER AT WALNUT GROVE							T5N, R4E, Sec. 35			
1/19	1250	10.2		48	9.0	4.1	4.2	.7	0	48	6.5	2.0		.4	83
2/19	1520	10.2		50	10	5.1	6.4	.7	0	59	5.6	4.8		.3	84
3/19	1450	6.9		55	11	5.5	6.7	.8	0	64	5.7	7.6		.3	87
4/24	1505	4.0		58	8.9	4.0	5.8	1.0	0	48	3.9	7.6		.1	70
5/21	1455	2.5		68	11	5.2	10	.9	0	58	8.3	10		.3	90
6/19	1500	*2.0		75	15	8.1	17	1.1	0	87	13	16		.5	130
7/20	0950	2.9		71	16	9.2	17	1.1	0	97	11	17		.5	140
8/22	1045	2.9		70	15	11	20	1.2	.6	110	12	13		.5	170
9/21	1510	1.30		71	19	12	24	1.7		130	14	20		.4	200
10/23	1535	*1.9		61	15	9.0	10	1.3	0	91	4.9	14		.2	140
11/23	0950	2.7		49	15	8.5	8.5	1.0	0	68	12	20		.4	140
12/20	1045	3.4		45	12	9.6	12	1.2	0	77	12	17		0	170
					CACHE CREEK NEAR CAPAY							T10N, R2W, Sec. 14			
1/18	1320			52			21					30	.8		252
4/30	1030			63			34					42			378
7/27	1320			79			40					45	1.4		434
10/23	1235			60			64					82	1.6		490
					PUTAH CREEK NEAR WINTERS							T8N, R2W, Sec. 28			
1/18	1415	13.8		50			4.0					3.5	.1		140
2/19	1300	*13.0		49			8.0					7.6	.2		287
3/19	1310	*8.0		58			12					13	.3		336
4/30	1130	5.5		60			16					17			413
5/21	1215			75			16					13	.6		385
6/19	1300	*10.00		76			26					26	.9		476
7/27	1400			78			30					29	.8		497
8/24	1045	3.6		70			40					35	.7		525
9/21	1230			71			43					35	.5		525
10/23	1320	4.0		60			39					40	1.0		448
11/21	1340	7.5		52			6.3					17	.1		161
12/20	1230			47			11					18	.2		259

* Estimated.

TABLE 210 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS - 1951

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION
(Daylight Saving Time effective April 29 through September 23)

Date of Sample	Time of Sample	Draw Down or G. H.	Depth or c.f.s.	Temperature Degrees	Parts per Million										
					Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
					YOLO BY-PASS AT LITTLE HOLLAND FERRY							T6N, R3E, Sec. 33			
1/19	1400			48			21					28			315
4/24	1430			64			48					53			532
7/19	1515			78			20					23			189
10/23	1455			62			18					25			140
					SACRAMENTO RIVER AT JUNCTION POINT (NEAR RIO VISTA)							T4N, R3E, Sec. 17			
1/19	1450			48			8.0					11			126
4/24	1550			60			8.0					8.0			91
7/23	0930			72			17					17			175
10/22	1240			64			16					25			140
					SACRAMENTO RIVER AT COLLINSVILLE							T3N, R1E, Sec. 27			
1/22	1315	6.79		47			6.4					8.3			105
2/19	1100	8.10		51			7.0					6.9			119
3/26	1020			55			11					14			133
4/30	1330			60			9.0					15			91
5/29	0900			63			11					11			112
6/26	1050	5.26		63			100					170			511
7/23	0845	5.30		69			510					1000			2450
8/20	0805	7.10		68			750					1400			3010
9/24	1410	5.38		66			300					510			1400
10/22	1145	4.9		64			120					210			588
11/20	1045	5.95		56			62					110			329
12/21	1337			47			22					49			196
					SAN JOAQUIN RIVER BELOW FRIANT DAM							T11S, R21E, Sec. 7			
1/19	1605	7.06	3918	47	3.5	.8	3.6	.7	0	17	1.2	2.1		.2	39
2/20	0820	5.82	2422	47	3.6	1.1	3.6	.8	0	24	.8	.3		.4	40
3/23	1500	4.88	1502	49	3.6	.9	4.0	1.0	0	21	1.2	3.1		.3	41
4/27	1315	5.36	1970	52	4.1	.5	3.9	1.0	0	22	1.2	3.8		.2	43
5/25	1620	5.45	2065	55	3.3	.8	4.0	1.0	0	17	1.2	4.2		.6	37
6/25	0815	5.76	2406	54	3.2	.4	3.3	.7	0	17	.6	2.8		.1	33
7/27	0945	5.37	1980	59	3.2	.4	2.7	1.0	0	17	.1	2.1		.2	30
8/24	1325	4.44	1122	65	1.2	.4	2.7	0	0	12	0	0		.2	76
9/21	0945	2.95	268	64	2.0	1.3	8.6	.5	0	31	1.2	2.8		0	47
10/26	1550	4.05	835	66	2.2	2.2	5.0	.9	0	19	1.2	5.6		.4	120
11/28	1700	3.65	580	58	5.4	3.7	1.9	.9	0	23	.4	11		.4	80
12/21	0810	2.26	111	47	4.4	2.2	4.8	.8	0	23	1.6	8.4		.5	100
					SAN JOAQUIN RIVER AT MENDOTA POOL							T13S, R15E, Sec. 19			
1/22	1305	11.46U 8.52L 12.72U	3578	49	3.6	.9	3.8	.7	0	19	1.9	1.7		.2	42
2/19	1305	6.34L 13.72U	2109	49	4.3	1.0	4.0	.6	0	22	1.0	3.8		.2	40
3/26	1100	1.88L 13.60U	137	58	6.0	.9	4.0	.8	0	27	1.5	4.2		.2	46
4/23	0945	1.80L 13.71U	166	63	3.7	.5	3.9	1.0	0	22	1.2	3.8		.1	42
5/28	0735	1.70L	223	69	3.5	.7	3.6	.9	0	19	1.3	3.1		.1	36
6/26	0755	13.55U 13.40U		68	3.2	.6	3.4	.7	0	19	.5	2.4		.1	34
7/23	1220	2.41L		75	2.9	.4	2.9	.7	0	16	.1	1.8		.2	32
7/31	1510			76	3.2	.6	3.2	.8	0	17	.1	2.8		.1	34
8/27	1450	14.04U		78	1.6	2.2	3.2		0	22	.8	.7		.4	71
9/24	1050	12.80U		73	18	8.5	40	1.7	0	83	20	59		0	240
10/31	1445	12.57U		62	2.4	2.4	4.2	.9	0	18	.8	6.3		.2	86
11/26	1225	11.87U		60	5.4	7.0	3.1	.7	0	31	0	17		0	74
12/26	1010	12.22U		56	5.2	3.5	7.1	.8	0	43	1.2	4.9		.2	120
					SAN JOAQUIN RIVER AT TEMPLE SLOUGH							T11S, R13E, Sec. 12			
1/22	1100		3488	49			1.8					2.1			52
2/19	0930		1919	49			2.3					2.1			39
3/26	0920		208	58			10					16			84
4/23	1210		246	66			9.0					14			70
5/28	0605		245	69			9.0					13			64
6/26	0605			68			8.5					9.3			55
7/23	1315			79			2.7					4.2			36
8/28	1130			73	1.2	2.6	6.8	.6	0	25	25	4.2		.2	81
9/25	1000			68	21	11	41	1.7	0	86	25	60		0	230
10/30	0940			59	3.8	1.3	7.7	1.0	0	30	.8	6.3		.2	130
11/27	0912			58	6.2	5.5	8.0	.9	0	44	.8	13		0	97
12/26	1100	3.09	43	57	22	11	53	1.5	0	71	98	39		.2	310

TABLE 210 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS - 1951

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION
(Daylight Saving Time effective April 29 through September 30)

Date of Sample	Time of Sample	Draw Down or G. H.	Depth or c.f.s.	Temperature Degrees	Parts per Million										
					Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
POSO DRAIN ABOVE BELMONT DRAIN CROSSING															T9S, R12E, Sec. 31
1/23	1000		13.8	54			53					96			371
2/20	1040		11.9	51			43					66			322
3/26	1310		20.9	62			20					26			182
4/23	1300		32	66			38					51			259
5/28	0915		30	67			55					56			357
6/26	1030			69			48					49			301
7/23	1600	2.15	45	79			45					58			294
8/28	1335			74			55					67			336
9/25	1140			71			100					130			630
10/30	1030	6.85	12	64			83					110			490
11/27	1106		8.9	59			60					73			315
12/26	1230	6.51	5.78		Sample Lost										
SALT SLOUGH AT SAN LUIS RANCH															T9S, R11E, Sec. 7
1/23	1205	6.70	598	52			16					25			140
2/20	1325	4.44	256	55			60					72			357
3/27	0950	3.05	93.0	60			180					200			980
4/23	1325	2.92	100	67			96					150			574
5/29	0745	2.67	84	70			88					130			525
6/26	1250	2.38	-	73			110					170			637
7/24	1645	2.82	79	80			72					110			448
8/29	1145	2.97		71			68					90			399
9/25	1410			71			100					150			609
10/30	1330	2.04	25.9	62			170					190			706
11/27	1221	2.24	41.0	64			140					200			665
12/26	1505	2.46	55	62	Sample Lost										
BEAR CREEK NEAR MOUTH															T8S, R11E, Sec. 6
1/24	1145	11.29	1508	52			8.0					3.5			91
2/21	1245	8.38	791	52			9.0					4.8			112
3/27	1320	2.16	50	62			45					28			308
4/23	1525	2.19	75	68			27					18			203
5/29	1345	2.08	88	78			36					15			238
6/27	0940	1.62		72			41					22			238
7/24	1040	.89	15	76			59					42			315
8/29	1550	1.64		77			50					17			273
9/26	1350			72			36					18			224
10/31	1255	1.05	*18.1	62			54					46			301
11/28	1300	1.39	34.5	62			49					37			259
12/27	1415	2.46	117	58	Sample Lost										
SAN JOAQUIN RIVER AT FREMONT FORD															T7S, R9E, Sec. 24
1/22	1400	67.64	3292	52	8	3	9.8	1.2	0	43	4.6	10		.7	94
2/26	1100	65.73	2089	50	8.9	3.4	14	.9	0	45	12	14		.6	95
3/28	1600	60.30	260	64	55	31	160	3.3	0	160	160	210		1.3	750
4/25	1210	59.20	224	61	47	25	120	3.5	0	130	94	200		.4	600
5/29	1115	59.67		75	51	25	130	3.4	0	180	89	190		.9	610
6/27	1300	59.24	150	76	45	23	130	2.6	0	160	93	190		0	590
7/25	1630	58.86	100.48	76	51	26	150	3.3	0	150	100	230		.4	700
8/22	1425	59.01	112.5	73	38	21	120	3.4	0	150	69	170		2.1	570
9/26	1415	59.25	181	64	27	16	78	2.6	0	150	30	100		0	350
10/31	0930	58.44	*50	60	63	36	200	4.5	0	170	140	330		.4	1000
11/28	1520	58.74		62	47	29	140	.9	2.3	170	95	200		.4	630
12/27	1515		60	59	37	20	110	3.5	0	170	84	140		1.1	590
SAN JOAQUIN RIVER ABOVE MOUTH OF MERCED RIVER															T7S, R9E, Sec. 3
1/29	1310			51			10					12			98
2/27	1210			49			21					25			168
3/28	1130			51			170					250			980
4/27	1130			65			170					250			910
5/29	1250			71			40					66			266
6/26	1130			71	59	40	210	2.9	0	170	200	300		.9	950
7/25	1445			74			230					330			1120
8/30	1515			73			110					140	.3		581
9/26	1345			67			110					140			581
10/26	1455			62			450					250			2100
11/28	0846			51			200					280			910
12/28	1110			51			130					160			644
MERCED RIVER AT STEVINSON DRAIN															T6S, R9E, Sec. 36
1/29	1155	7.36	1480	48			5.5					4.8			84
2/27	1045	6.80	1287	48			8.0					10			98
3/28	1100	5.34	906	54			8.0					7.3			84
4/25	1045	2.80	392	59			22					24			161
5/29	1230	9.36		66			5.1					11			63
6/26	1015			68	14	4.0	21	1.3	0	83	6.2	19		1.6	130
7/25	1500	1.40		74			8.0					20			203
8/30	1545	1.52		72			25					25	.1		161
9/24	1205	1.72		65			41					36			182
10/26	1510	1.52		62			33					28			203
11/28	0820	1.88		54			42					46			217
12/28	1130	1.81		55			43					52			217

* Estimated.

TABLE 210 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS - 1951

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION
(Daylight Saving Time effective April 29 through September 30)

Date of Sample	Time of Sample	Draw Down or G. H.	Depth or c.f.s.	Temperature Degrees	Parts per Million										
					Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
SAN JOAQUIN RIVER BELOW MOUTH OF MERCED RIVER (AT HILLS FERRY BRIDGE) T7S, R9E, Sec. 3															
2/27	1310	8.58	4083	52			21					25			168
3/28	1300	4.80	1313	58			74					100			462
4/27	1240	3.40		62			160					240			910
5/29	1200	7.20		68			34					54			231
6/26	1140			70			110					150			588
7/25	1440	52.05		74	47	23	140	2.6	0	140	110	200		.9	650
8/30	1510	2.46		72			110					140			546
9/26	1240	2.55		64			100					130			539
10/26	1450	1.99		61			240					320			1300
11/28	0840	2.01		52			190					260			910
12/28	1100	3.02		51			130					150			609
VIVIAN SLOUGH AT NORTH LINE OF SECTION 16 (AT OLLINGERS PUMP) T6S, R9E, Sec. 16															
1/24	1340			54			210					340			1050
2/28	1105			50			220					69			1260
3/30	0915			56			270					530			1540
4/26	1310			70			49					130			490
5/29	1230			80			84					98			413
6/25	1100			74			67					75			343
7/24	1030			78			85					100			427
8/28	1150			73			200					310			910
9/25	0940			67			180					260			840
10/24	1030			58			62					84			322
11/28	1025			52			83					120			378
12/27	1045			48			120					180			525
PATTERSON DRAIN AT SAN RAMON LAKE T5S, R8E, Sec. 27															
1/29	1455			54			190					250			1610
2/27	1350			55			180					240			1470
3/29	1130			60			170					180			1400
5/31	0955			63			160					170			980
6/26	1310			69			150					180			1050
7/25	1315			62			200					230	.4		1190
8/30	1440			62	79	47	170	2.3		240	270	190		.5	1000
9/26	1145			58			170					180			980
10/26	1420			58			180					190			1050
11/28	0920			55			240					220			1400
12/28	1035			55			230					220			1400
SAN JOAQUIN RIVER AT PATTERSON WATER COMPANY INTAKE T5S, R8E, Sec. 15															
1/29	1505	46.20		52			9.0					10			105
2/27	1400	43.90		54			16					22			140
3/29	1100	39.5		58			72					94			588
4/26	1430	37.8		63			92					130			539
5/31	0945	41.4		64			17					25			126
6/26	1255			73			83					110			476
7/25	1300	36.0		73			150					220			840
8/30	1430	36.7		71			88					99			427
9/26	1130	36.9		66			91					110			462
10/26	1415	36.4		62			170					220			890
11/28	0940	36.4		53			120					150			609
12/28	1020	37.4		52			110					130			518
SAN JOAQUIN RIVER NEAR LAIRD SLOUGH BRIDGE T4S, R7E, Sec. 25															
2/27	1500	35.40		56			17					25			156
3/29	1210	30.68		59			72					100			462
4/26	1325	28.30		62			110					160			651
5/31	1035	29.38		67			17					24			119
6/26	1355			71			83					110			504
7/25	1200	26.78		70			140					190			840
8/30	1320	27.34		70	34	19	99	2.5		160	69	120		1.1	520
9/26	1100	27.64		64			98					120	.1		539
10/26	1345	27.16		62			170					230			910
11/28	1010	37.35		54			110					160			588
12/28	0950	29.65		53			100					120			497
SAN JOAQUIN RIVER AT WEST STANISLAUS I.D. DIVERSION T4S, R7E, Sec. 10															
1/24	1455	36.50		54			12					15			119
2/27	1440	30.75		58			16					20			154
3/29	1240	28.48		60			73					100			469
4/26	1350	24.24		63			110					150			623
5/31	1020	34.30		66	10	4.1	17	1.3	0	47	11	22		.5	100
6/26	1335			73			76					110			483
7/25	1215	22.53		72			150					230			910
8/30	1130			72			91					120			497
9/27	0930			68			100					130			574
10/25	0915			59			160					230	.1		860
11/28	1440	24.63		56			120					160			602
12/27	1400	27.05		52			100					130			546

TABLE 210 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS - 1951

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION
(Daylight Saving Time effective April 29 through September 30)

Date of Sample	Time of Sample	Draw Down or G. H.	Depth or c.f.s.	Temperature Degrees	Parts per Million									
					Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
					TUOLUMNE RIVER AT TUOLUMNE CITY								T4S, R8E, Sec. 7		
1/24	1435	39.58		50			2.8					6.2			57
2/28	1230	31.39		48			40					71			315
3/29	1410	33.16		51			11					24			119
4/26	1305	28.92		62			64					130			455
5/31	1045	38.68		57	7.1	1.8	4.5	.9	0	23	1.7	8.7		.2	51
6/26	1410	30.52		69			25					49			203
7/25	1145	28.75		70			67					130			449
8/30	1310	28.05		70			76					140			476
9/26	0910	28.05		65			73					130			449
10/26	1325	29.58		62			24					61			189
11/28	1028	29.31		55			33					65			217
12/28	0925			51			19					38			105
					SAN JOAQUIN RIVER AT EL SOLYO PUMPS								T3S, R7E, Sec. 29		
2/28	1215	25.22		50			26					43			245
3/29	1345	23.77		55			34					57			266
4/27	1020	19.90		61			90					160			574
5/31	1115	29.00		59			9					12			70
6/27	0950			72			51					83			336
7/24	1630	18.3	464	73			100					210	.2		651
8/30	1245	18.7		70			91					140			525
9/25	1625	18.9		64			83					120			476
10/25	1700	19.7		63			68					110			440
11/28	1050	19.8		56			65					100			371
12/28	0900	21.7		52			41					58			224
					STANISLAUS RIVER AT BRET HARTE PUMP								T3S, R7E, Sec. 9		
1/24	1405			52			5.9					8.3			163
2/28	0900			50			3.4					2.8			84
3/29	0730			54			4.0					3.8			91
4/26	1030			54	9.3	3.3	4.9	1.3	0	52	3.5	3.1		.5	70
5/31	1405			60			1.0					1.0			49
6/27	0900			70			13					10			168
7/24	1015			69			15					9.8			196
8/30	1155			68			15					15	.1		168
9/25	0930			63			18					11			182
10/25	0925			59			12					8.4			119
11/28	1145			57			11					12			119
12/28	0945			51			10					8.4			98
					SAN JOAQUIN RIVER NEAR VERNALIS								T3S, R6E, Sec. 13		
1/24	1330	18.03	13912	51			8.0					11			91
2/28	1130	13.78	7513	48			17					32			168
3/29	0915	12.00	5821	56			26					46			217
4/27	1000	8.51		61			120					92			371
5/31	1140	17.40	12500	59			4.5					9.3			63
6/27	0915			71			45					79			336
7/24	1230	6.20	628	72	40	18	77	3.4	0	140	27	150		0	450
8/30	1210	6.97		70			70					110	.3		462
9/25	1200	7.14		64			74					110			462
10/25	1230	8.02		60			58					90			400
11/28	1130	8.20		55			51					87			315
12/28	0930	9.9		52			34					48			196
					SAN JOAQUIN RIVER AT BANTA CARBONA I. D. DIVERSION								T2S, R6E, Sec. 34		
1/24	1345	22.35		52			18					27			189
2/28	1200	17.15		50			46					42			336
3/29	1315	15.58		58			62					69			427
4/26	1055	12.30		55			38					73			280
5/31	1125	21.60		63			4.5					9.7			63
6/27	0930	11.70		72			51					82			350
7/24	1330	8.50		73			88					180	.2		602
8/30	1225	9.80		68			87					140			518
9/25	1255			64			80					115			490
10/25	1310	10.8		63			71					110			560
11/28	1110			53			83					110			455
12/28	1020	13.1		52			70					86			399
					SAN JOAQUIN RIVER AT MOSSDALE BRIDGE								T2S, R6E, Sec. 3		
1/22	1420	10.5		48			7.0					11			84
2/19	1440	9.3		52			10					16			119
3/20	1420	3.8		58			25					43			224
4/25	1100	*4.0		60			36					75			259
5/22	1315	*6.0		70			22					35			168
6/19	1410			72			16					26			126
7/18	1015			77			82					150			553
8/21	1155	4.50		78			88					150			560
9/21	0850			74			84					130			532
10/22	1700			62			55					94			357
11/23	1345			55			51					92			343
12/20	1320			49			38					68			245

TABLE 210 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS - 1951

DATA COPIED FROM UNITED STATES BUREAU OF RECLAMATION COMPILATION
(Daylight Saving Time effective April 29 through September 30)

Date of Sample	Time of Sample	Draw Down or G. H.	Depth or c.f.s.	Temperature Degrees	Parts per Million										
					Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
					SAN JOAQUIN RIVER AT BRANDT BRIDGE							T1S, R6E, Sec. 9			
3/20	1445	7.4		58			24					44			217
6/19	1430	5.85		72			17					27			126
9/21	0920	5.20		74			83					130			490
12/21	1400			48			38					62			238
					SAN JOAQUIN RIVER AT GARWOOD BRIDGE							T1N, R6E, Sec. 16			
1/22	0945	5.1		49			8.0					11			98
2/19	1515	5.8		53			9.0					15			112
3/20	0945	3.2		56			22					38			196
4/25	0910	5.4		64			48					80			357
5/22	0915	5.9		70			31					48			231
6/19	1045	4.6		72			17					27			133
7/20	1125	4.1		79			69					120			469
8/21	1010	5.10		77			85					140			497
9/21	0945	3.7		74			82					120			525
10/22	1015	3.0		64			54					90			350
11/23	1310	5.9		55			60					100			350
12/20	1250	4.8		50			44					72			246
					CALAVERAS RIVER NEAR STOCKTON							T2N, R6E, Sec. 24			
3/20	0835	3.90		58			3.9					5.5			126
6/19	0920			75			6.5					6.2			154
12/20	0930	3.00		40			9.0					19			126
					STOCKTON SHIP CHANNEL AT BURNS CUT-OFF							T1N, R5E, Sec. 1			
1/22	0920	5.15		49			9.0					15			119
2/19	1540	6.60		56			9.0					13			112
3/20	0925	3.80		56			22					39			189
4/25	0850	6.60		64			42					70			308
5/22	0955	6.90		71			34					58			259
6/19	0955	5.55		72			34					59			252
7/20	1205	4.57		79			55					95			364
8/21	0945	6.15		76			72					120			455
9/21	1020	5.20		74			91					150			532
10/22	0945	4.12		66			63					110			378
11/23	1237	5.9		56			65					110			371
12/20	1230	5.7		49			36					62			231
					MIDDLE RIVER AT SANTA FE RAILROAD							T1N, R4E, Sec. 15			
3/20	1015			58			27					48			245
6/19	1120			74			22					35			175
9/24	1745			73			39					54			266
12/21	1440			48			53					94			392
					OLD RIVER AT CLIFTON COURT FERRY							T1S, R4E, Sec. 21			
1/22	1040	4.61		49			12					24			133
2/19	1400	5.00		53			11					18			119
3/20	1330	4.20		58			25					47			231
4/25	0955	5.79		63			47					84			343
5/22	1150	5.45		70			37					69			280
6/19	1300	3.95		74			27					43			196
7/20	1020	5.52		78			32					55			252
8/21	1245	4.40		76			34					57			252
9/24	1855	4.45		72			50					72			329
10/22	1620	4.10		64			53					85			329
11/20	1445			68			65					110			392
12/28	1015	4.64		50			44					65			252
					OLD RIVER AT VICTORIA ISLAND BRIDGE							T1N, R4E, Sec. 16			
3/20	1045			57			27					47			245
6/19	1155			75			37					64			280
9/24	1800			73			38					57			273
12/21	1515	5.8		47			44					73			294
					ROCK SLOUGH AT CONTRA COSTA CANAL INTAKE							T2N, R3E, Sec. 34			
1/22	1300	1.7		52	33	20	72	2.1	0	96	89	100		3.5	400
2/19	1250	2.0		53	25	15	53	1.4	0	86	65	73		2.1	300
3/20	1115	0.68		60	28	17	61	1.4	0	110	67	80		1.6	340
4/30	1600	1.5		62	30	16	60	2.2	0	100	51	98		.4	340
5/22	1020	2.7		70	17	8.3	30	1.7	0	71	23	43		1.2	180
6/25	1315	1.85		71	19	8.8	33	1.7	0	72	26	51		.7	200
7/24	1145	1.90		76	17	8.8	27	1.5	0	73	23	41		.5	180
8/20	1030	2.10		75	18	12	35	1.8		100	16	50		.5	260
9/24	1745	1.70		70	20	15	42	2.0		112	29	56		.4	300
10/22	1500	1.43		66	26	16	52	2.3	0	130	37	81		.2	370
11/20	1300	2.7		69	32	21	62	3.0	0	130	32	110		.5	380
12/21	1400	1.7		47	30	20	64	2.8	0	100	60	100		1.2	430

TABLE 210 (CONT'D)

COMPLETE OR PARTIAL ANALYSIS OF THE WATERS OF THE SACRAMENTO, SAN JOAQUIN RIVERS, THEIR TRIBUTARIES AND THEIR DELTAS - 1951

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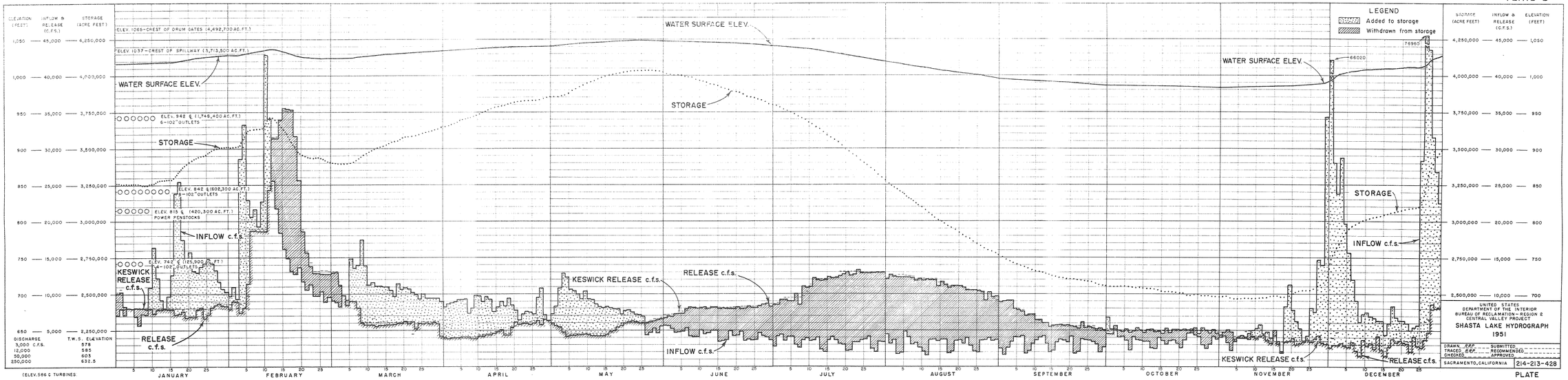
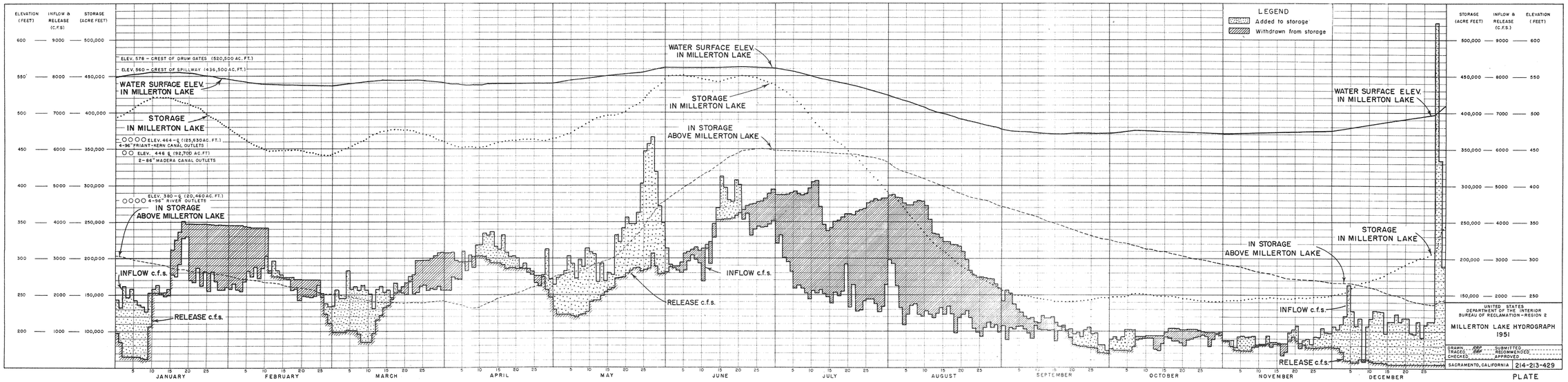
Date of Sample	Time of Sample	Draw Down or G. H.	Depth or c.f.s.	Temperature Degrees	Parts per Million									
					Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	B	NO_3	Total Solids
					MOKELUMNE RIVER AT WOODBRIDGE							T4N, R6E, Sec. 28			
2/19	1005	13.85		48			.6					1.0			38
5/21	0920	14.3		56			.5					1.0			35
8/22	1150	4.40		70			3.8					7.0			49
11/21	0930	12.0		55			3.5					28			37
					COSUMNES RIVER AT McCONNELL STATION							T6N, R6E, Sec. 20			
2/19	1040	35.2		47			1.4					1.4			63
5/21	0955	33.55		66			.7					1.0			43
8/22	1630			90			8.6					5.6			91
11/21	1005	33.7		51			4.2					7.7			51
					MOKELUMNE RIVER AT NEW HOPE BRIDGE							T4N, R4E, Sec. 15			
2/19	1545	4.0		49			1.1					1.7			58
5/21	1520	1.3		61			.5					2.0			37
8/22	1110	4.60		72			21					21			182
11/23	0930	1.6		50			12					13			105
					MOKELUMNE RIVER AT CENTRAL LANDING							T3N, R4E, Sec. 20			
1/24	1130			49			2.0					3.5			83
2/23	1335			48½			4.4					4.5			91
3/25	1650			56			5.7					11			98
4/29	1335			58			10					18			112
5/23	1355			66			10					8.3			98
6/26	1310			69			16					24			154
7/23	1040			72			18					24			168
8/20	0945			72			28					39			210
9/24	1640			70			28					28			203
10/22	1415			64			21					36			168
11/20	1310			56			16					29			147
12/21	1345			47			23					46			203
					SAN JOAQUIN RIVER NEAR WEBB POINT (OPPOSITE MOKELUMNE RIVER MOUTH)							T3N, R4E, Sec. 19			
1/24	1115			48			8.0					20			126
2/23	1140			51½			10					18			133
3/25	1635			58			15					31			161
4/29	1320			58			16					30			154
5/23	1410			67			16					24			154
6/26	1300			68			17					26			154
7/23	2357			72			16					39			210
8/20	0935			71			41					55			238
9/24	1630			70			31					32			210
10/22	1405			64			21					40			189
11/20	1300			57			19					31			154
					SAN JOAQUIN RIVER AT ANTIOCH							T2N, R2E, Sec. 18			
1/22	1215	3.2		50			17					35			196
2/19	1205	3.3		53			11					23			156
3/20	1220	2.95		57			16					27			168
4/27	1055	3.76		59			15					24			133
5/24	1230	2.70		70			20					30			168
6/25	1015	2.45		66			57					98			336
7/24	0925	2.30		70			280					540			1540
8/20	0750	2.54		70			420					770			1820
9/24	1510	2.00		69			120					190			602
10/22	1220	1.75		66			74					120			413
11/20	1130	2.6		69			93					170			469
12/21	1100	2.25		46			27					47			203

PLATE 2


ELEVATION (FEET)
INFLOW & RELEASE (C.F.S.)
STORAGE (ACRE FEET)
ELEV. 1065 – CREST OF DRUM GATES (4,492,700 AC. FT.)
ELEV. 1037 – CREST OF SPILLWAY (3,713,500 AC. FT.)
WATER SURFACE ELEV.
ELEV. 942 & (1,748,400 AC. FT.) 6–102" OUTLETS
STORAGE
ELEV. 848 & (602,300 AC. FT.) 8–102" OUTLETS
ELEV. 815 & (420,300 AC. FT.) POWER PENSTOCKS
INFLOW c.f.s.
ELEV. 742' & (125,900 AC. FT.) 4–102" OUTLETS
KESWICK RELEASE c.f.s.
RELEASE c.f.s.
DISCHARGE 3,000 C.F.S. 12,000 50,000 250,000
T.W.S. ELEVATION 578 585 603 632.5
(ELEV. 586 @ TURBINES)
JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
LEGEND
Added to storage
Withdrawn from storage
75980
66020
KESWICK RELEASE c.f.s.
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION – REGION 2
CENTRAL VALLEY PROJECT
SHASTA LAKE HYDROGRAPH
1951
DRAWN RRP SUBMITTED
TRACED RRP RECOMMENDED
CHECKED APPROVED
SACRAMENTO, CALIFORNIA 214-213-428
PLATE


ELEVATION (FEET)
INFLOW & RELEASE (C.F.S)
STORAGE (ACRE FEET)
ELEV. 578 – CREST OF DRUM GATES (520,500 AC. FT.)
ELEV. 560 – CREST OF SPILLWAY (436,500 AC. FT.)
WATER SURFACE ELEV. IN MILLERTON LAKE
STORAGE IN MILLERTON LAKE
ELEV. 464 – & (125,630 AC. FT.) 4–96" FRIANT–KERN CANAL OUTLETS
ELEV. 448 & (92,700 AC. FT.) 2–96" MADERA CANAL OUTLETS
ELEV. 380 – & (20,460 AC. FT.) 4–96" RIVER OUTLETS
IN STORAGE ABOVE MILLERTON LAKE
INFLOW c.f.s.
RELEASE c.f.s.
JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
LEGEND
Added to storage
Withdrawn from storage
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION – REGION 2
MILLERTON LAKE HYDROGRAPH
1951
DRAWN RRP SUBMITTED
TRACED RRP RECOMMENDED
CHECKED APPROVED
SACRAMENTO, CALIFORNIA 214-213-429
PLATE

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

SACRAMENTO–SAN JOAQUIN WATER SUPERVISION

1951

SCALE 0 5 10 15 20 25 30 35 40 MILES

LEGEND

- POINTS OF DIVERSION
- SALINITY OBSERVATION STATIONS
- STREAM GAGING STATIONS
- DRAINAGE PUMPING PLANTS
- SACRAMENTO-SAN JOAQUIN DELTA AREA