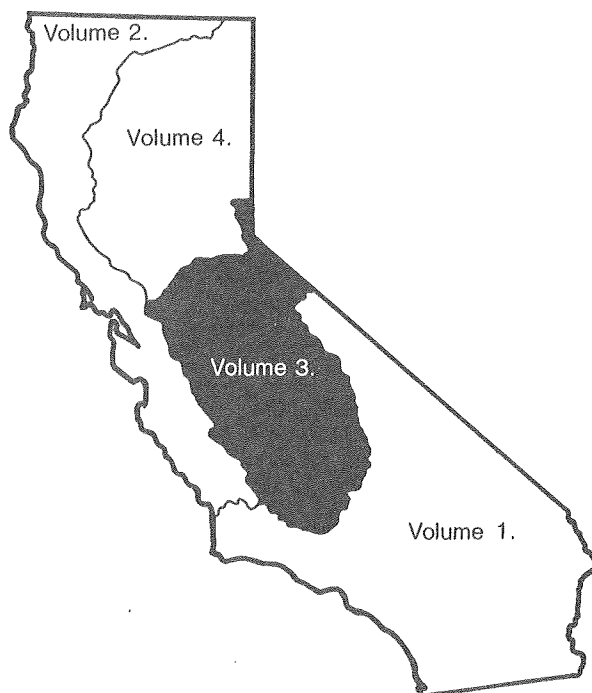


# Water Resources Data California Water Year 1988

Volume 3. Southern Central Valley Basins and  
The Great Basin from Walker River  
to Truckee River



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT CA-88-3  
Prepared in cooperation with the California Department of  
Water Resources and with other agencies

# CALENDAR FOR WATER YEAR 1988

1987

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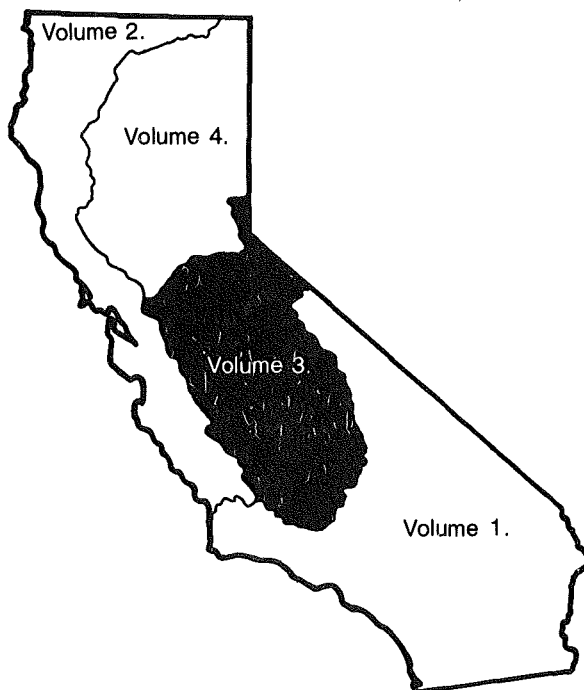
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# Water Resources Data California Water Year 1988

Volume 3. Southern Central Valley Basins and  
The Great Basin from Walker River  
to Truckee River

by J.R. Mullen, S.W. Anderson, and T.C. Hunter



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT CA-88-3  
Prepared in cooperation with the California Department of  
Water Resources and with other agencies

DEPARTMENT OF THE INTERIOR  
MANUEL LUJAN, JR., *Secretary*  
U.S. GEOLOGICAL SURVEY  
Dallas L. Peck, *Director*

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Room W-2234, Federal Building  
2800 Cottage Way  
Sacramento, California 95825



## PREFACE

This volume of the annual hydrologic data report of California is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources. Hydrologic data for California are contained in five volumes:

- Volume 1. Southern Great Basin from Mexican Border to Mono Lake Basin, and Pacific Slope Basins from the Tijuana River to the Santa Maria River
- Volume 2. Pacific Slope Basins from Arroyo Grande to Oregon State Line except Central Valley
- Volume 3. Southern Central Valley Basins and The Great Basin from the Walker River to the Truckee River
- Volume 4. Northern Central Valley Basins and The Great Basin from Honey Lake Basin to Oregon State Line
- Volume 5. Ground-Water Data for California

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines, the individuals contributing significantly to the collection, processing, and tabulation of the data are given on page V.

This report was prepared in cooperation with the California Department of Water Resources and with other agencies, under the general supervision of John M. Klein, District Chief, California.

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<b>16. Abstract (Limit: 200 words)</b>  Water resources data for the 1988 water year for California consist of records of stage, discharge, and water quality of streams; stage and contents in lakes and reservoirs; and water levels and water quality in wells. Volume 3 contains discharge records for 178 gaging stations; stage and water contents for 47 lakes and reservoirs; water quality for 32 stations; and 4 crest-stage partial-record stations. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in California.					
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SURFACE-WATER AND WATER-QUALITY STATIONS  
IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

[Letters after station name designate type of data: (d), discharge;  
(l), lake contents; (c), chemical; (b), biological; (p), precipitation;  
(t), water temperature; and (s), sediment]

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WATER RESOURCES DATA -- CALIFORNIA, WATER YEAR 1988

VOLUME 3--SOUTHERN CENTRAL VALLEY BASINS AND THE GREAT BASIN

FROM WALKER RIVER TO TRUCKEE RIVER

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By J.R. Mullen, S.W. Anderson, and T.C. Hunter

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INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of California each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series entitled "Water Resources Data - California."

This volume of the report includes records on surface water in the State. Specifically, it contains (1) discharge records for 178 streamflow-gaging stations and 4 crest-stage partial-record streamflow stations; (2) stage and contents records for 47 lakes and reservoirs; and (3) water-quality records for 32 streamflow-gaging stations. Records included for stream stages are only a small fraction of those obtained during the water year.

The series of annual reports for California began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format changed to one volume, including data on quantities of surface water, quality of surface and ground water, and ground-water levels. Beginning with the 1985 water year, a separate volume for ground-water levels and quality was published for California.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for California were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 10 and 11." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in public libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Building 810, Box 25425, Denver, CO 80225.

Publications similar to this report are published annually by the U.S. Geological Survey for all States. Each report has an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report CA-88-3." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (916) 978-4668.

## COOPERATION

The U.S. Geological Survey and organizations of the State of California have had cooperative agreements for the systematic collection of records since 1903. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

California Department of Water Resources, David N. Kennedy, Director.  
 California State Water Resources Control Board, Michael Campos, Executive Director.  
 East Bay Municipal Utility District, Jerome B. Gilbert, General Manager.  
 El Dorado County Water Agency, Robert E. Dorr, Chairman, Board of Supervisors.  
 Fresno County Metropolitan Flood Control District, Doug Harrison, General Manager-Secretary.  
 Kings River Conservation District, Jeff L. Taylor, General Manager-Chief Engineer.  
 Madera Irrigation District, Robert L. Stanfield, General Manager-Chief Engineer.  
 Merced, City of, Stevan M. Stroud, Director of Public Works.  
 Merced Irrigation District, Tom Reta, Chief Engineer-Manager.  
 San Francisco, City and County, Hetch-Hetchy Water and Power, R.W. Coffee, General Manager of Public Utilities.  
 Tahoe Regional Planning Agency, David S. Ziegler, Senior Planner.  
 Terra Bella Irrigation District, John E. Boudreau, Engineer-Manager.  
 Tulare County Flood Control District, Herb Knierem, Flood Control Engineer.  
 Turlock Irrigation District, Paul S. Brown, Controller.  
 University of California (Davis), Division of Environmental Studies.  
 Woodbridge Irrigation District, Mabel Hall, Manager-Secretary.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army; Forest Service and Soil Conservation Service, U.S. Department of Agriculture; and Bureau of Reclamation and Fish and Wildlife Service, U.S. Department of Interior.

The following organizations aided in collecting records: Pacific Gas & Electric Co.; Southern California Edison Co.; and Merced, Nevada, and Oakdale-South San Joaquin Irrigation Districts.

## SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

Runoff during the 1988 water year in the area covered by this volume was 37 percent of the 1951-80 median (based on five representative streamflow records). Total runoff, in percent of median, at selected sites in California is shown in figure 1. Runoff ranged from 66 percent of median at Bear Creek near Lake Thomas A. Edison (station 11230500) to 0 percent at Orestimba Creek near Newman (station 11274500). In figure 2, monthly mean runoff during the 1988 water year at four index stations is compared to the 1951-80 maximum, minimum, and median monthly mean runoff.

In anticipation of a third less than normal water year in 1989, many water agencies limited reservoir releases to maximize storage. The water year began with reservoir levels at or below average. By the end of the water year, storage in major reservoirs was about 35 percent below average. Many small to moderate-sized reservoirs were less than 50 percent of capacity. Storage in selected reservoirs for water years 1986-88 is shown in figure 3.

There were no significant storms during the 1988 water year; several moderate storms occurred during December and January. Few streams exceeded the peak discharge bases, and none had peaks of record. Precipitation in the area covered by this volume (based on 10 representative rain gages) was 82 percent of the long-term average. Precipitation on the western slopes of the Sierra Nevada averaged 67 percent and the valleys averaged 88 percent of average. The average April 1 water content of the Sierra Nevada snowpack was 32 percent of average. Warm temperatures in spring caused rapid melting, and the snowmelt peak occurred about a month earlier than usual.



Figure 1.--Runoff, in percent of median, for the 1988 water year.

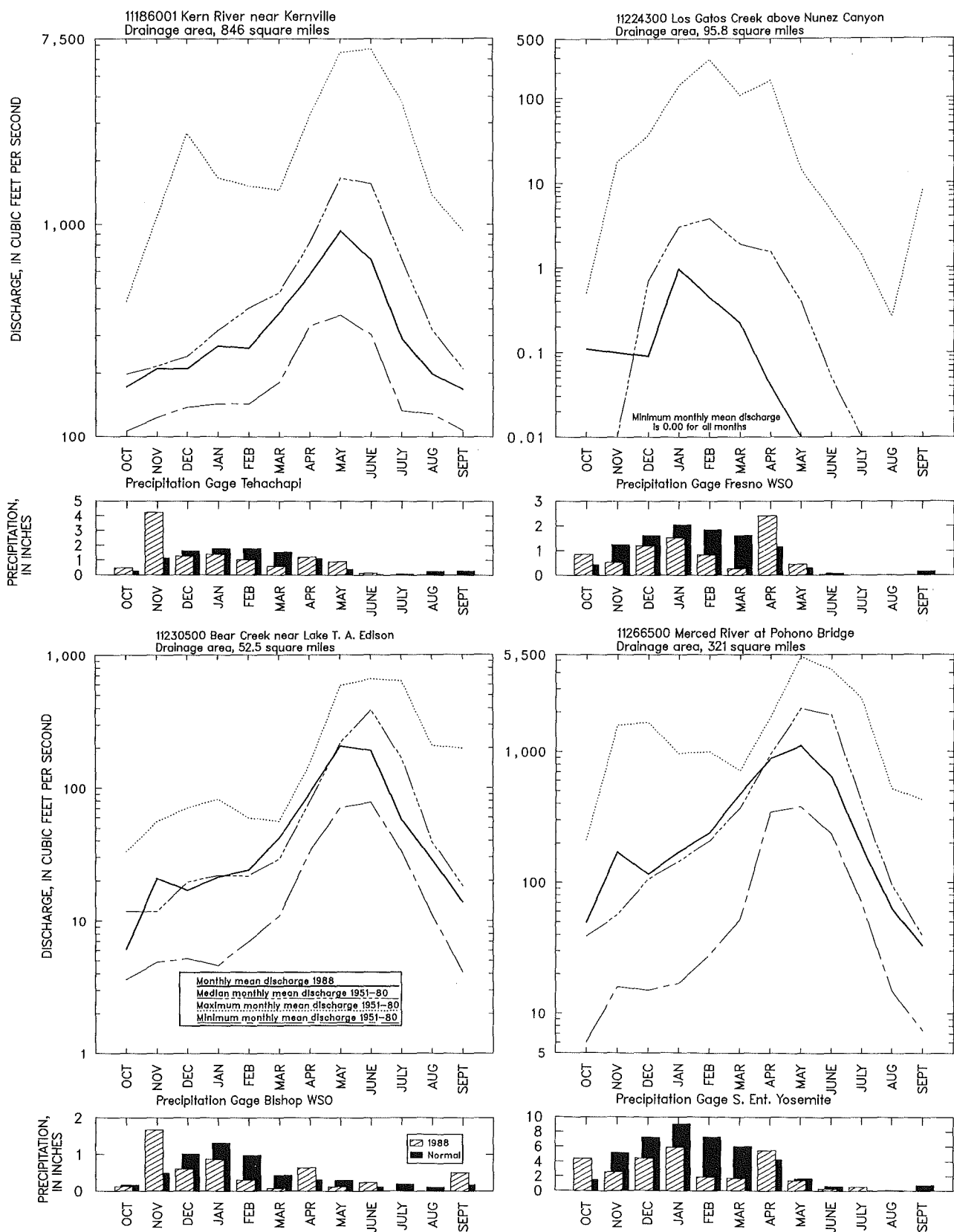


Figure 2.--Comparison of discharge during water year 1988 with long-term discharge statistics and rainfall of four representative gaging stations.

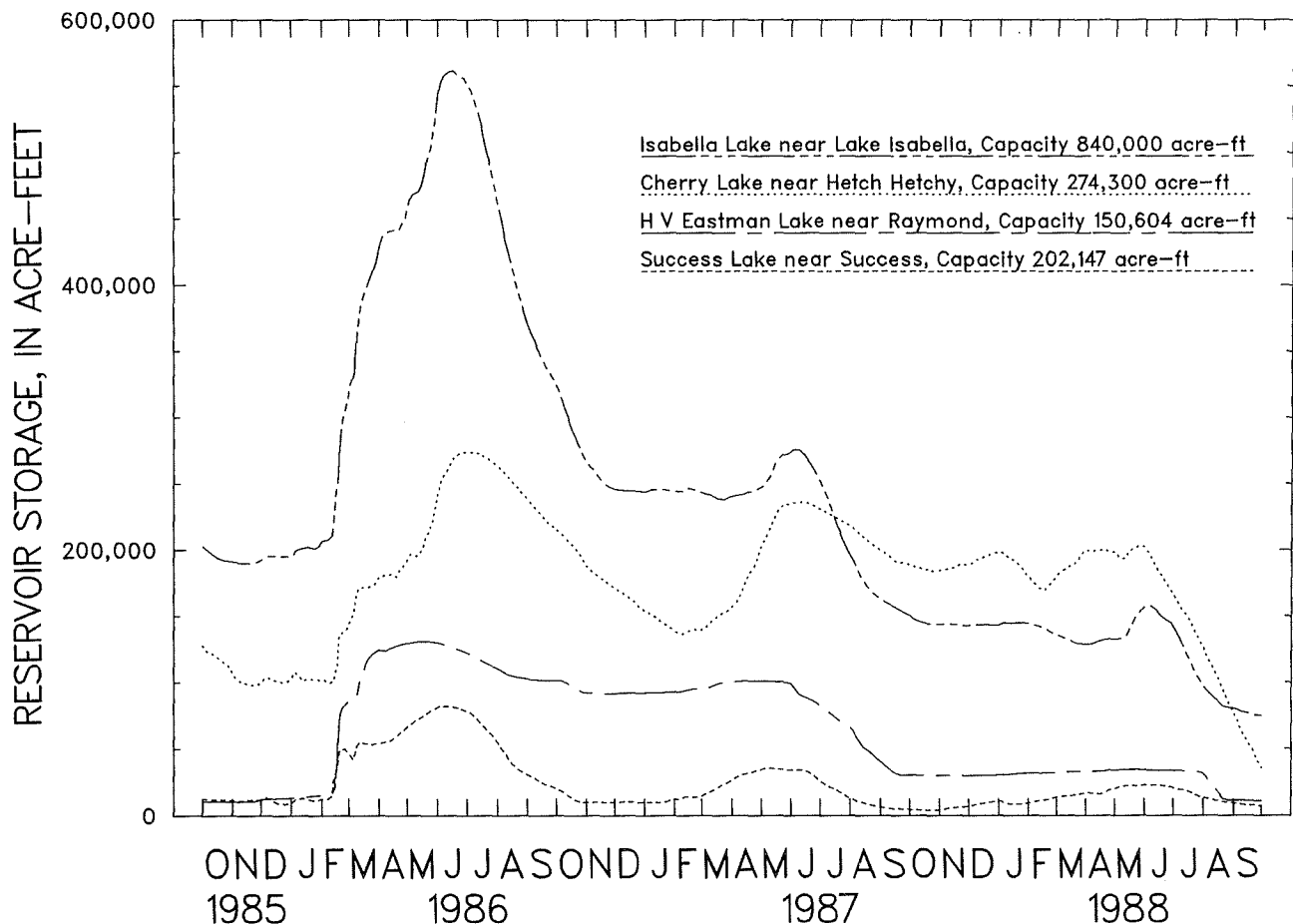


Figure 3.--Storage in selected reservoirs water years 1986-88.

#### Water Quality

Water samples collected at four NASQAN and two Hydrologic Benchmark stations reported in this volume were analyzed for water-quality constituents. Median dissolved-solids concentrations of samples collected from these stations were slightly higher when compared to the 1987 values. The monthly dissolved-solids concentrations during water year 1988 are compared in figure 4 with long term mean dissolved-solids concentration at two selected stations. The largest fecal-coliform bacterial density (350 colonies per 100 milliliters) and fecal-streptococcus bacterial density (2,000 colonies per 100 milliliters) occurred in water samples collected from the NASQAN stations on the San Joaquin River near Vernalis (station 11303500) and the Mokelumne River at Woodbridge (station 11325500).

Surface water-quality data have been collected at 11 stations in the lower San Joaquin River drainage basin as part of the Western San Joaquin Valley Study. Data collection began in June 1985 and is continuing. Physical measurements are made onsite at each station, and water samples are collected for chemical, biological, and sediment analyses. Results of these measurements and analyses will be published in U.S. Geological Survey reports.

The following water-quality partial-record stations had several chemical constituents that exceeded recommended U.S. Environmental Protection Agency criteria:

Westfarmers Pond 1 near Lost Hills  
 Pryse Pond East Cell near Alpaugh  
 Westlake Northeast Pond near Kettleman City  
 Meyers Pond A near Stratford

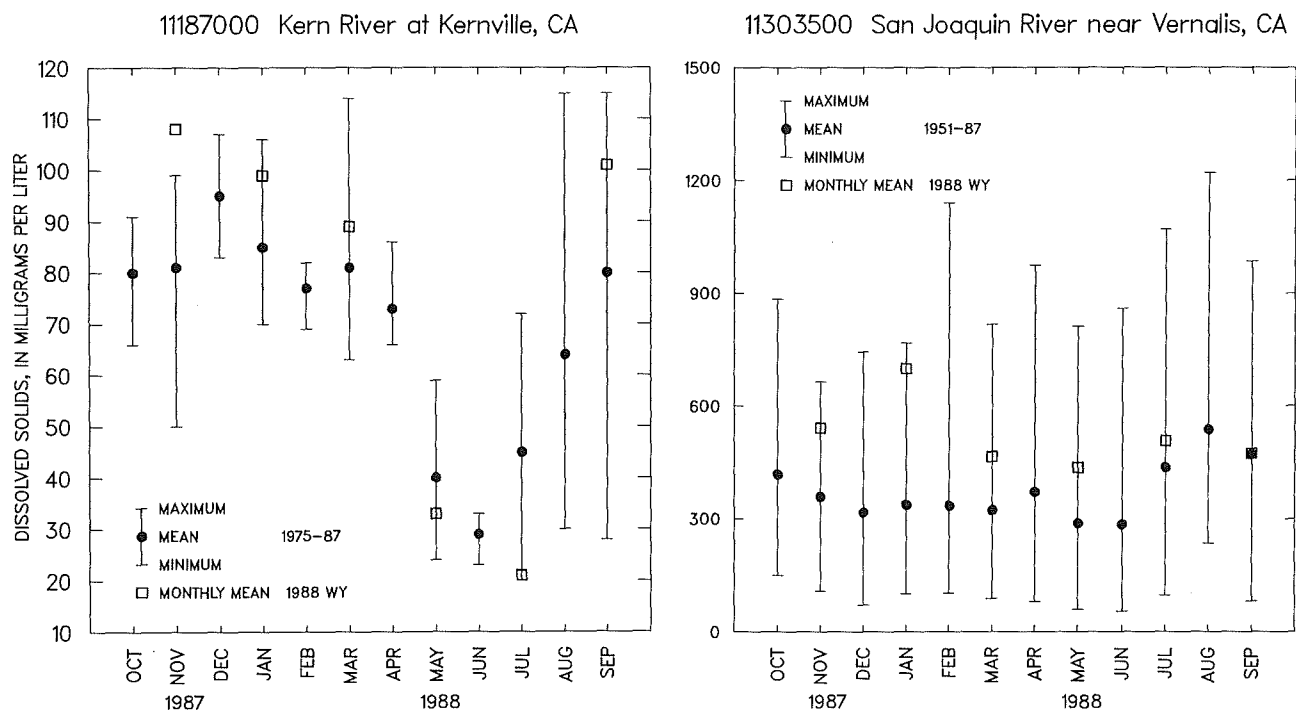


Figure 4.--Comparison of monthly mean dissolved-solids concentrations during water year 1988 with long-term dissolved-solids concentrations of two selected stations.

#### Sediment

Suspended-sediment discharge and concentration were monitored daily at six stations and periodically at eight stations in the area reported in this volume. Five of the daily stations monitor sediment transport into Lake Tahoe (station 10337000). The high resistance to erosion of the granitic and volcanic rock surrounding the lake, as well as the presence of snowcover during a significant part of the year, generally resulted in relatively low sediment-discharge rates and concentrations. The stations monitored periodically are in an area extending from as far north as Truckee to as far south as the town of Kernville.

During the 1988 water year, sediment discharge at five stations in the Lake Tahoe basin ranged from 1 to 6 percent of the mean sediment discharge for the 1981-87 water years. Sediment discharge for 1988 was less than half that of any of the previous 7 years. Sediment discharge at the San Joaquin River near Vernalis was 31 percent of the long-term mean (1957-87).

Sediment discharge for the six daily stations ranged from 7.6 tons per year in General Creek near Meeks Bay to 114,000 tons per year in the San Joaquin River near Vernalis. Annual sediment discharge per square mile of drainage ranged from a minimum of 1.0 ton per square mile at General Creek near Meeks Bay (station 10336645) to a maximum of 8.4 tons per square mile at the San Joaquin River near Vernalis.

The majority of sediment transport in the Tahoe basin was the result of snowmelt runoff in April and May. Sediment discharge at the San Joaquin River station was more evenly distributed during the year because of flow regulation.

#### SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 56 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide. The data provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 408 sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting that the data may be used for; (2) to describe the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs; (3) to detect changes or trends with time in the pattern of occurrence of water-quality characteristics; and (4) to provide a nationally consistent data base useful for water-quality assessment and hydrologic research.



## EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1988 water year that began October 1, 1987, and ended September 30, 1988. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and contents data for lakes and reservoirs, and water-quality data for surface water. The locations of the stations where the data were collected are shown in figures 6 through 25. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each streamsite data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for surface-water stations in California where only miscellaneous measurements are made.

## Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports has been in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station such as 11218500, which appears just to the left of the station name, includes the two-digit part number "11" plus the six-digit downstream-order number "218500." The part number designates the major river basin; for example, part "11" is the Pacific Slope Basins in California.

## Latitude-Longitude System

The identification numbers for miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the other sites within a 1-second grid (fig. 5). This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

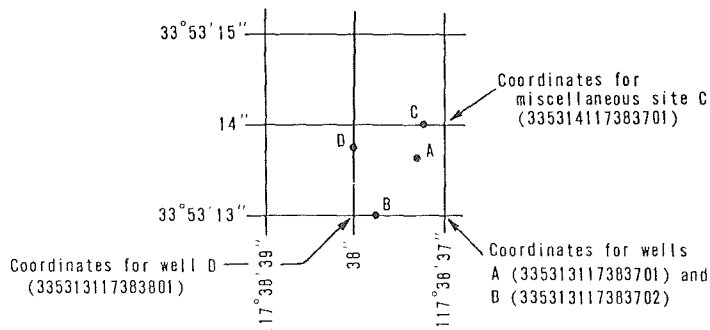


Figure 5.--System for numbering miscellaneous sites (latitude and longitude).

### Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake and reservoir contents, similarly, are those for which stage or contents may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record stations for which data are given in this report are shown, by county, in figures 6 through 25.

### Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake contents. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the U.S. Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in U.S. Geological Survey Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge are prepared for any stage within the range of the measurements. If it is necessary to define extremes of discharge outside the range of current-meter measurements, the curves are extended using (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dam or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes or observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available surveys, curves, or tables defining the relationship of stage and contents. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. When this is done, the contents computed may become increasingly in error as time increases since the last survey. Discharges over lake or reservoir spillways are computed from stage-discharge relationships, in the same manner as other stream discharges are computed.

For some gaging stations there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

## Data Presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location, period of record, average discharge, historical extremes, record accuracy, and other remarks pertinent to station operation and regulation.

The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

**LOCATION.**--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

**DRAINAGE AREA.**--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

**PERIOD OF RECORD.**--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time when the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

**REVISED RECORDS.**--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was published is given.

**GAGE.**--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see Definition of Terms), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

**REMARKS.**--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station, and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

**COOPERATION.**--Records provided by a cooperating organization or obtained for the U.S. Geological Survey by a cooperating organization are identified.

**AVERAGE DISCHARGE.**--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record, if the median differs from the average given by more than 10 percent.

**EXTREMES FOR PERIOD OF RECORD.**--Extremes may include maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and reported in the same manner as the maximum.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Included is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

**EXTREMES FOR CURRENT YEAR.**--Extremes given are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

**REVISIONS.**--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possible, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District office to determine if the published records were revised after the station was discontinued. If the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton storage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

#### Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing the table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

#### Accuracy of the Records

The accuracy of streamflow records depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned, are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second ( $\text{ft}^3/\text{s}$ ) for values less than  $1 \text{ ft}^3/\text{s}$ , to the nearest tenth between  $1.0$  and  $10 \text{ ft}^3/\text{s}$ , to whole numbers between  $10$  and  $1,000 \text{ ft}^3/\text{s}$ , and to three significant figures for more than  $1,000 \text{ ft}^3/\text{s}$ . The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

#### Other Records Available

The National Water Data Exchange (NAWDEX), U.S. Geological Survey, Reston, VA 22092, maintains an index of sites as well as an index of records of discharge collected by other agencies but not published by the U.S. Geological Survey. Information on records at specific sites can be obtained from that office upon request.

Information used in the preparation of the records in this publication, such as discharge measurement notes, gage-height records, temperature measurements, and rating tables are on file in the California District office. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the District office.

### Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

#### Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figures 6 through 25.

#### Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

#### Onsite Measurements and Sample Collection

In obtaining water-quality data, a major concern is the assurance that the data obtained represent the in-situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, are made onsite when samples are taken. To assure that measurements made in the laboratory also represent the in-situ water, carefully prescribed procedures are followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in Techniques of Water-Resources Investigations, Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. All these references are listed on page 21 of this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the California District office.

One sample can adequately define the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative value available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum and minimum values for each constituent measured and are based on hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the District office whose address is given on the back of the title page of this report.

#### Water Temperature

Water temperatures are measured at the water-quality stations. In addition, water temperatures are taken at the time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the District office.

#### Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

#### Cross-Sectional Data

Cross-sectional surveys of water temperature, pH, specific conductance, dissolved oxygen, and suspended sediment are done at all NASQAN and Hydrologic Bench-mark stations during various seasons and surface-water discharges. Documentation of cross-sectional variations of water quality is essential in order to determine how many samples in a cross section are necessary to ensure a representative composite sample.

#### Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the U.S. Geological Survey's National Water-Quality Laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in Techniques of Water-Resources Investigations, Book 5, Chapter C1; methods used by the laboratory are given in Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4.

#### Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and other data obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the individual parameters.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the U.S. Geological Survey by a cooperating organization are identified here.

**EXTREMES.**--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

**REVISIONS.**--If errors in water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to ensure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

#### Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptable range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant
*	Instantaneous streamflow at the time of cross-sectional measurement
1	Laboratory value
A	Samples collected by another agency

#### ACCESS TO WATSTORE DATA

The National WATER Data STORAGE and RETRIEVAL System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's District offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist  
U.S. Geological Survey  
437 National Center  
Reston, VA 22092

#### DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See the table for converting inch-pound units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by a well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease; others perform an essential role in nature in the recycling of materials, for example, decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35 °C. For the membrane filter method these bacteria are defined as the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C ± 0.5 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.

Fecal-coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. For the membrane filter method they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5 °C ± 0.2 °C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.

Fecal-streptococcal bacteria are bacteria found in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. For the membrane filter method they are defined as all the organisms which produce red or pink colonies within 48 hours at 35 °C ± 0.5 °C on KF streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Benthic organisms (invertebrates) are the group of animals living in or on the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by micro-organisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500 °C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m<sup>3</sup>) and periphyton and benthic organisms are expressed in grams per square meter (g/m<sup>2</sup>).

Dry mass refers to the mass of residue present after drying in an oven at 105 °C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash, and sediment in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cell volume determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell numbers of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm<sup>3</sup>) is determined by obtaining critical cell measurements on cell dimensions (that is, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (that is, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

$$\text{sphere } \frac{4}{3} \pi r^3 \quad \text{cone } \frac{1}{3} \pi r^2 h \quad \text{cylinder } \pi r^2 h.$$

From cell volume, total algal biomass expressed as biovolume (πm<sup>3</sup>/mL) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes over all species.

Cells per volume (cells/volume) refers to the number of cells of any organism that are counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually in milliliters (mL) or liters (L).

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.



Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

Cubic foot per second (ft<sup>3</sup>/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic foot per second-day (cfs.d) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons or 2,445 cubic meters.

Discharge is the volume of water (or more broadly, total fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to that material in a representative water sample which passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate. It is recognized that certain kinds of samples cannot be filtered; to provide for this, procedures that are considered equivalent to filtering through a 0.45-micrometer membrane filter will be identified and announced at a later date.

Dissolved-solids concentration of water is determined either analytically or by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = \sum_{i=1}^s \frac{n_i}{n} \log^2 \frac{n_i}{n},$$

where  $n_i$  is the number of individuals per taxon,  $n$  is the total number of individuals, and  $s$  is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the samples are the same; to some positive number, when some or all the organisms in the sample are different.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the Earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water, together with all tributary surface streams and bodies of impounded surface water.

Gage datum is the elevation of the zero point of the reference gage from which gage height is determined as compared to the National Geodetic Vertical Datum of 1929. This elevation is established by a system of levels from known bench marks or by approximation from topographic maps.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap that is required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO<sub>3</sub>).

Hydrologic Bench-Mark Network is a network of 56 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation

$$I = I_0 e^{-\lambda L},$$

where  $I_0$  is the source light intensity,  $I$  is the light intensity at length  $L$  (in meters) from the source,  $\lambda$  is the light-attenuation coefficient, and  $e$  is the base of the natural logarithm. The light-attenuation coefficient is defined as

$$\lambda = -\frac{1}{L} \log_e \frac{I}{I_0}.$$

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that are usually arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This development process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-pupa-adult or egg-nymph-adult.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (UG/G, ug/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L, ug/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called Sea Level Datum of 1929 or mean sea level in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 408 sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting that the data may be used for, (2) to describe the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) to detect changes in trends with time in the pattern occurrence of water-quality characteristics, and (4) to provide a nationally consistent data base useful for water-quality assessment and hydrologic research.

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area of the habitat, usually square meter ( $m^2$ ), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter code is a five-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay.....	0.00024-0.004	Sedimentation
Silt.....	0.004-0.062	Sedimentation
Sand.....	0.062-2.0	Sedimentation or sieve
Gravel.....	2.0-64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Percent composition or percent of total is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, or volume.

Periphyton is the assemblage of micro-organisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, the periphyton also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7 are termed "acidic," and solutions with a pH greater than 7 are termed "basic." Solutions with a pH of 7 are neutral. The presence and concentration of many dissolved chemical constituents found in water are, in part, influenced by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms are also influenced, in part, by the hydrogen-ion activity of water.

Picocurie (PC, pCi) is one trillionth ( $1 \times 10^{-12}$ ) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton are suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton compose the plant part of the plankton. They are usually microscopic, and their movement is subject to water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials into the surrounding water, the phytoplankton have a profound effect on the quality of the water. They are the primary food producers in the aquatic environment and are commonly known as algae.

Blue-green algae are phytoplankton organisms having a blue pigment in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms, chiefly green plants. The rate of primary production is estimated by measuring the amount of carbon assimilated by plants (carbon method) or the amount of oxygen released (oxygen method).

Milligrams of carbon per area or volume per unit time [ $\text{mg C}/(\text{m}^2 \cdot \text{time})$  for periphyton and macrophytes and  $\text{mg C}/(\text{m}^3 \cdot \text{time})$  for phytoplankton] are the units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light- and dark-bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [ $\text{mg O}_2/(\text{m}^2 \cdot \text{time})$  for periphyton and macrophytes and  $\text{mg O}_2/(\text{m}^3 \cdot \text{time})$  for phytoplankton] are the units for expressing primary productivity. They define the amount of oxygen produced and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light- and dark-bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical Program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment; thus, the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bedload is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bedload is considered to consist of particles in transit within 0.25 ft (0.076 m) of the streambed.

Bedload discharge (tons per day) is the quantity of sediment, as measured by dry weight, that moves past a section as bedload in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour period.

Suspended-sediment discharge (tons per day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day by multiplying discharge times milligrams per liter times 0.0027.

Suspended-sediment load (tons per day) is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total-sediment discharge or total-sediment load (tons per day) is the sum of suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry mass, that passes a section in a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content in water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and the volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff." Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic-organism collection and plexiglass strips for periphyton collection.

Surface area of a lake is the area, in square miles or acres, outlined on the latest U.S. Geological Survey topographic map as the boundary of the lake and measured by a planimeter. In localities not covered by topographic maps, the areas are computed from the best maps available. Areas shown are for the lake stage at the time the map was made.

Surficial bed material is the part (upper 0.1 to 0.2 ft or 0.03 to 0.06 m) of the bed material that is sampled by using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment; thus, the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata is the following:

```
Kingdom.....Animal
Phylum.....Arthropoda
Class.....Insecta
Order.....Ephemeroptera
Family.....Ephemeridae
Genus.....Hexagenia
Species.....Hexagenia limbata
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Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that records water temperature in a digital format on punched paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total load (tons) is the total amount of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the milligrams per liter of the constituent, times the factor 0.0027, times the number of days.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment; thus, the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses, because different digestion procedures are likely to produce different analytical results.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in the dissolved and suspended phases of the sample. A knowledge of the expected form is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all the constituent in the sample.)

Turbidity of a sample is the reduction of transparency due to the presence of particulate matter. In this report it is expressed in Nephelometric turbidity units (NTU), obtained from the Nephelometric method for turbidity determination which measures the intensity of light scattered by suspended particles at 90° from the path of incident light source.

Water year in U.S. Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1988, is called the "1988 water year."

WDR is used as an abbreviation for "Water-Data Reports" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WSP is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Building 810, Denver, CO 80225. Prepayment is required. Remittance should be sent by check or money order payable to U.S. Geological Survey, Department of the Interior. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. Water temperature--influential factors, field measurement, and data presentation, by H.H. Stevens, Jr., J.F. Ficke, and G.F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. Guidelines for collection and field analysis of ground-water samples for selected unstable constituents, by W.W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. Application of surface geophysics to ground-water investigations, by A.A.R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-E1. Application of borehole geophysics to water-resources investigations, by W.S. Keys, and L.M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 3-A1. General field and office procedures for indirect discharge measurements, by M.A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. Measurement of peak discharge by slope-area method, by Tate Dalrymple and M.A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. Measurement of peak discharge at culverts by indirect methods, by G.L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. Measurement of peak discharge at width contractions by indirect methods, by H.F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. General procedure for gaging streams, by R.W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. Stage measurements at gaging stations, by T.J. Buchanan and W.P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. Discharge measurements at gaging stations, by T.J. Buchanan and W.P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. Measurement of time of travel and dispersion in streams by dye tracing, by E.F. Hubbard, F.A. Kilpatrick, L.A. Martens, and J.F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.
- 3-A10. Discharge ratings at gaging stations, by E.J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. Measurement of discharge by moving-boat method, by G.F. Smoot and C.E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. Fluorometric procedures for dye tracing, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. Computation of continuous records of streamflow, by E.J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. Use of flumes in measuring discharge, by F.A. Kilpatrick and V.R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. Computation of water-surface profiles in open channels, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. Measurement of discharge using tracers, by F.A. Kilpatrick and E.D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. Acoustic velocity meter systems, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-B1. Aquifer-test design, observation, and data analysis, by R.W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.

- 3-B2. Introduction to ground-water hydraulics, a programmed text for self-instruction, by G.D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. Type curves for selected problems of flow to wells in confined aquifers, by J.E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B5. Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. The principle of superposition and its application in ground-water hydraulics, by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-C1. Fluvial sediment concepts, by H.P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. Field methods for measurement of fluvial sediment, by H.P. Guy and V.W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. Computation of fluvial sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. Some statistical tools in hydrology, by H.C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. Frequency curves, by H.C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. Low-flow investigations by H.C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. Storage analyses for water supply, by H.C. Riggs and C.H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. Regional analyses of streamflow characteristics, by H.C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. Computation of rate and volume of stream depletion by wells, by C.T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. Methods for determination of inorganic substances in water and fluvial sediments, edited by M.W. Skougstad and others: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.
- 5-A2. Determination of minor elements in water by emission spectroscopy, by P.R. Barnett and E.C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. Methods for analysis of organic substances in water, by D.F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
- 5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, edited by P.E. Greeson, T.A. Ehlke, G.A. Irwin, B.W. Lium, and K.V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 322 pages.
- 5-A5. Methods for determination of radioactive substances in water and fluvial sediments, by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-A6. Quality assurance practices for the chemical and biological analyses of water and fluvial sediments, by L.C. Friedman, and D.E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. Laboratory theory and methods for sediment analysis, by H.P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. A modular three-dimensional finite-difference ground-water flow model, by M.G. McDonald and A.W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.
- 7-C1. Finite difference model for aquifer simulation in two dimensions with results of numerical experiments, by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. Computer model of two-dimensional solute transport and dispersion in ground water, by L.F. Konikow and J.D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. A model for simulation of flow in singular and interconnected channels by R.W. Shaffranek, R.A. Baltzer, and D.E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. Methods of measuring water levels in deep wells, by M.S. Garber and F.C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. Installation and service manual for U.S. Geological Survey manometers, by J.D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.
- 8-B2. Calibration and maintenance of vertical-axis type current meters, by G.F. Smoot and C.E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.



## DISCONTINUED GAGING STATIONS

The following continuous-record streamflow station reported in this volume has been discontinued as of the 1988 water year. Daily streamflow or stage records were collected and published for the period of record shown for each station.

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record
11293500	North Fork Stanislaus River below Silver Creek	27.8	1953-88

## DISCONTINUED WATER-QUALITY STATIONS

The following water-quality stations reported in this volume have been discontinued as of the 1988 water year. Continuous daily records of water temperature were collected and published for the period of record shown.

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Type of record	Period of record
11187000	Kern River at Kernville	1,009	T	1962-88
11203201	Tule River at Highway 190, near Springville	247	T	1966-67, 1969-88
11209900	Kaweah River at Three Rivers	418	T	1966, 1968-88
11218500	Kings River below North Fork, near Trimmer	1,342	T	1967-88
11257500	Fresno River near Knowles	133	T	1971-88
11258960	Chowchilla River above Willow Creek, near Raymond	173	T	1980-88
11308600	Calaveras River above New Hogan Lake, near San Andreas	307	T	1971-88

Type of record: T (water temperature).

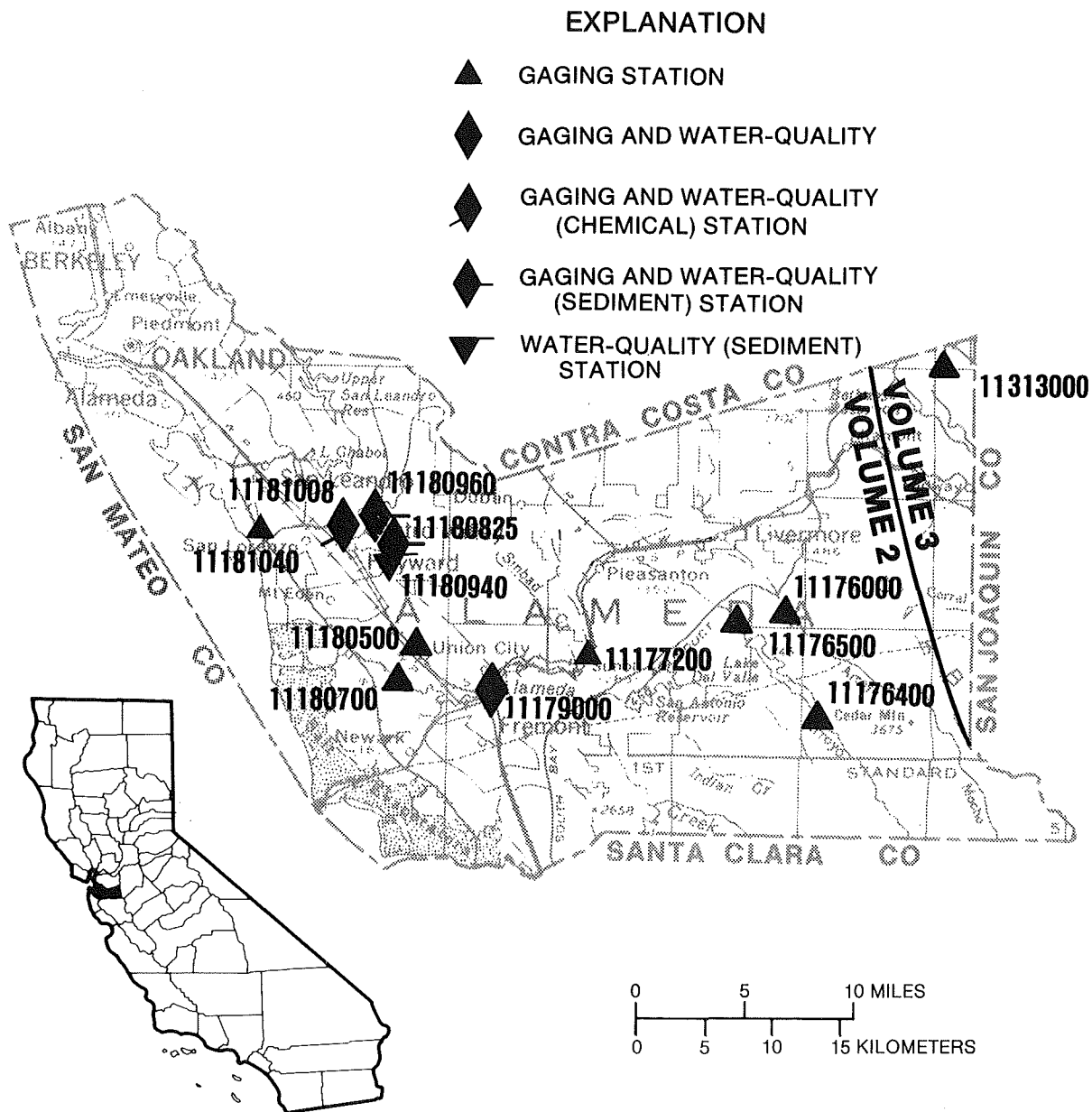


Figure 6.-- Location of discharge and water-quality stations in Alameda County.  
(NOTE: Records for stations 11176000 through 11181008 published in volume 2)

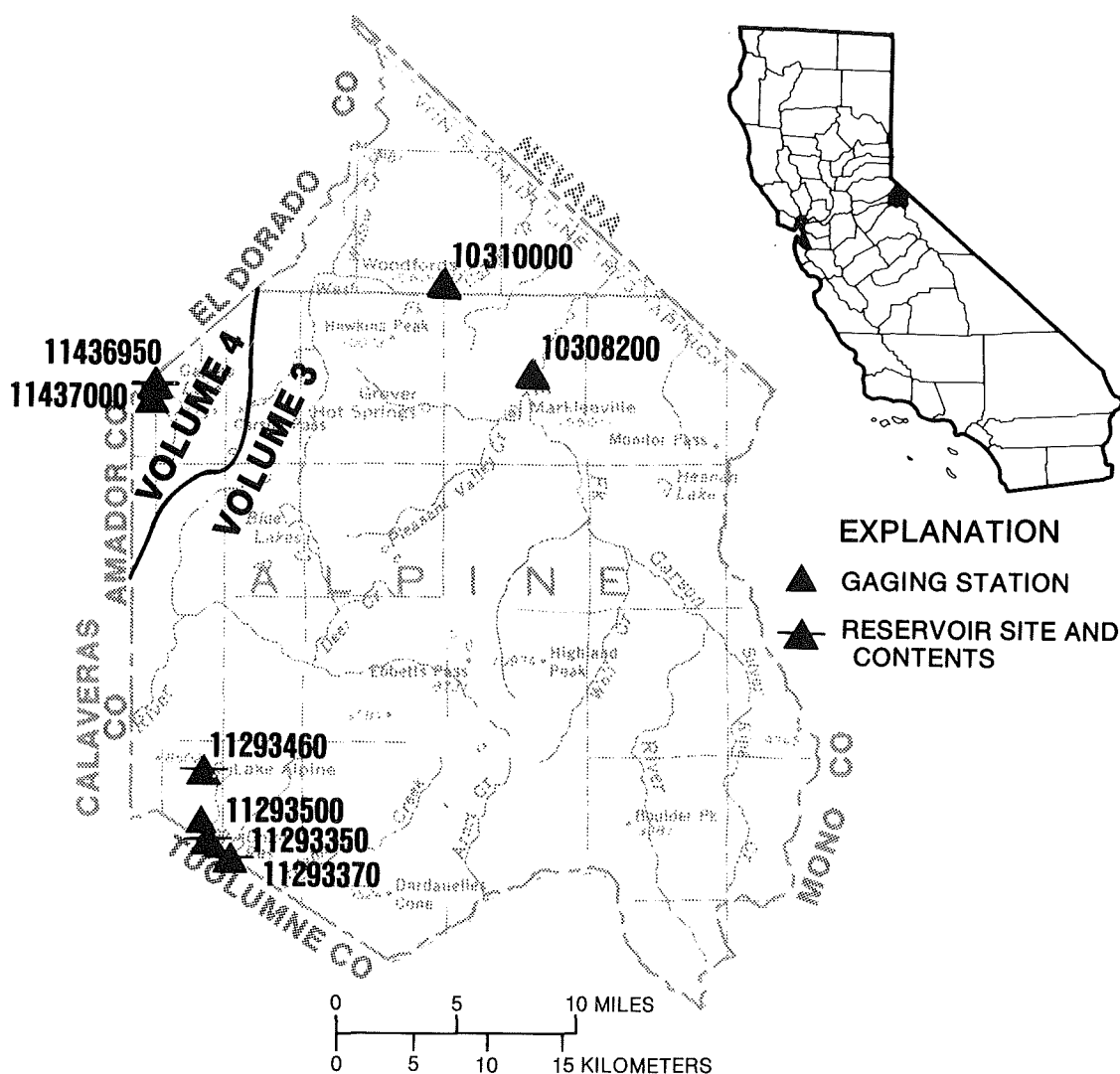


Figure 7.--Location of discharge stations in Alpine County.  
(NOTE: Stations 10297000, 10336740, and 10336759 in Douglas County, Nevada, not shown on this map.  
Record for stations 11436950 and 11437000 published in volume 4)

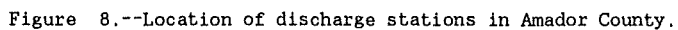
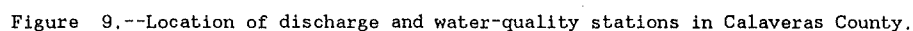


Figure 8.--Location of discharge stations in Amador County.



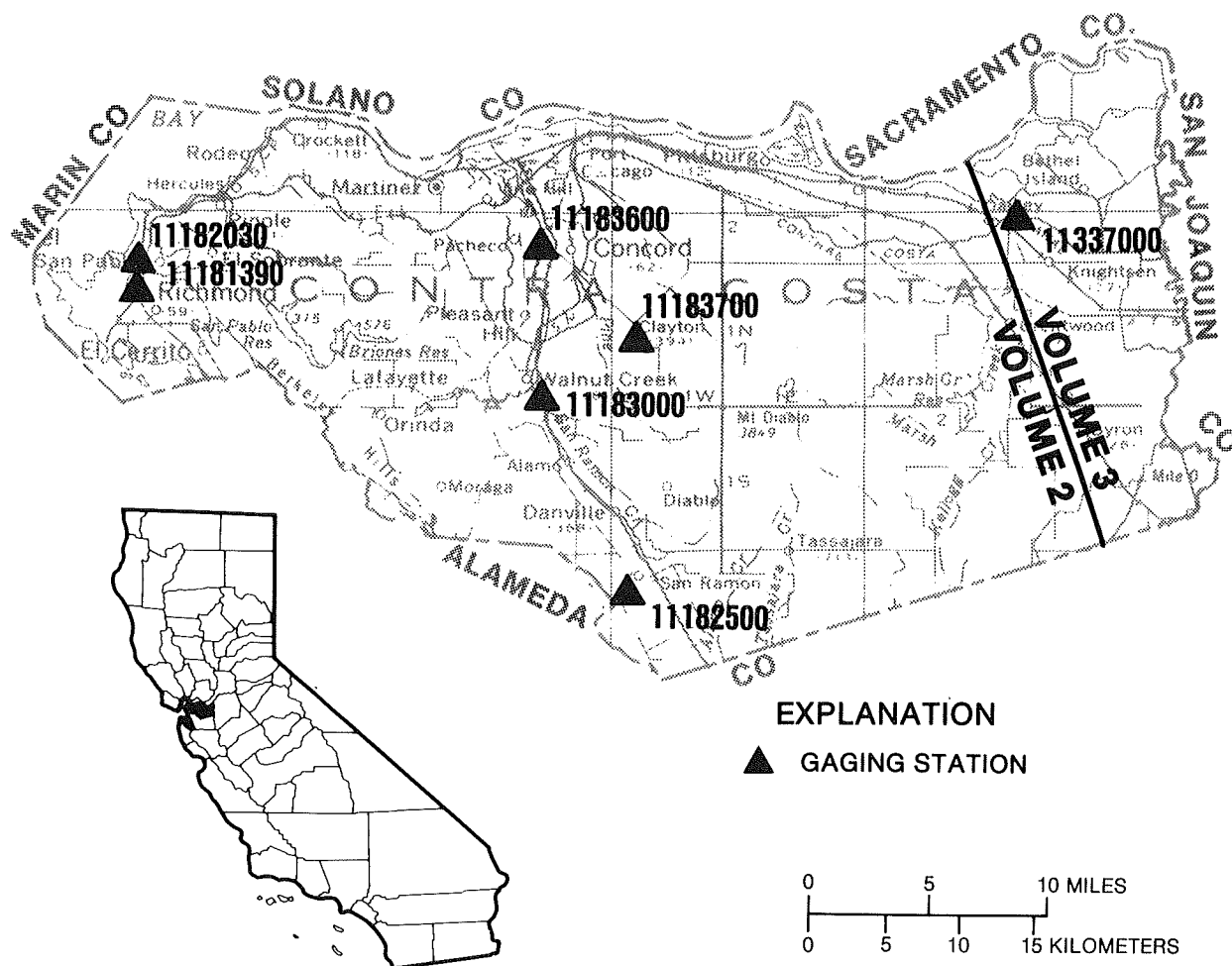


Figure 10.--Location of discharge stations in Contra Costa County.  
(NOTE: Records for stations 11181390 through 11183600 published in volume 2)

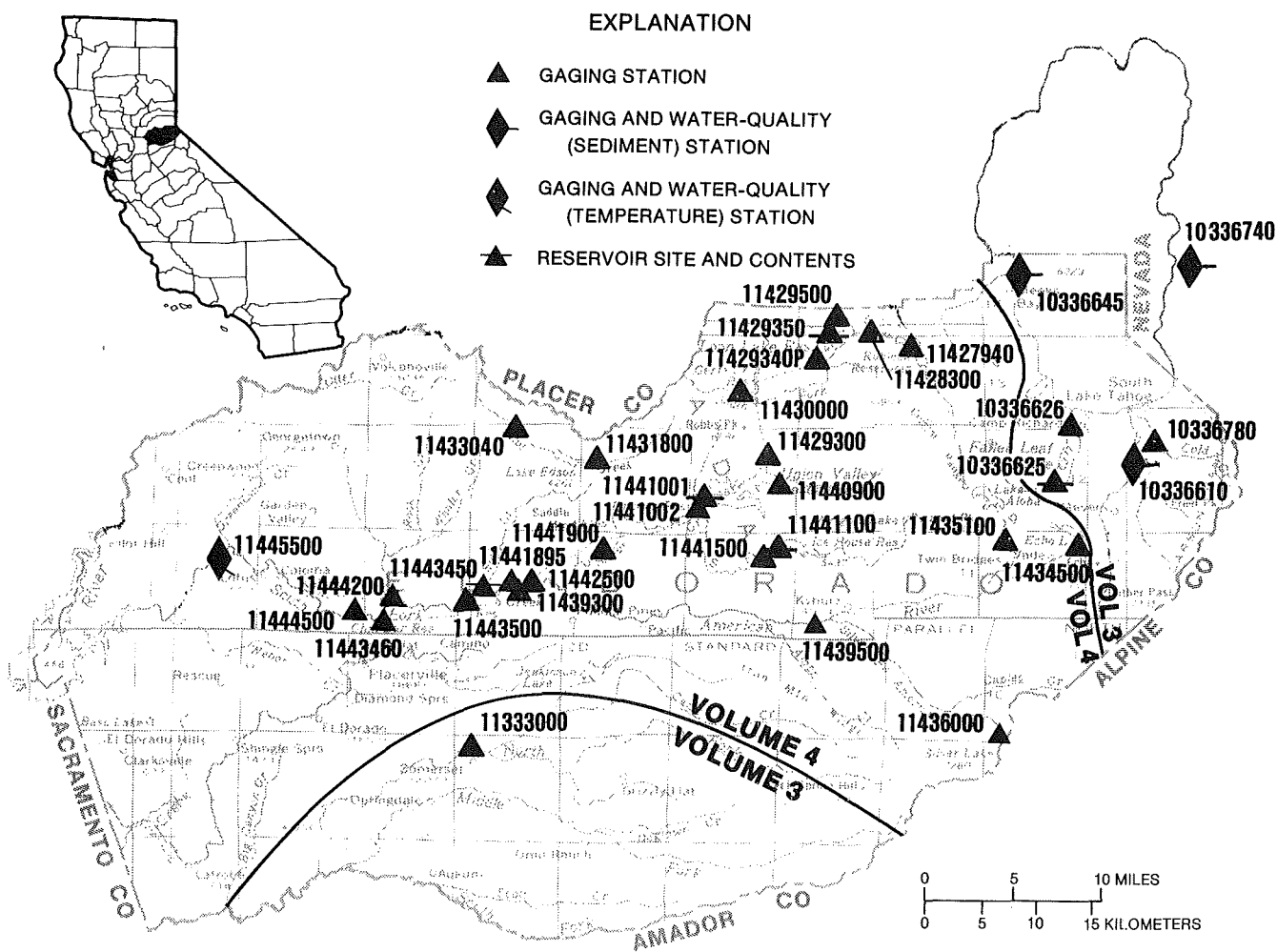


Figure 11.--Location of discharge and water-quality stations in El Dorado County.  
(NOTE: Records for stations 11427940 through 11445500 published in volume 4)

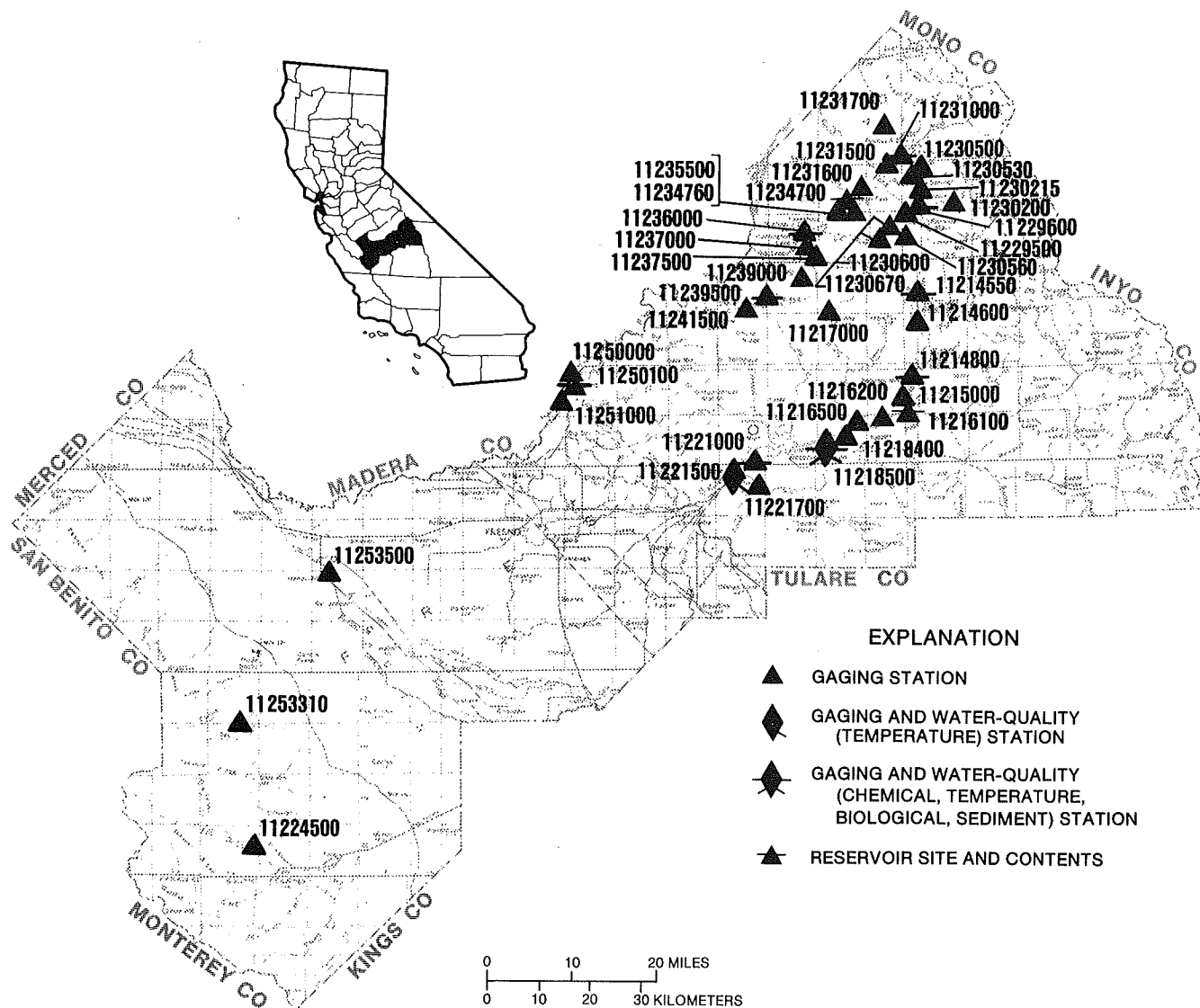


Figure 12.--Location of discharge and water-quality stations in Fresno County.



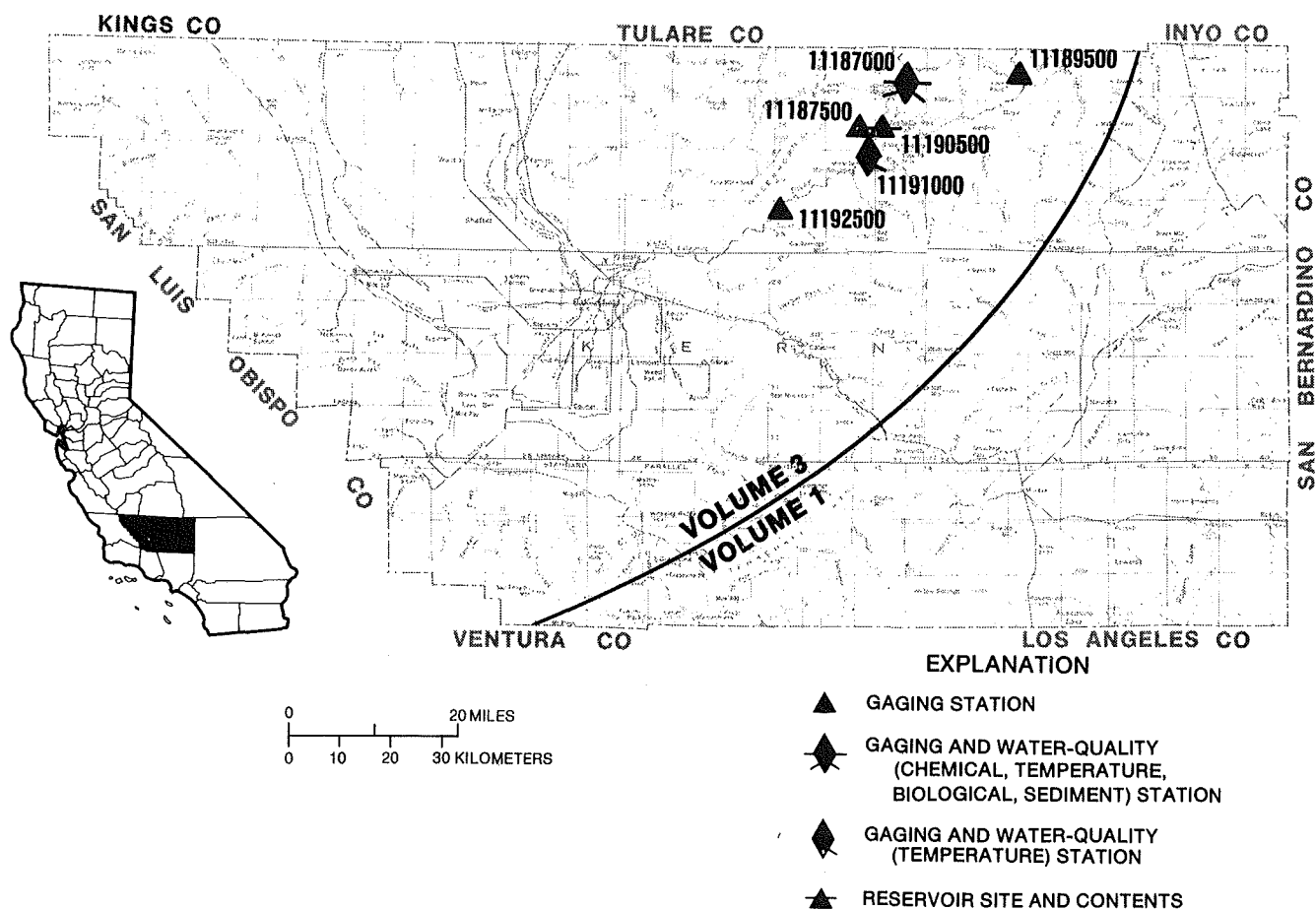


Figure 13.--Location of discharge and water-quality stations in Kern County.

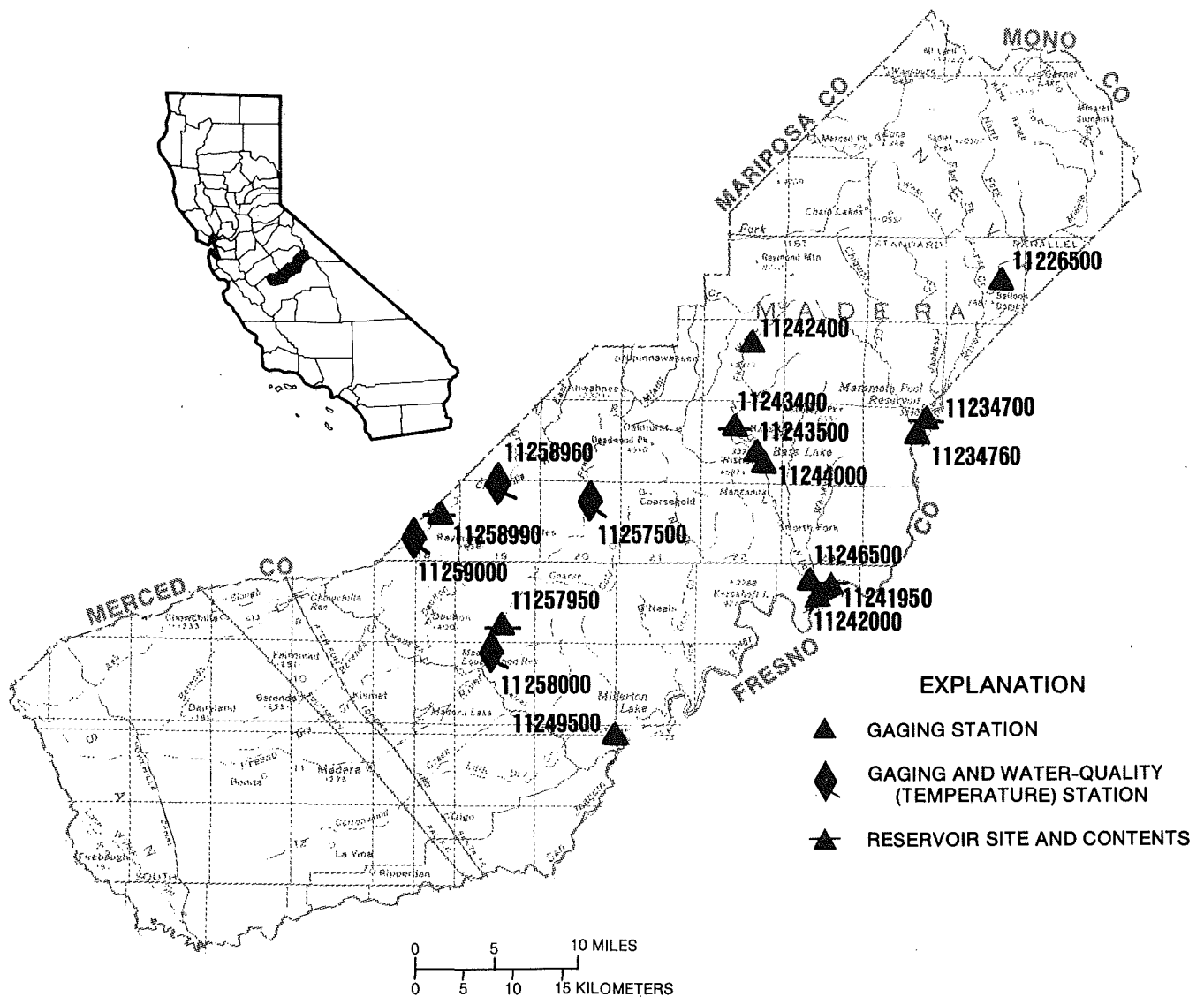


Figure 14.--Location of discharge and water-quality stations in Madera County.

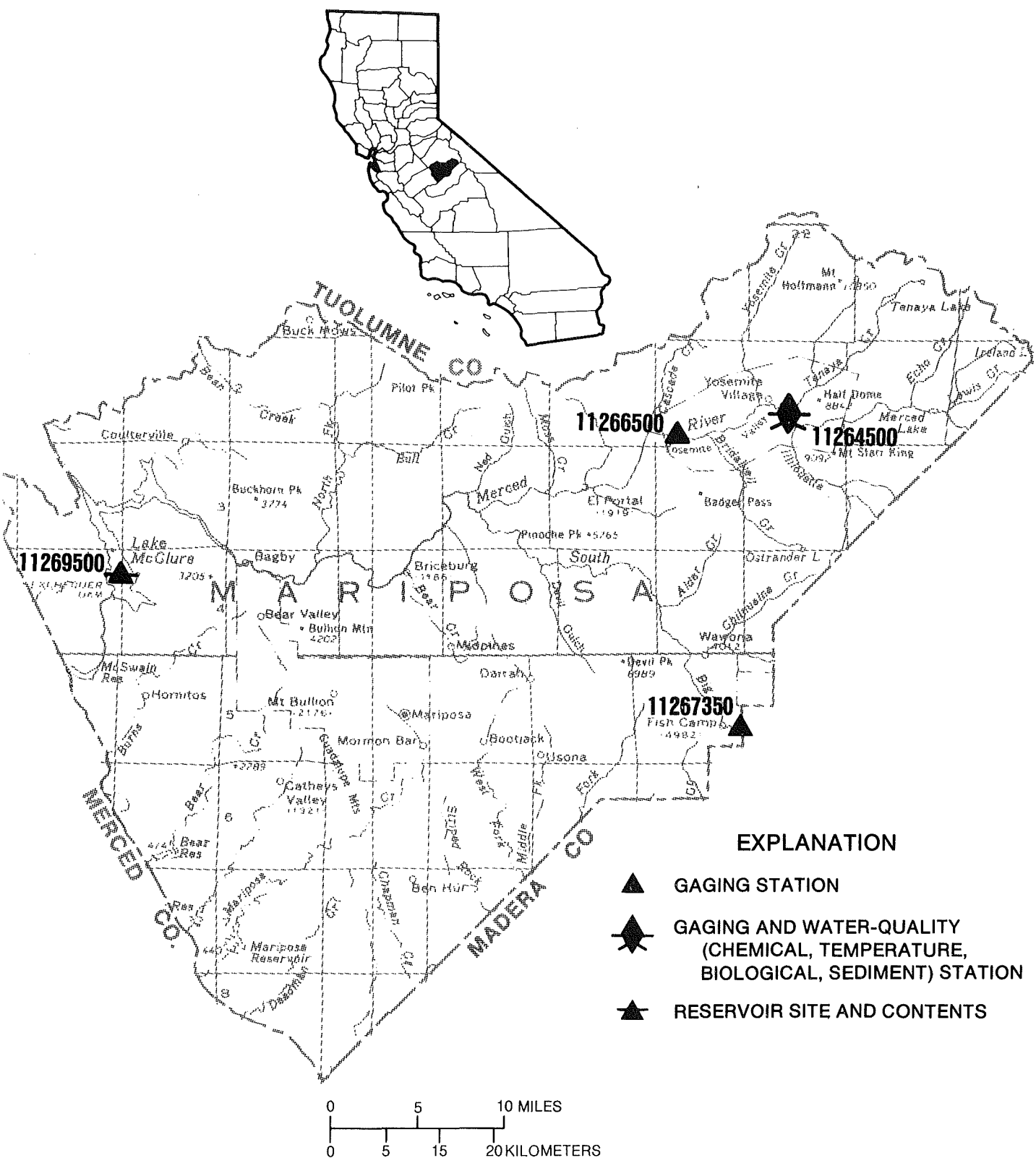


Figure 15.--Location of discharge and water-quality stations in Mariposa County.

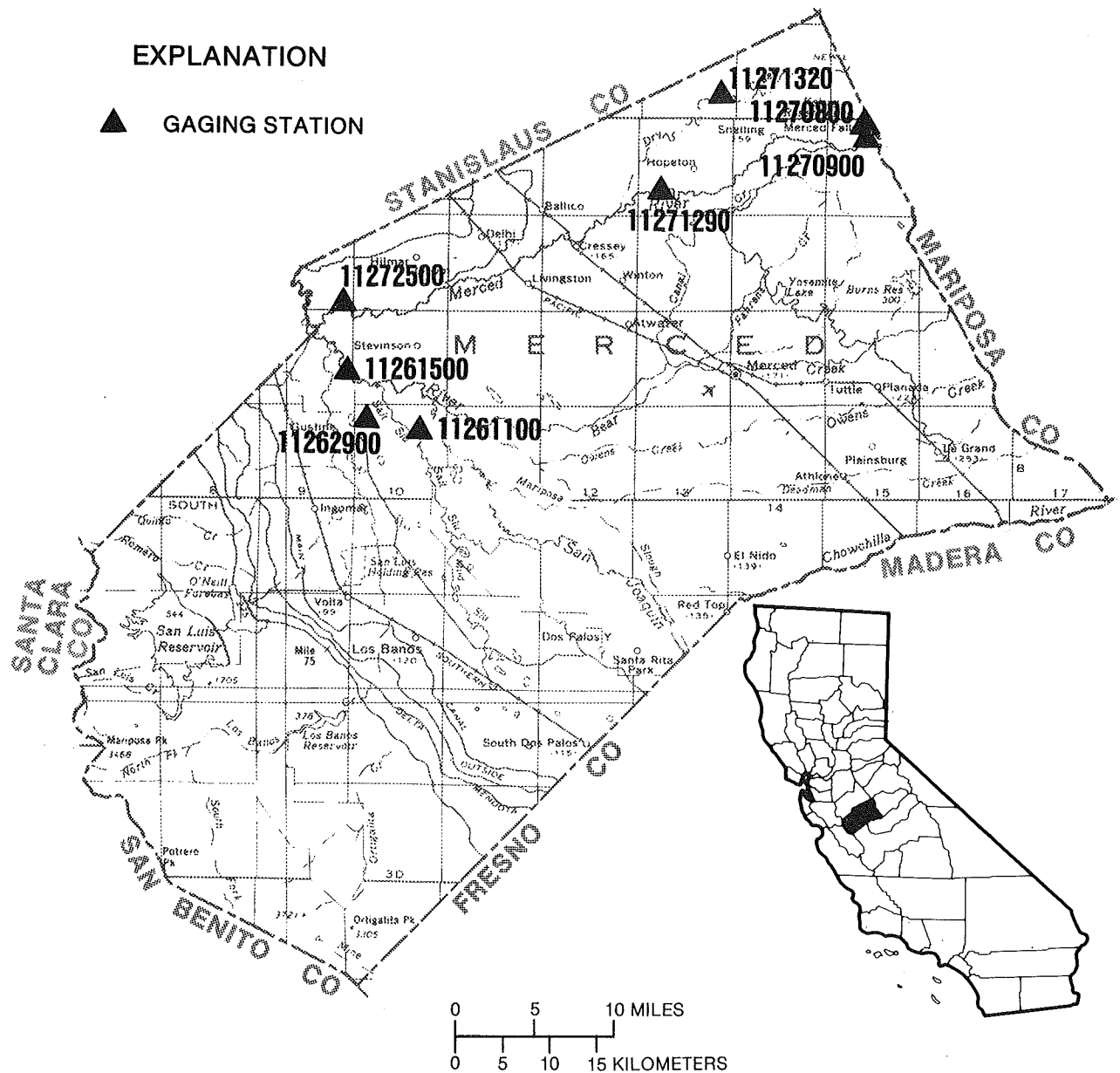


Figure 16.--Location of discharge stations in Merced County.

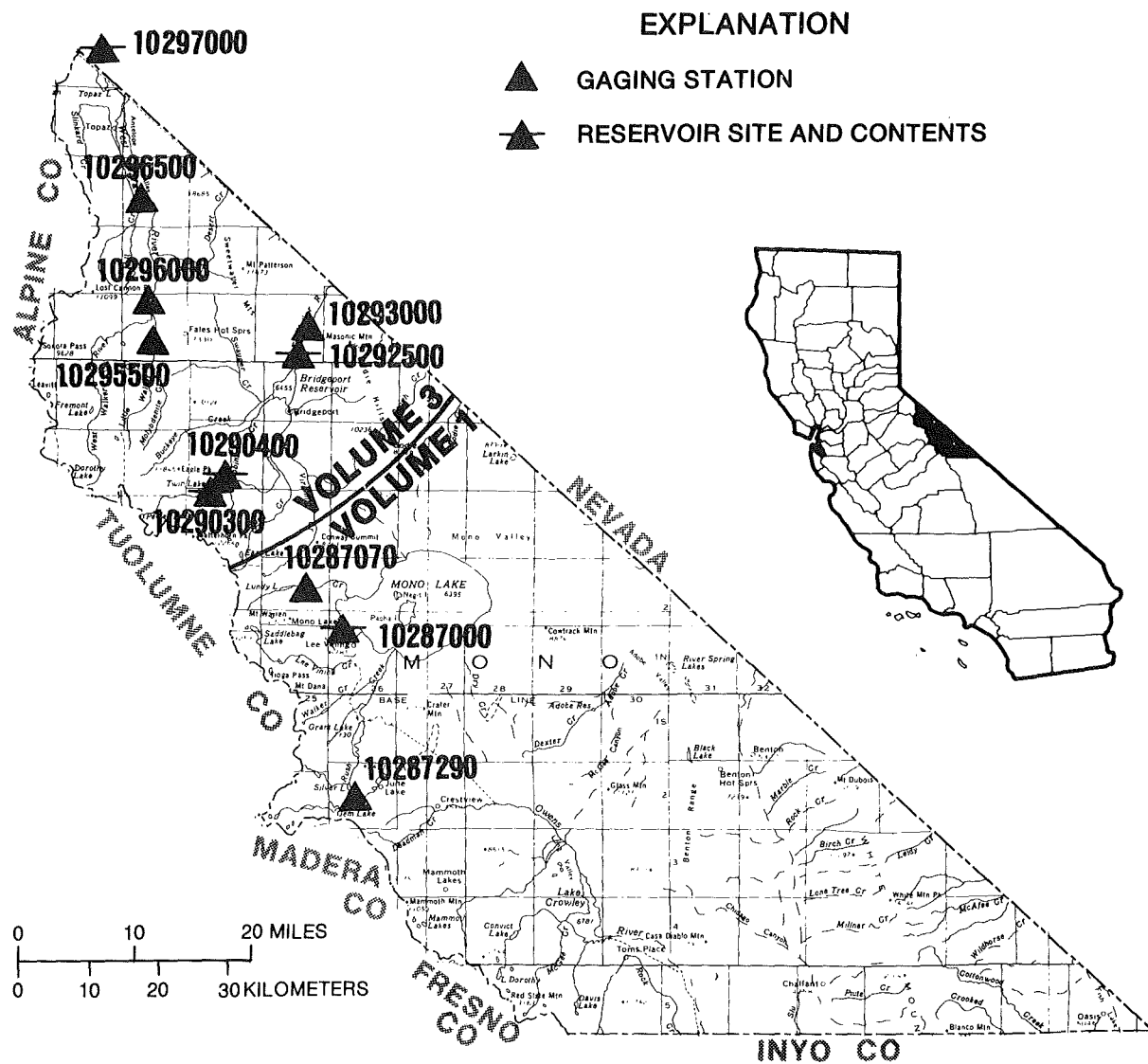


Figure 17.--Location of discharge stations in Mono County.  
(NOTE: Records for stations 10287000, 10287070, and 10287290 published in volume 1)

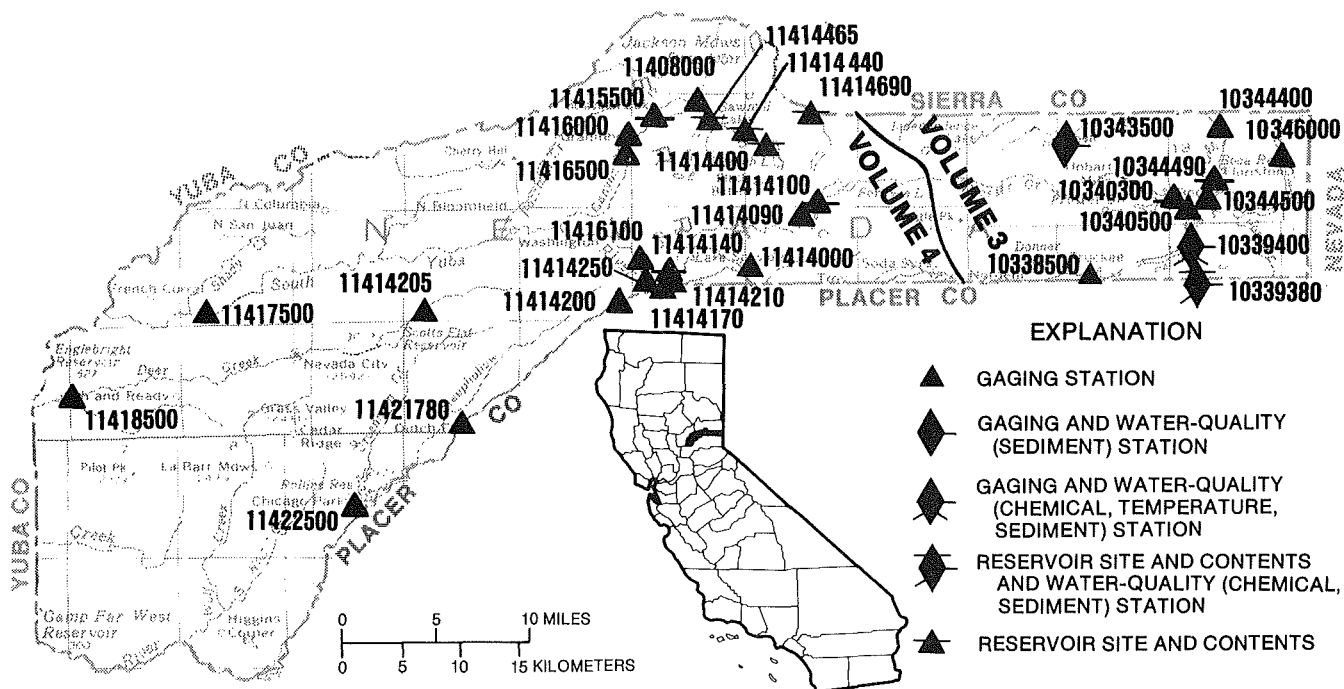


Figure 18.--Location of discharge and water-quality stations in Nevada County.  
(NOTE: Records for stations 11408000 through 11422500 published in volume 4)

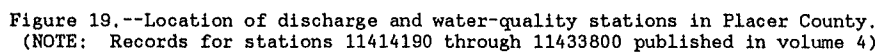


Figure 19.--Location of discharge and water-quality stations in Placer County.  
(NOTE: Records for stations 11414190 through 11433800 published in volume 4)

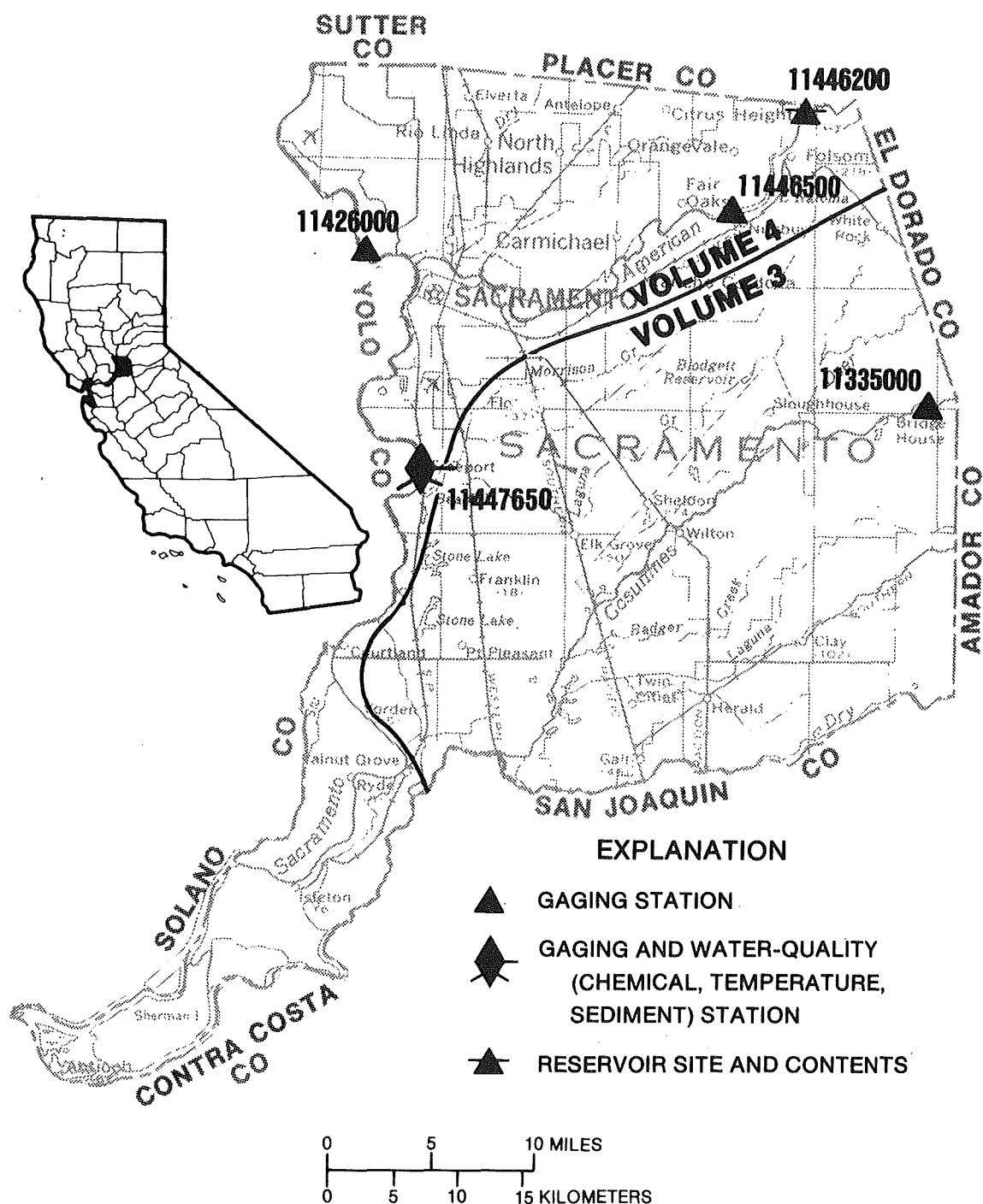


Figure 20.--Location of discharge and water-quality stations in Sacramento County.  
(NOTE: Records for stations 11426000, 11446200, 11446500, and 11447650 published in volume 4)



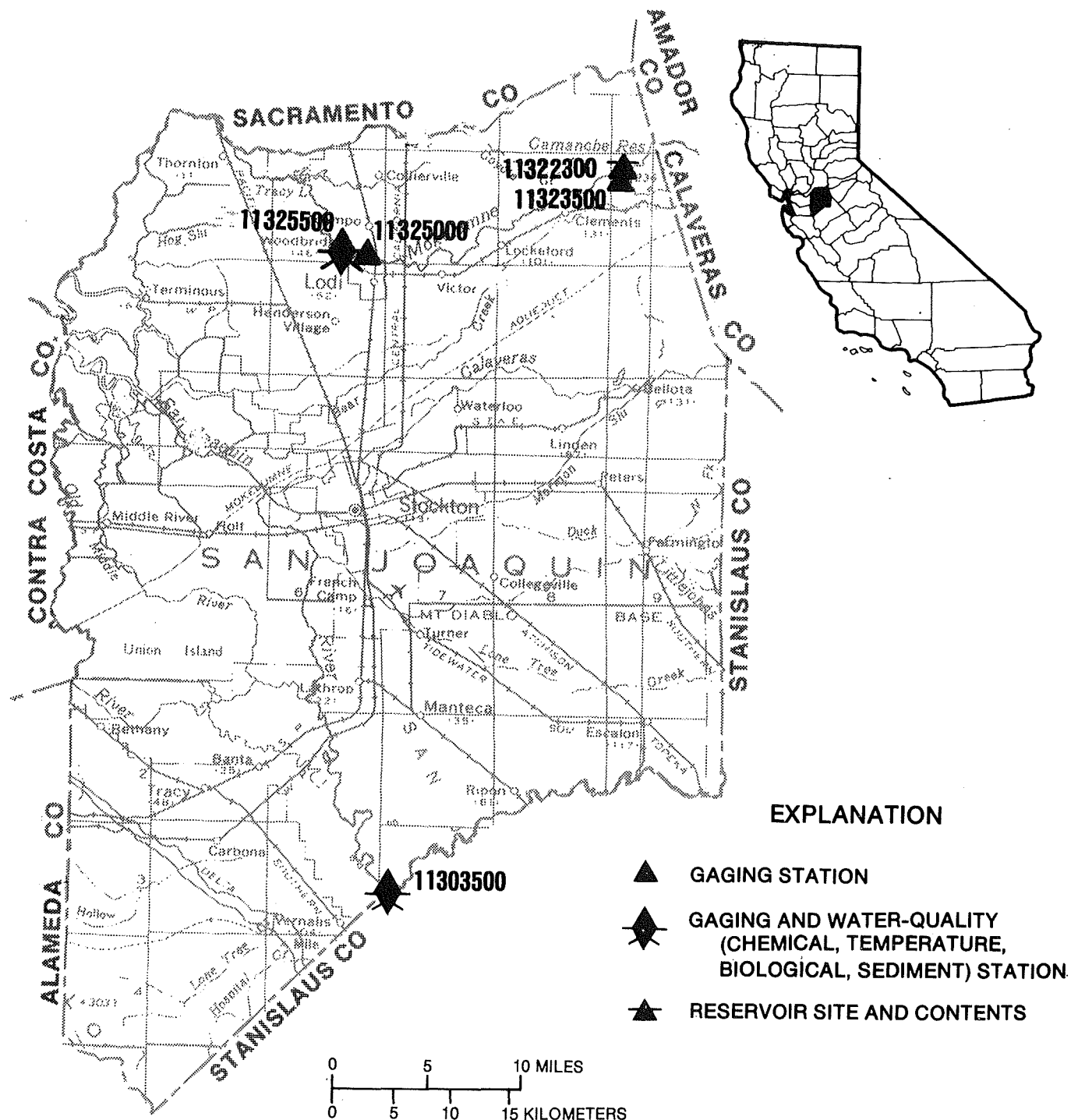


Figure 21.--Location of discharge and water-quality stations in San Joaquin County.

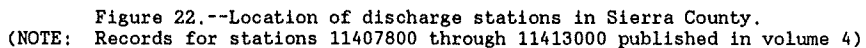


Figure 22.--Location of discharge stations in Sierra County.

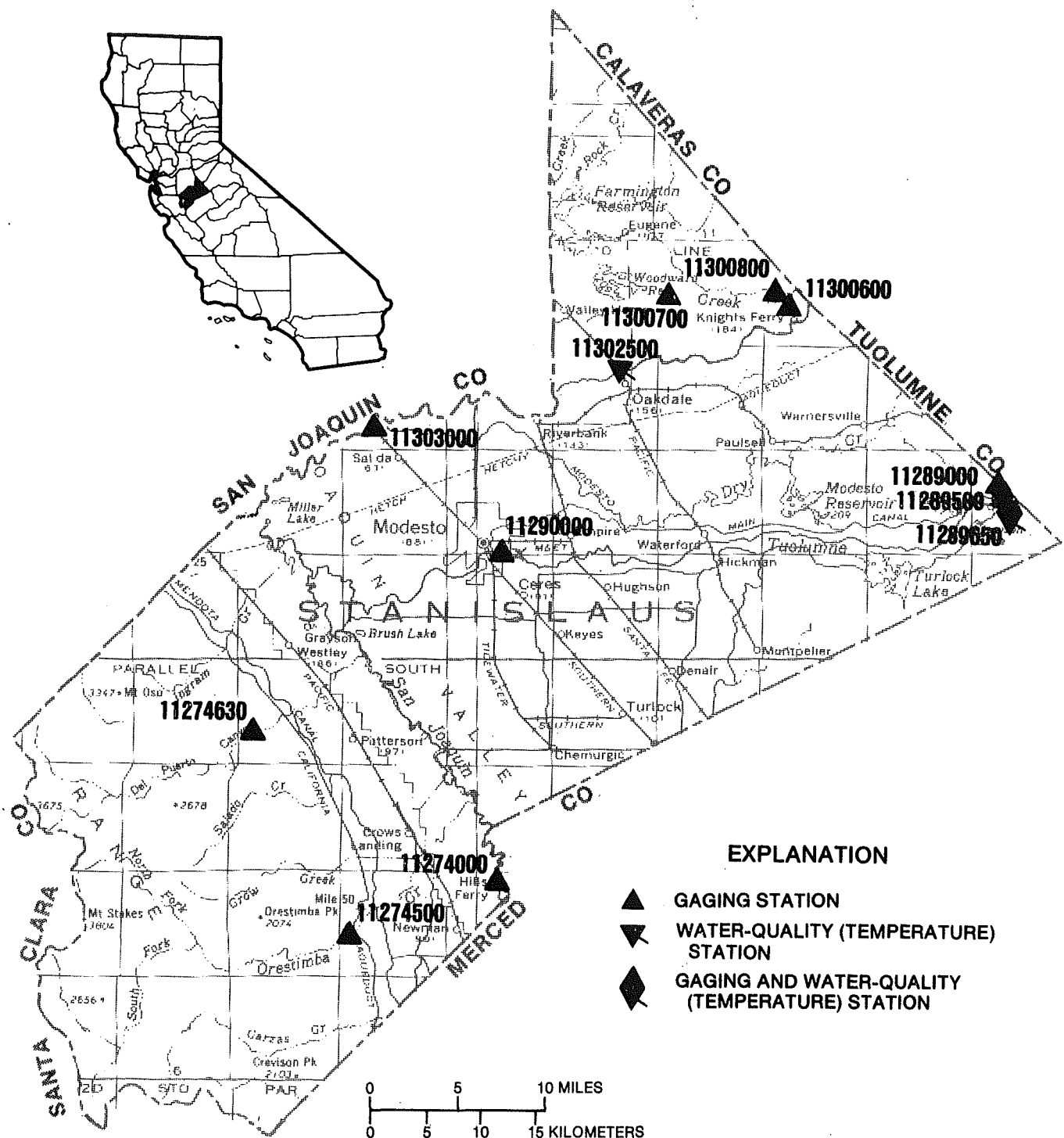


Figure 23.--Location of discharge and water-quality stations in Stanislaus County.

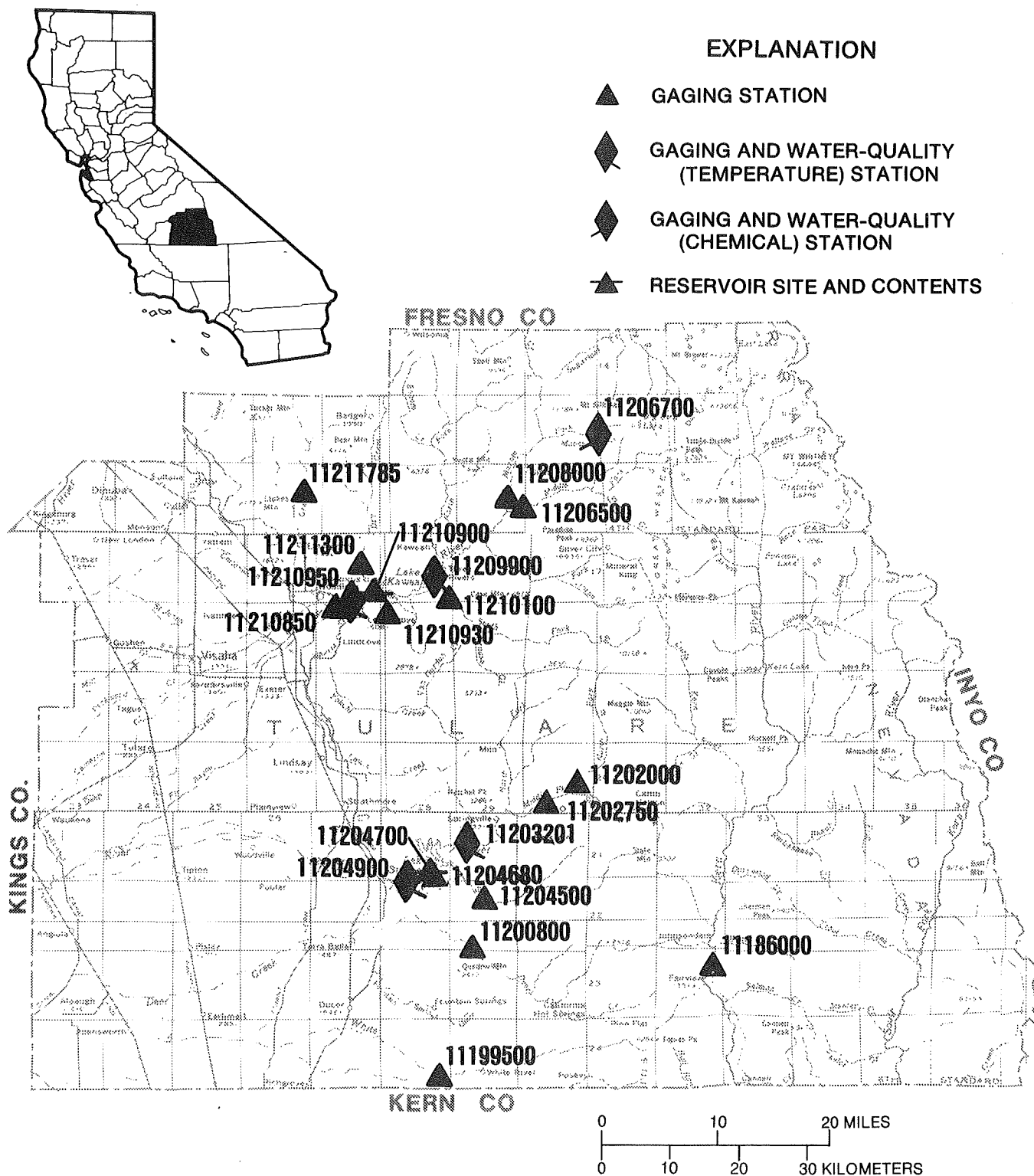


Figure 24.--Location of discharge and water-quality stations in Tulare County.

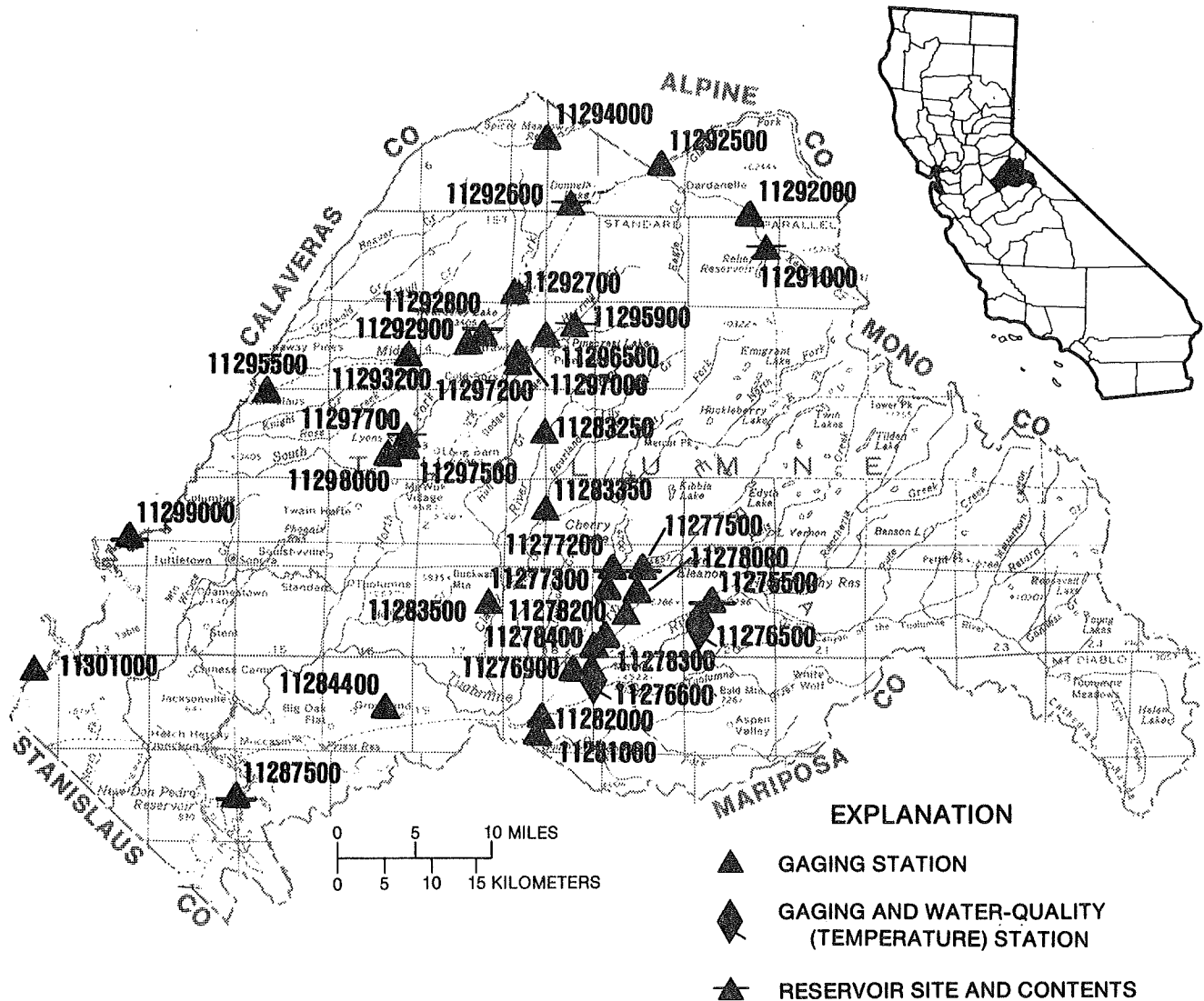


Figure 25.--Location of discharge and water-quality stations in Tuolumne County.



## 10290300 UPPER TWIN LAKE NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°09'15", long 119°20'58", in NW 1/4 NE 1/4 sec.5, T.3 N., R.24 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, at outlet of upper lake dam on Robinson Creek, and 10 mi southwest of Bridgeport.

DRAINAGE AREA.--29.5 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1961 to February 1964, September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7,212.86 ft, National Geodetic Vertical Datum of 1929 (project datum of U.S. Indian Irrigation Service).

REMARKS.--Contents regulated by dam at outlet. Figures given herein represent usable contents. Usable contents, 2,070 acre-ft between elevations 7,200 ft, natural rim, and 7,207 ft, spillway crest.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 2,990 acre-ft, July 7, 1983, elevation, 7,209.85 ft; minimum observed, 62 acre-ft, Oct. 31, Nov. 1, 1964, elevation, 7,200.22 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--No contents observed Oct. 17, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,520 acre-ft, sometime during Mar. 7 to Apr. 10, elevation, 7,208.42 ft; minimum, from interpolated figures between measurements, 106 acre-ft, Sept. 30, elevation, 7,200.38 ft, but may have been lower during periods of no gage-height record, Oct. 1 to Dec. 14 and July 28 to Sept. 30.

EXTREMES FOR 1987 WATER YEAR (NOT PREVIOUSLY PUBLISHED).--Maximum contents, 2,500 acre-ft, June 4-8, elevation, 7,208.34 ft; minimum observed, 426 acre-ft, Sept. 1, elevation, 7,201.52 ft, but may have been lower between Sept. 2-30.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30. . . . .	--	g2,220	--
Oct. 31. . . . .	7,207.02	2,080	-140
Nov. 30. . . . .	--	1,930	-150
Dec. 31. . . . .	7,206.53	1,920	-10
CAL YR 1986. . . . .	--	--	-250
Jan. 31. . . . .	7,206.66	1,960	+40
Feb. 28. . . . .	7,206.94	2,050	+90
Mar. 31. . . . .	7,206.98	2,060	+10
Apr. 30. . . . .	7,208.33	2,500	+440
May 31. . . . .	7,207.88	2,350	-150
June 30. . . . .	7,207.70	2,290	-60
July 31. . . . .	7,204.81	1,380	-910
Aug. 31. . . . .	--	g456	-924
Sept. 30. . . . .	--	g238	-218
WTR YR 1987 . . . . .	--	--	-1,982

g Interpolated.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30. . . . .	--	g238	--
Oct. 31. . . . .	--	g585	+347
Nov. 30. . . . .	--	g930	+345
Dec. 31. . . . .	--	g1,510	+580
CAL YR 1987. . . . .	--	--	-410
Jan. 31. . . . .	--	g1,870	+360
Feb. 29. . . . .	7,207.05	2,090	+220
Mar. 31. . . . .	--	g2,240	+150
Apr. 30. . . . .	7,207.56	2,250	+10
May 31. . . . .	--	g2,220	-30
June 30. . . . .	7,207.25	2,150	-70
July 31. . . . .	--	g1,070	-1,080
Aug. 31. . . . .	--	g577	-493
Sept. 30. . . . .	--	g106	-471
WTR YR 1988 . . . . .	--	--	-132

g Interpolated.

## WALKER LAKE BASIN

10290400 LOWER TWIN LAKE NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°10'05", long 119°19'33", in NE 1/4 NE 1/4 sec.33, T.4 N., R.24 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, at outlet of lower lake dam on Robinson Creek, and 8 mi southwest of Bridgeport.

DRAINAGE AREA.--38.9 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7,205.45 ft, National Geodetic Vertical Datum of 1929 (project datum of U.S. Indian Irrigation Service).

REMARKS.--Contents regulated by dam at outlet and by Upper Twin Lake. Figures given herein represent usable contents. Usable contents, 4,010 acre-ft between elevations 7,190 ft, natural rim, and 7,200 ft, spillway crest. One transarea diversion out of Tamarack Creek into Summers Creek.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,560 acre-ft, June 19, 1983, elevation, 7,203.58 ft; no contents Nov. 17, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 4,330 acre-ft, July 1, elevation, 7,200.75 ft; minimum observed, 280 acre-ft, Oct. 1, elevation, 7,191.70 ft, but may have been lower during period of no gage-height record, Oct. 1 to Feb. 6, Mar. 24 to Apr. 10, June 4-20, and Aug. 21 to Sept. 30.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum recorded contents, 4,560 acre-ft, May 18, elevation, 7,201.29 ft; minimum observed, 700 acre-ft, Sept. 1, elevation, 7,191.75 ft, but may have been lower during period of no gage-height record, Nov. 3 to May 8, Aug. 21 to Sept. 30.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30. . . . .	--	g2,230	--
Oct. 31. . . . .	--	g2,100	-130
Nov. 30. . . . .	--	g3,080	+980
Dec. 31. . . . .	--	g4,010	+930
CAL YR 1986. . . . .	--	--	+2,340
Jan. 31. . . . .	--	g4,220	+210
Feb. 28. . . . .	--	g4,200	-20
Mar. 31. . . . .	--	g4,180	-20
Apr. 30. . . . .	--	g4,200	+20
May 31. . . . .	7,200.54	4,240	+40
June 30. . . . .	7,200.07	4,040	-200
July 31. . . . .	7,196.05	2,420	-1,620
Aug. 31. . . . .	--	g752	-1,670
Sept. 30. . . . .	--	g292	-460
WTR YR 1987. . . . .	--	--	-1,930

g Interpolated.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30. . . . .	--	g292	--
Oct. 31. . . . .	--	g496	+204
Nov. 30. . . . .	--	g704	+208
Dec. 31. . . . .	--	g900	+196
CAL YR 1987. . . . .	--	--	-3,112
Jan. 31. . . . .	--	g1,400	+500
Feb. 29. . . . .	7,194.82	1,930	+530
Mar. 31. . . . .	--	g2,720	+790
Apr. 30. . . . .	7,197.94	3,180	+460
May 31. . . . .	7,199.24	3,700	+520
June 30. . . . .	7,200.74	4,320	+620
July 31. . . . .	7,196.79	2,720	-1,600
Aug. 31. . . . .	--	g1,830	-890
Sept. 30. . . . .	--	g984	-846
WTR YR 1988. . . . .	--	--	+692

g Interpolated.



## 10292500 BRIDGEPORT RESERVOIR NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°19'30", long 119°12'40", in SE 1/4 NE 1/4 sec.34, T.6N., R.25 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, at Bridgeport Dam on East Walker River, and 4.5 mi north of Bridgeport.

DRAINAGE AREA.--358 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1926 to current year. Monthend contents only for some periods, published in WSP 1314.

REVISED RECORDS.--WSP 1180: 1949. WSP 1927: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,466.44 ft National Geodetic Vertical Datum of 1929 (project datum).

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began Dec. 8, 1923. Dam completed in November 1924. Capacity, 42,460 acre-ft between elevations 6,415 ft, approximate elevation of bottom of reservoir, and 6,461 ft, crest of spillway is at elevation 6,460.75 ft; however, there are four siphons that become operative prior to reaching this spillway. Elevation of sill of outlet gate, 6,412 ft. No dead storage. Figures given herein represent total contents. Water is used for irrigation by Walker River Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 44,880 acre-ft, June 16, 1974, elevation, 6,460.78 ft; no contents during fall of 1929, 1930, 1960, and 1977.

EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 17,890 acre-ft, Mar. 29, elevation, 6,449.47 ft, maximum elevation, 6,449.60 ft, Apr. 7, affected by seiche; no contents, Aug. 31 to Sept. 30.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum recorded contents, 44,170 acre-ft, Mar. 26, elevation, 6,459.90 ft; minimum, 2,080 acre-ft, Sept. 30, elevation, 6,433.07 ft.

Capacity table, (elevation, in feet, and contents, in acre-feet)

6,430	1,130	6,450	18,780
6,435	2,920	6,455	29,160
6,440	6,240	6,459	39,540
6,445	11,380	6,460	42,460

RESERVOIR STORAGE (AC-FT) WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
OBSERVATION AT 2400 (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16690	20580	25390	29450	34350	41030	42000	36840	34800	28310	16740	5290
2	16950	20780	25540	29520	34590	40860	42000	36680	34720	27900	16360	5060
3	17230	20950	25670	29830	34800	40540	41970	36550	34670	27500	15970	4840
4	17490	21210	25910	30000	35040	40210	42000	36310	34590	27110	15470	4650
5	17750	21380	26020	20100	35220	39890	42000	36070	34610	26750	e15100	4480
6	18010	21500	26090	30240	35410	39800	42000	35800	34540	26310	e14550	4290
7	18260	21680	26200	30360	35650	40060	41970	35540	34610	25890	e14100	4100
8	18510	21800	26330	e30510	35780	40240	41880	35280	34740	25520	e13720	3950
9	18710	21970	26440	e30660	36120	40300	41880	35010	34740	25030	13250	3820
10	18910	22190	26550	e30780	36420	40510	41790	34770	34740	24600	12740	3710
11	19090	22360	26680	e30920	36680	40680	41610	34610	34560	24240	12280	3600
12	19330	22540	26840	e31070	36900	40860	41490	34480	34460	23830	11820	3520
13	19540	22750	27000	e31190	37730	41090	41380	34350	34250	23540	e11210	3440
14	19650	22870	27140	e31330	38010	41230	41120	34090	34010	23120	e10790	3400
15	19750	23040	27230	e31470	38460	41410	40860	33990	33760	22790	e10380	3320
16	19920	23240	27370	e31620	38710	41520	40590	33990	33550	22360	e9980	3240
17	19920	23430	27500	e31770	38850	41670	40360	34090	33250	21930	e9580	3150
18	20070	23660	27670	e31920	39010	41760	39830	34140	32990	21620	e9190	3070
19	20180	23810	27800	e32080	39290	41790	39690	34010	32620	21290	e8800	2970
20	20270	24020	27920	e32230	39400	42000	39540	34250	32230	20900	e8480	2880
21	20350	24020	28060	e32380	39630	41940	39400	34610	31800	20490	e8170	2800
22	20380	24180	28240	e32510	39830	42030	39200	34720	31500	20160	e7870	2720
23	20440	24320	28310	e32670	29860	41970	38930	34980	31190	19840	e7570	2620
24	20480	24490	28420	e32820	40240	42050	38710	34980	30780	19390	e7290	2540
25	20480	24600	28540	e32940	40270	42110	38460	34900	30410	19090	e7030	2460
26	20460	24770	28750	e33090	40450	42030	38210	34900	30000	18730	e6780	2370
27	20440	24990	28790	e33250	40740	42000	37930	34900	29660	18420	e6520	e2300
28	20480	25100	28910	e33400	40860	41910	37670	34980	29300	18110	e6270	e2230
29	20550	25100	29000	33860	---	41940	37400	34980	29000	17770	e6020	e2150
30	20440	25210	29070	34060	---	41970	37100	34980	28700	17440	5700	e2080
31	20440	---	29280	34220	---	41970	---	34950	---	17110	5520	---
MAX	20550	25210	29280	34220	40860	42110	42000	36840	34800	28310	16740	5290
MIN	16690	20580	25390	20100	29860	39800	37100	33990	28700	17110	5520	2080
a	6450.90	6453.25	6455.05	6457.04	6459.45	6459.83	6458.12	6457.32	6454.80	6449.03	6439.10	6433.07
b	+3960	+4770	+4070	+4940	+6640	+1110	-4870	-2150	-6250	-11590	-11590	-3440

CAL YR 1986 MAX 40090 MIN 16480 b -440

WTR YR 1987 MAX 42110 MIN 2080 b -14400

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

e Estimated.

## WALKER LAKE BASIN

10292500 BRIDGEPORT RESERVOIR NEAR BRIDGEPORT, CA--Continued

RESERVOIR STORAGE (AC-FT) WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2040	2360	6140	e9100	13090	16900	17840	15400	12840	e10980	5280	e.00
2	2020	2490	6230	e9210	13170	17010	17840	15310	12710	10840	5100	e.00
3	1980	2650	6370	e9340	13250	17150	17870	e15310	12740	10710	4900	e.00
4	1950	2770	6460	e9450	13310	17210	17840	e15320	12480	10500	4700	e.00
5	1920	2980	6580	e9560	13390	17230	17850	e15030	12320	10310	4490	e.00
6	1890	3130	6730	e9680	13520	17230	17850	14910	12260	10180	4320	e.00
7	1860	3220	6850	e9800	13620	17280	17780	14880	12200	9940	4080	e.00
8	1800	3340	7020	e9910	13710	17300	17730	14790	12100	9750	3940	e.00
9	1730	3460	7090	e10040	13840	17300	17680	14600	12070	9570	3790	e.00
10	1680	3580	7260	e10160	13980	17300	17650	14520	11990	9290	3570	e.00
11	1630	3700	7300	e10270	14190	17320	17600	14450	11930	8980	3420	e.00
12	1620	3800	7340	e10400	14400	17350	17490	14480	11930	8830	3220	e.00
13	1640	3920	7430	e10530	14570	17420	17330	14360	11880	8620	2990	e.00
14	1630	4030	7460	e10650	14780	17490	17250	14370	11870	8420	2780	e.00
15	1620	4170	7540	e10780	14930	e17510	17210	14420	e11800	8230	2560	e.00
16	1620	4260	7630	e10910	15040	e17530	17160	14430	e11750	8100	2310	e.00
17	1620	4440	7720	e11030	15200	e17540	17090	14360	11800	7940	2070	e.00
18	1620	4600	7820	e11140	15280	e17560	17000	14290	11760	7780	1840	e.00
19	1620	4750	7890	e11280	15400	e17580	16820	14220	11700	7590	1590	e.00
20	1620	4890	7980	e11400	15530	e17610	16690	14170	11630	7400	1350	e.00
21	1640	4990	8120	e11530	15660	e17630	16630	14100	11620	7180	1100	e.00
22	1680	5160	8230	e11670	15820	e17800	e16770	14010	11570	6940	870	e.00
23	1710	5280	8290	e11810	15980	e17890	e16600	13930	11530	6730	660	e.00
24	1750	5430	8350	e11940	16110	e17750	e16420	13840	11420	6560	500	e.00
25	1780	5510	8420	12210	16230	e17750	e16260	13680	11330	6380	420	e.00
26	1810	5600	8500	12450	16360	e17780	16090	13530	11370	6190	610	e.00
27	1850	5680	8530	12580	16500	e17820	e15980	13380	11320	6000	530	e.00
28	1900	5760	8680	12700	16660	e17820	e15870	13230	11250	5820	440	e.00
29	2030	5850	8780	12820	16740	e17890	15790	13130	11120	5650	e370	e.00
30	2140	5960	8890	12910	---	e17800	e15550	13090	11040	5480	e120	e.00
31	2250	---	e9000	12980	---	e17840	---	12930	---	5370	e.00	---
MAX	2250	5960	9000	12980	16740	17890	17870	15400	12840	10980	5280	.00
MIN	1620	2360	6140	9100	13090	16900	15550	12930	11040	5370	.00	.00
a	6433.51	6439.65	6442.90	6446.26	6448.80	6449.45	6448.05	6446.22	6444.71	6438.90	--	--
b	+170	+3710	+3040	+3980	+3760	+1100	-2290	-2620	-1890	-5670	-5370	0

CAL YR 1987 MAX 42110 MIN 1620 b -20280

WTR YR 1988 MAX 17890 MIN .00 b -2080

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

e Estimated.

## 10293000 EAST WALKER RIVER NEAR BRIDGEPORT, CA

LOCATION.--Lat 38°19'40", long 119°12'50", in SW 1/4 NE 1/4 sec.34, T.6 N., R.25 E., Mono County, Hydrologic Unit 16050301, in Toiyabe National Forest, on right bank 1,500 ft downstream from Bridgeport Reservoir, 5 mi north of Bridgeport, and 10 mi upstream from Sweetwater Creek.

DRAINAGE AREA.--359 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1911 to September 1914 (gage heights only), October 1921 to current year.

REVISED RECORDS.--WSP 1927: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 6,400 ft, from topographic map. Prior to Oct. 1, 1921, nonrecording gage at site 0.5 mi upstream at different datum. Oct. 1, 1921, to Feb. 21, 1924, water-stage recorder at site 1 mi downstream at different datum. Feb. 22, 1924, to Sept. 30, 1931, water-stage recorder, and Oct. 1, 1931, to May 25, 1939, nonrecording gage at present site at datum 2.34 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Diversions for irrigation of meadow pasturelands near Bridgeport. Flow regulated by Bridgeport Reservoir (10292500).

AVERAGE DISCHARGE.--65 years (1922-24, 1925-88), 147 ft<sup>3</sup>/s, 106,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,390 ft<sup>3</sup>/s, June 19, 1963, gage height, 4.64 ft; maximum gage height, 4.95 ft, Jan. 22, 1943 (top of surge); minimum daily discharge, 0.2 ft<sup>3</sup>/s, Nov. 2-29, Dec. 1-22, 25-28, 1955, and Jan. 17-25, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 173 ft<sup>3</sup>/s, July 25, gage height, 3.50 ft; minimum daily, 5.0 ft<sup>3</sup>/s, Nov. 20, but may have been less during periods of estimated discharge.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum discharge, 348 ft<sup>3</sup>/s, Mar. 3, gage height, 1.99 ft; minimum daily, 5.9 ft<sup>3</sup>/s, Oct. 2-13, but may have been less during this period.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	12	14	17	15	84	78	187	117	227	190	142
2	e5.9	12	14	17	15	214	71	181	117	222	204	141
3	e5.9	12	14	17	15	336	80	180	116	214	209	139
4	e5.9	12	14	17	15	308	98	192	115	215	225	125
5	e5.9	12	14	17	15	290	97	209	114	217	230	120
6	e5.9	12	16	17	15	114	98	212	120	232	231	120
7	e5.9	12	16	17	15	18	97	223	122	228	231	119
8	e5.9	12	15	17	15	18	97	227	119	219	229	111
9	e5.9	12	15	17	14	18	106	225	131	218	230	95
10	e5.9	13	15	17	14	18	118	225	150	212	235	80
11	e5.9	13	15	17	15	19	128	216	148	210	243	71
12	e5.9	13	15	17	15	19	135	215	151	210	243	67
13	e5.9	13	16	16	15	19	147	227	162	207	241	66
14	73	13	16	16	15	19	166	217	169	201	239	66
15	70	13	16	16	15	20	180	200	175	202	233	67
16	49	13	16	16	15	19	185	200	183	202	233	70
17	49	13	16	16	15	20	179	200	182	202	228	74
18	49	13	16	16	15	20	174	198	189	202	216	75
19	49	13	17	16	15	20	174	199	198	201	201	75
20	49	13	17	16	16	58	170	183	197	205	184	75
21	72	13	17	16	16	82	164	154	197	210	171	75
22	107	13	17	16	16	83	179	138	202	210	166	79
23	107	12	17	16	16	83	193	138	210	197	166	84
24	107	13	17	15	16	82	199	138	208	180	161	86
25	107	13	17	15	16	100	205	138	211	172	154	85
26	107	14	17	15	16	119	215	130	216	172	152	85
27	107	14	17	15	16	115	230	116	216	172	151	86
28	108	14	17	15	55	110	240	117	214	172	150	86
29	107	14	17	15	---	111	223	116	213	171	151	82
30	108	14	17	15	---	96	204	116	219	174	150	66
31	77	---	17	15	---	87	---	117	---	183	147	---
TOTAL	1597.8	385	494	500	466	2719	4630	5534	5081	6259	6194	2712
MEAN	51.5	12.8	15.9	16.1	16.6	87.7	154	179	169	202	200	90.4
MAX	108	14	17	17	55	336	240	227	219	232	243	142
MIN	5.9	12	14	15	14	18	71	116	114	171	147	66
AC-FT	3170	764	980	992	924	5390	9180	10980	10080	12410	12290	5380

CAL YR 1986 TOTAL 102439.8 MEAN 281 MAX 1350 MIN 5.9 AC-FT 203200  
WTR YR 1987 TOTAL 36571.8 MEAN 100 MAX 336 MIN 5.9 AC-FT 72540

e Estimated.

## WALKER LAKE BASIN

10293000 EAST WALKER RIVER NEAR BRIDGEPORT, CA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	21	12	e10	e9.7	11	25	93	101	104	127	57
2	54	18	12	e9.8	e9.8	17	25	78	94	110	135	51
3	54	15	12	e9.6	e9.8	30	25	65	81	125	142	49
4	54	14	12	e9.4	e10	34	25	59	81	133	139	45
5	54	14	12	e9.2	e10	45	25	51	81	133	138	44
6	54	14	13	e9.0	e10	45	25	51	72	135	140	45
7	58	13	13	e9.0	e10	45	25	55	59	136	140	43
8	67	13	13	e9.0	e10	41	34	60	58	133	139	46
9	66	12	13	e9.0	e10	33	50	59	56	134	137	46
10	66	12	14	e9.0	e10	32	53	59	52	137	134	46
11	66	12	14	e9.0	e10	29	58	56	51	134	138	44
12	66	11	14	e9.0	e10	25	86	42	48	127	144	45
13	66	11	e13	e9.0	e10	25	97	47	49	124	144	46
14	62	11	e13	e8.7	e10	25	92	54	49	124	143	46
15	53	11	e12	e8.4	e10	25	66	54	49	124	143	45
16	53	11	e12	e8.2	e10	25	66	61	48	124	146	43
17	53	10	e12	e7.6	e11	25	65	110	48	123	147	42
18	53	9.9	e12	e7.4	e11	25	65	110	57	124	149	42
19	53	7.1	e11	e7.6	11	25	76	107	70	130	148	42
20	48	5.0	e11	e8.2	11	25	96	107	81	139	145	43
21	41	5.5	e11	e9.0	11	25	80	119	95	141	140	47
22	42	5.5	e11	e9.6	11	25	80	123	89	141	129	47
23	42	e5.3	e11	e10	11	25	95	123	89	140	114	43
24	42	e5.1	e11	e11	11	25	103	128	94	143	98	38
25	42	e5.3	e11	e12	11	25	103	142	102	155	76	35
26	42	7.0	e11	e10	11	25	98	142	113	162	39	33
27	42	8.3	e11	e10	11	25	89	129	113	155	87	32
28	42	9.3	e10	e9.8	11	25	92	127	116	149	84	32
29	42	10	e10	e9.8	11	25	98	124	109	138	102	33
30	33	12	e10	e9.6	---	25	100	118	100	128	127	31
31	24	---	e10	e9.7	---	25	---	108	---	124	119	---
TOTAL	1588	318.3	367	286.6	302.3	862	2017	2761	2305	4129	3933	1281
MEAN	51.2	10.6	11.8	9.25	10.4	27.8	67.2	89.1	76.8	133	127	42.7
MAX	67	21	14	12	11	45	103	142	116	162	149	57
MIN	24	5.0	10	7.4	9.7	11	25	42	48	104	39	31
AC-FT	3150	631	728	568	600	1710	4000	5480	4570	8190	7800	2540

CAL YR 1987 TOTAL 36368.3 MEAN 99.6 MAX 336 MIN 5.0 AC-FT 72140  
WTR YR 1988 TOTAL 20150.2 MEAN 55.1 MAX 162 MIN 5.0 AC-FT 39970

e Estimated.

## 10296000 WEST WALKER RIVER BELOW LITTLE WALKER RIVER, NEAR COLEVILLE, CA

LOCATION.--Lat 38°22'47", long 119°26'57", in NE 1/4 SE 1/4 sec.9, T.6 N., R.23 E., Mono County, Hydrologic Unit 16050302, in Toiyabe National Forest, on left bank 50 ft downstream from Little Walker River, 160 ft upstream from bridge on U.S. Highway 395, and 13 mi southeast of Coleville.

DRAINAGE AREA.--180 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1938 to current year. Prior to October 1958, published as "below East Fork."

REVISED RECORDS.--WDR NV-79-1: Drainage area. WDR CA-87-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,591.39 ft above National Geodetic Vertical Datum of 1929, supplementary adjustment of 1958. Prior to Oct. 1, 1939, at site, 125 ft downstream at datum 1.00 ft higher. Oct. 1, 1939, to Sept. 30, 1969, at present site and datum. Oct. 1, 1969, to July 10, 1987, at site 100 ft downstream at same datum.

REMARKS.--Records good except for periods of estimated daily discharges, which are fair. Station is above diversions except for a few small ranch ditches. Flow slightly regulated by Poor Lake Reservoir (capacity, unknown) 7 mi upstream.

AVERAGE DISCHARGE.--50 years, 262 ft<sup>3</sup>/s, 189,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,220 ft<sup>3</sup>/s, Nov. 20, 1950, gage height, 8.10 ft, from rating curve extended above 1,900 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 4.0 ft<sup>3</sup>/s, Nov. 18, 1948, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge observed prior to 1938, 5,800 ft<sup>3</sup>/s, Dec. 11, 1937, on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,120 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 16	0100	*819	*3.53				
Minimum daily, 14 ft <sup>3</sup> /s, Oct. 2-6.							

EXTREMES FOR 1987 WATER YEAR (NOT PREVIOUSLY PUBLISHED).--Peak discharges greater than base discharge of 1,120 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 17	0100	*963	*3.37				
Minimum daily, 18 ft <sup>3</sup> /s, Sept. 15-17, 28-30.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	61	e40	55	41	56	69	410	362	e109	38	22
2	92	59	e44	54	40	56	79	323	366	e100	36	25
3	88	59	e46	49	41	56	87	315	362	e95	36	28
4	87	59	e47	e49	45	58	81	391	351	e90	37	25
5	86	60	47	e49	52	72	82	476	370	e84	36	24
6	87	57	47	e48	49	77	86	528	374	e80	35	24
7	88	51	47	e49	44	74	93	526	405	e75	42	22
8	88	52	43	e49	44	70	108	519	381	e72	43	23
9	88	54	e42	e45	45	64	128	544	e350	e70	44	23
10	87	53	e42	e43	49	61	161	587	e300	60	42	23
11	87	53	e41	e41	53	60	181	620	e280	62	42	23
12	84	53	e43	e40	50	64	186	649	e260	72	40	24
13	82	52	e45	e40	83	65	199	593	e250	77	39	24
14	80	52	e46	e40	63	63	257	599	e250	66	38	25
15	79	49	e49	e40	57	61	279	665	e240	66	39	18
16	77	51	e47	e40	52	61	304	755	e205	66	38	18
17	75	49	e46	e40	53	63	346	749	e180	52	36	18
18	74	51	e46	e40	52	66	349	547	e170	49	35	19
19	74	51	e47	e40	52	59	252	491	e160	44	30	19
20	73	48	e48	e40	54	58	217	437	e160	45	27	19
21	72	48	52	e41	54	59	239	370	e150	52	26	19
22	71	43	e52	e41	55	56	309	320	e145	55	25	19
23	71	47	e52	e42	53	58	348	325	e135	52	24	19
24	70	44	51	e43	58	60	375	306	e130	49	25	19
25	69	43	e52	e44	54	59	420	278	e125	48	24	19
26	68	40	e54	44	58	57	484	262	e125	47	25	19
27	67	45	56	45	64	57	519	241	e130	45	30	19
28	65	42	57	43	58	56	553	243	e125	45	26	18
29	65	41	e56	42	---	56	603	285	e120	e43	24	18
30	64	40	e56	41	---	58	625	299	e115	40	23	18
31	63	---	e55	43	---	63	---	348	---	39	23	---
TOTAL	2411	1507	1496	1360	1473	1903	8019	14001	7076	1949	1028	633
MEAN	77.8	50.2	48.3	43.9	52.6	61.4	267	452	236	62.9	33.2	21.1
MAX	92	61	57	55	83	77	625	755	405	109	44	28
MIN	63	40	40	40	40	56	69	241	115	39	23	18
AC-FT	4780	2990	2970	2700	2920	3770	15910	27770	14040	3870	2040	1260

CAL YR 1986 TOTAL 147144 MEAN 403 MAX 2700 MIN 40 AC-FT 291900

WTR YR 1987 TOTAL 42856 MEAN 117 MAX 755 MIN 18 AC-FT 85000

e Estimated.

## WALKER LAKE BASIN

10296000 WEST WALKER RIVER BELOW LITTLE WALKER RIVER, NEAR COLEVILLE, CA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	27	41	e40	e57	84	121	185	352	183	59	51
2	14	29	40	e40	e58	86	130	162	383	170	56	47
3	14	35	40	e42	e58	83	147	165	478	158	55	42
4	14	38	43	45	e58	86	137	171	506	152	56	36
5	14	57	43	49	e59	87	137	159	403	144	64	34
6	14	64	57	e50	e59	88	181	145	305	134	61	32
7	15	49	50	e52	e59	88	225	137	272	123	60	32
8	15	42	e46	e50	59	89	264	128	248	116	62	32
9	15	41	e49	e52	e59	99	220	125	234	111	54	32
10	15	38	e53	53	e59	95	285	145	240	105	50	33
11	15	38	e47	53	e60	91	366	277	275	97	47	31
12	22	36	e38	e51	e60	89	388	493	307	93	46	32
13	24	46	e33	e49	e63	88	361	599	334	88	42	32
14	23	40	e35	e50	e64	86	344	577	387	88	40	32
15	22	34	e38	54	e66	84	258	655	418	97	39	30
16	20	48	e43	e50	e63	83	225	707	428	99	38	28
17	19	53	e43	e44	e61	80	215	529	399	90	36	28
18	18	51	e42	e44	e64	81	220	453	376	85	34	28
19	18	48	e41	e43	e61	84	206	448	383	81	32	29
20	17	48	e40	e43	e64	89	197	478	426	77	30	30
21	17	45	e40	e46	e67	94	165	561	407	74	31	33
22	21	48	e41	e49	e69	95	162	599	358	72	31	33
23	35	41	e41	e52	e70	101	147	571	307	73	30	31
24	35	45	e41	e54	e73	105	140	610	290	72	30	30
25	34	51	e43	e56	e75	117	142	588	360	85	32	30
26	29	e48	e44	e56	e77	142	162	561	433	108	40	29
27	28	e52	e45	52	e80	159	201	478	295	104	38	27
28	51	e48	e46	54	e83	153	215	478	248	78	34	26
29	66	e47	e45	54	e83	142	220	518	220	68	32	e24
30	36	e47	e44	55	---	135	240	392	198	66	33	e23
31	29	---	e41	e56	---	125	---	353	---	64	44	---
TOTAL	728	1334	1333	1538	1888	3108	6421	12447	10270	3155	1336	957
MEAN	23.5	44.5	43.0	49.6	65.1	100	214	402	342	102	43.1	31.9
MAX	66	64	57	56	83	159	388	707	506	183	64	51
MIN	14	27	33	40	57	80	121	125	198	64	30	23
AC-FT	1440	2650	2640	3050	3740	6160	12740	24690	20370	6260	2650	1900

CAL YR 1987 TOTAL 40837 MEAN 112 MAX 755 MIN 14 AC-FT 81000  
WTR YR 1988 TOTAL 44515 MEAN 122 MAX 707 MIN 14 AC-FT 88300

e Estimated.

## 10296500 WEST WALKER RIVER NEAR COLEVILLE, CA

LOCATION.--Lat 38°30'55", long 119°27'15", in NW 1/4 NE 1/4 sec.28, T.8 N., R.23 E., Mono County, Hydrologic Unit 16060302, in Toiyabe National Forest, on left bank 0.2 mi downstream from Rock Creek, and 5 mi southeast of Coleville.

DRAINAGE AREA.--271 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1902 to July 1908 (published as West Fork of Walker River near Coleville, 1903, 1905-8 and as Walker River (West Fork) near Coleville, 1904), March 1909 to September 1910, June 1915 to March 1938, May 1957 to current year. Monthly discharge only for some periods published in WSP 1314.

REVISED RECORDS.--WSP 880: 1917 (runoff in acre-ft). WSP 1514: 1918, 1923. WDR NV-80-1: Drainage area.

WDR CA-87-3: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,520 ft, from topographic map. Prior to July 31, 1908, nonrecording gage at site 0.5 mi upstream at different datum. Mar. 1, 1909, to Aug. 31, 1910, nonrecording gage, and June 18, 1915, to Aug. 15, 1919, water-stage recorder near present site at different datums. Aug. 16, 1919, to Mar. 31, 1938, water-stage recorder at site 1,000 ft upstream at different datum. May 26, 1957, to Sept. 10, 1963, water-stage recorder at site 10 ft downstream at datum 0.38 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Station is above diversions except for a few small ranch ditches. Flow slightly regulated by Poor Lake Reservoir (capacity, unknown) 17 mi upstream.

AVERAGE DISCHARGE.--59 years (1902-7, 1909-10, 1915-37, 1957-88), 278 ft<sup>3</sup>/s, 201,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft<sup>3</sup>/s Dec. 11, 1937, on basis of slope-area measurement of peak flow; minimum, 5 ft<sup>3</sup>/s, Dec. 3, 1924, Aug. 27, 1931.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,120 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 16	0800	*767	*2.43
Minimum daily, 29 ft <sup>3</sup> /s, Oct. 1, 2, 4-6.			

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Peak discharges greater than base discharge of 1,120 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 17	0500	*1,020	*2.73
Minimum daily, 29 ft <sup>3</sup> /s, Sept. 29, 30.			

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107	e83	e56	62	62	63	84	426	412	123	55	32
2	112	e80	65	57	61	65	94	342	418	118	53	35
3	106	e80	67	55	60	65	104	327	418	117	53	39
4	101	e82	67	56	60	69	97	392	410	108	54	37
5	98	e80	65	e54	62	80	97	470	414	103	54	37
6	100	e75	68	e54	62	87	101	527	422	95	52	36
7	102	e70	66	e54	62	86	112	530	475	92	55	35
8	100	e71	58	53	62	83	130	524	416	87	55	35
9	103	e72	e55	e52	62	77	149	551	381	86	56	34
10	104	e74	e54	e50	65	75	180	593	345	84	54	34
11	99	e72	e54	e50	70	73	202	614	332	81	53	33
12	e96	e71	e56	e50	68	77	211	679	313	80	52	34
13	e95	e71	e56	e50	101	80	219	621	297	89	51	34
14	e94	e70	e58	e50	85	77	263	621	295	87	49	35
15	e93	e66	59	e50	76	73	282	668	290	83	48	35
16	e91	e69	58	e50	68	74	316	812	237	85	48	34
17	e90	e68	e56	e50	69	74	358	858	208	80	46	34
18	e90	e68	e56	e50	67	80	369	619	195	76	45	33
19	e92	e68	e56	e50	63	71	275	552	188	70	41	32
20	e90	e66	e56	e50	65	69	240	491	184	67	38	31
21	e90	e66	58	e52	64	72	256	425	175	66	37	31
22	e90	e64	e58	e54	65	69	313	373	167	66	36	31
23	e90	e64	e58	58	61	73	351	371	157	68	35	31
24	e90	e63	59	60	66	76	378	363	150	67	35	31
25	e90	66	59	62	65	73	425	334	143	67	33	31
26	e90	58	60	63	64	72	503	319	144	66	33	32
27	e91	65	61	66	69	72	528	305	143	64	34	32
28	e92	61	58	66	68	70	596	298	143	63	34	30
29	e90	62	57	63	---	70	630	330	135	61	33	29
30	e88	56	56	64	---	73	640	351	123	58	33	29
31	e86	---	60	62	---	78	---	390	---	57	33	---
TOTAL	2950	2081	1830	1717	1872	2296	8503	15076	8130	2514	1388	996
MEAN	95.2	69.4	59.0	55.4	66.9	74.1	283	486	271	81.1	44.8	33.2
MAX	112	83	68	66	101	87	640	858	475	123	56	39
MIN	86	56	54	50	60	63	84	298	123	57	33	29
AC-FT	5850	4130	3630	3410	3710	4550	16870	29900	16130	4990	2750	1980

CAL YR 1986 TOTAL 159990 MEAN 438 MAX 2780 MIN 54 AC-FT 317300

WTR YR 1987 TOTAL 49353 MEAN 135 MAX 858 MIN 29 AC-FT 97890

e Estimated.

## WALKER LAKE BASIN

10296500 WEST WALKER RIVER NEAR COLEVILLE, CA

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	53	53	e48	58	85	153	237	344	197	67	56
2	29	52	49	e48	e58	86	160	214	351	183	64	54
3	30	56	47	58	57	85	175	210	419	171	63	49
4	29	57	49	63	59	88	165	219	468	163	61	44
5	29	65	48	68	60	89	169	209	400	156	72	41
6	29	73	e47	61	e60	92	206	193	325	147	67	40
7	30	64	e46	62	59	93	238	187	293	137	69	39
8	31	59	45	60	60	95	268	175	272	129	69	38
9	32	57	57	63	60	102	247	171	257	123	62	38
10	32	55	61	65	62	91	275	179	254	117	59	38
11	32	55	59	63	61	91	316	252	275	108	56	38
12	36	54	53	59	63	91	341	386	298	105	54	38
13	38	56	40	63	65	92	325	561	322	98	50	39
14	36	57	e43	61	65	94	314	525	354	93	48	39
15	36	50	48	61	69	93	283	593	400	100	47	38
16	35	58	52	50	67	84	259	677	399	109	45	36
17	34	60	51	56	62	85	254	538	379	98	44	35
18	34	62	51	e56	67	88	256	452	365	93	43	35
19	34	59	e49	e57	63	91	246	436	360	88	41	36
20	34	57	e48	59	68	97	239	458	395	85	39	37
21	35	54	e48	e59	68	106	213	539	388	81	39	38
22	36	58	e48	59	69	111	209	598	357	79	39	39
23	44	53	e49	59	71	118	191	529	317	79	39	38
24	45	52	50	59	73	126	182	570	296	79	38	36
25	45	54	e50	60	74	137	185	552	331	87	40	35
26	43	48	e50	60	78	164	202	542	410	114	45	34
27	42	e47	e50	60	83	192	240	452	313	113	47	33
28	46	e47	e51	61	88	179	249	437	266	92	43	33
29	72	48	e52	60	84	173	254	488	237	77	41	31
30	62	49	53	59	---	166	267	395	215	75	41	30
31	55	---	e50	61	---	154	---	356	---	74	46	---
TOTAL	1174	1669	1547	1838	1931	3438	7081	12330	10060	3450	1578	1155
MEAN	37.9	55.6	49.9	59.3	66.6	111	236	398	335	111	50.9	38.5
MAX	72	73	61	68	88	192	341	677	468	197	72	56
MIN	29	47	40	48	57	84	153	171	215	74	38	30
AC-FT	2330	3310	3070	3650	3830	6820	14050	24460	19950	6840	3130	2290

CAL YR 1987 TOTAL 46882 MEAN 128 MAX 858 MIN 29 AC-FT 92990  
WTR YR 1988 TOTAL 47251 MEAN 129 MAX 677 MIN 29 AC-FT 93720

e Estimated.



## 10297000 TOPAZ LAKE NEAR TOPAZ, CA

LOCATION.--Lat 38°41'35", long 119°31'10", in NW 1/4 NE 1/4 sec.33, T.10 N., R.22 E., Douglas County, Hydrologic Unit 16050301, at outlet works of Topaz Lake on West Walker River, and 5.5 mi north of Topaz.

PERIOD OF RECORD.--December 1921 to September 1931 (monthly contents only published in WSP 1734), October 1931 to current year.

GAGE.--Water-stage recorder read once daily. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1978, at datum 4.62 ft higher.

REMARKS.--Topaz Lake, formerly known as Alkali Lake and Topaz Reservoir, was formed by the diversion of water from West Walker River through a feeder canal and the construction of an outlet tunnel through a low saddle in rim of lake. Storage began about December 1921. Usable capacity, 59,440 acre-ft, between elevations 4,967.68 ft (lowest practical elevation for diversion through tunnel) and 5,000.38 ft (3 ft below top of levee). Useable capacity of reservoir was increased from about 45,000 acre-ft to 59,440 acre-ft in October 1937 by an earthfill, rock-faced levee at south end. Figures given herein represent usable contents. There is 65,000 acre-ft of lake volume below the point of controllable storage. Water is used for irrigation in Walker River Irrigation District.

COOPERATION.--Elevations provided by Walker River Irrigation District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 60,680 acre-ft, July 3, 1980, elevation, 5,000.92 ft, present datum; no contents Oct. 31, 1924, Sept. 22, Sept. 24-30, Oct. 1-15, 1960, and Aug. 19 to Dec. 23, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 19,670 acre-ft, Apr. 15, elevation, 4,979.95 ft; no contents, Sept. 15-30.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum contents observed, 41,980 acre-ft, Apr. 3, elevation, 4,992.33 ft. Minimum contents recorded, 1,950 acre-ft, Sept. 30, elevation, 4,968.95 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)

4,968	490	4,985	28,310
4,970	3,580	4,990	37,360
4,975	11,520	4,995	47,540
4,980	19,760		

RESERVOIR STORAGE (AC-FT) WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 0800 (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19470	16400	21240	26120	31260	36610	41900	38620	39670	29230	15890	4970
2	19500	16590	21420	26290	31390	36860	41960	38150	39710	28690	15360	4750
3	19570	16700	21560	26410	31550	37110	41980	37550	39730	28270	14990	4520
4	19620	16870	21760	26710	31710	37300	41920	37130	39550	27730	14580	4160
5	19650	17070	21900	26860	31890	37490	41900	36820	39250	27330	14070	3970
6	19670	17230	22080	27020	32070	37690	41880	36670	39090	26970	13550	3740
7	19690	17380	22250	27230	32230	37920	41840	36480	39050	26590	12990	3570
8	19720	17570	22420	27380	32410	38130	41780	36330	38920	26190	12470	3430
9	19700	17720	22560	27490	32590	38330	41760	36380	38740	25760	11870	3300
10	19540	17860	22710	27590	32750	38520	41740	36440	38660	25360	11450	3180
11	19330	18010	22860	27720	32950	38700	41680	36650	38480	24930	10970	3070
12	19130	18220	23050	27840	33130	38880	41680	36800	38230	24470	10480	2960
13	18950	18380	23220	27940	33420	39090	41680	37070	37900	24090	10000	2880
14	18770	18530	23390	28080	33830	39330	41630	37240	37460	23700	9600	2790
15	18580	18680	23550	28220	34010	39490	41650	37420	37010	23190	9280	2730
16	18400	18850	23700	28360	34210	39650	41570	37840	36600	22640	8980	2670
17	18200	19030	23840	28430	34400	39830	41470	38470	36140	22130	8670	2620
18	18000	19220	23990	28600	34580	39970	41310	39070	35650	21720	8370	2560
19	17810	19370	24150	28730	34730	40100	41250	39330	35210	21300	8040	2500
20	17650	19570	24320	28870	34910	40220	41010	39550	34860	20890	7730	2450
21	17500	19720	24490	28990	35100	40420	40710	39750	34450	20480	7430	2390
22	17350	19890	24640	29130	35320	40570	40400	39870	34120	20070	7150	2330
23	17200	20040	24800	29320	35480	40730	40100	39890	33740	19740	6890	2280
24	17080	20210	24970	29480	35670	40930	39790	39910	33340	19420	6630	2230
25	16970	20360	25110	29720	35880	41110	39550	39830	32870	19050	6390	2170
26	16850	20530	25330	29940	36050	41310	39350	39710	32320	18670	6180	2120
27	16740	20700	25420	30130	36220	41490	39330	39630	31710	18300	5980	2060
28	16620	20850	25570	30380	36420	41700	39110	39570	31070	17900	5760	2020
29	16500	21000	25670	30640	---	41700	38900	39530	30450	17420	5540	1980
30	16420	21140	25840	30820	---	41780	38780	39570	29810	16880	5300	1950
31	16340	---	25970	31030	---	41860	---	39610	---	16390	5160	---
MAX	19700	21100	26000	31000	36400	41900	42000	39900	39700	29200	15900	4970
MIN	16300	16400	21200	26100	31300	36600	38800	36300	29800	16400	5160	1950
a	4977.95	4980.82	4983.65	4986.55	4989.51	4992.27	4990.73	4991.15	4985.86	4977.98	4971.01	4968.95
b	-3200	+4800	+4830	+5060	+5390	+5440	-3080	+830	-9800	-13420	-11230	-3210

CAL YR 1986 MAX 60300 MIN 16300 b +5660

WTR YR 1987 MAX 42000 MIN 1950 b -17590

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

e Estimated.

## WALKER LAKE BASIN

10297000 TOPAZ LAKE NEAR TOPAZ, CA

RESERVOIR STORAGE (AC-FT) WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATION AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1880	1970	e5390	8860	13250	17530	18580	17630	15500	13740	5330	752
2	1840	2120	e5490	8980	13400	17730	18620	17420	15350	13420	5040	705
3	1810	2250	5600	9060	13530	17900	18630	17230	15330	13040	4850	644
4	1780	2340	5760	9280	13640	18050	18670	17080	15270	12630	4580	598
5	1750	2500	5870	9440	13770	18180	18670	16970	15280	12200	4390	521
6	1720	2590	6040	9500	13920	18270	18750	16870	15070	11860	4220	459
7	1690	2700	6140	9620	14080	18370	18770	16850	14920	11530	3930	413
8	1680	2840	6290	9620	14220	18520	18880	16790	14870	11180	3750	367
9	1660	2910	6360	9620	14400	18500	19020	16750	14790	10850	3660	337
10	1630	3010	6560	9620	14490	18480	19180	16690	14720	10550	3440	306
11	1580	3120	6640	9620	14640	18480	19350	16690	14680	10240	3260	e245
12	1640	3220	6740	10290	14810	18500	19490	16790	14710	9980	3100	e184
13	1640	3350	6770	10580	14940	18520	19470	16900	14860	9650	2990	e122
14	1630	3430	6880	10600	15050	18530	19620	16970	15000	9460	2840	e61
15	1610	3540	6960	10890	15220	18500	19670	17070	15180	9250	2670	e.00
16	1600	3610	7100	11020	15330	18500	19640	17280	15320	8930	2510	e.00
17	1600	3830	7210	11180	15480	18500	19520	17220	15410	8660	2330	e.00
18	1580	3960	7320	11290	15600	18480	19400	16970	15400	8350	2150	e.00
19	1570	4110	7460	11430	15730	18480	19280	16820	15380	8050	2000	e.00
20	1570	4220	7560	11580	15880	18470	19200	16720	15500	7670	1830	e.00
21	1540	4300	7670	11680	16020	18430	19120	16720	15480	7320	1720	.00
22	1580	4430	7830	11810	16170	18450	19020	16750	15480	6960	1580	.00
23	1600	4530	7960	11970	16320	18420	18920	16650	15380	6690	1480	.00
24	1600	4600	8050	12100	16470	18430	18780	16590	15180	6580	1350	.00
25	1600	4740	8150	12240	16640	18420	18680	16520	15090	6330	1240	.00
26	1610	e4850	8230	12410	16800	18420	18580	16470	15180	6170	1180	.00
27	1630	e4960	8320	12580	16980	18480	18500	16260	15020	6040	1070	.00
28	1680	e5060	8450	12700	17150	18520	18370	16070	14710	5930	998	.00
29	1830	e5170	8580	12860	17330	18570	18100	15980	14400	5770	952	.00
30	1890	e5280	8670	13010	---	18570	17850	15810	14080	5630	875	.00
31	1940	---	8770	13140	---	18570	---	15660	---	5480	829	---
MAX	1940	5280	8770	13140	17330	18570	19670	17630	15500	13740	5330	752
MIN	1540	1970	5390	8860	13250	17530	17850	15660	14080	5480	829	.00
a	4968.94	4971.08	4973.29	4976.00	4978.55	4979.29	4978.86	4977.54	4976.58	4971.21	4968.22	4967.23
b	-10	+3340	+3490	+4370	+4190	+1240	-720	-2190	-1580	-8600	-4651	-829
CAL YR 1987	MAX 42000	MIN 1540	b	-17200								
WTR YR 1988	MAX 19670	MIN	.00	b	-1950							

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

e Estimated.

10308200 EAST FORK CARSON RIVER BELOW MARKLEEVILLE CREEK, NEAR MARKLEEVILLE, CA

LOCATION.--Lat 38°42'50", long 119°45'50", in SW 1/4 SE 1/4 sec.15, T.10 N., R.20 E., Alpine County, Hydrologic Unit 16050201, on right bank 0.5 mi downstream from Markleeville Creek, and 1.5 mi north-northeast of Markleeville.

DRAINAGE AREA.--276 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,400 ft, from topographic map. Prior to Oct. 1, 1967, at present site at datum 2.00 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. A few small diversions for irrigation above station. Flow slightly regulated by several small reservoirs, total capacity, about 5,000 acre-ft.

AVERAGE DISCHARGE.--28 years, 367 ft<sup>3</sup>/s, 265,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,100 ft<sup>3</sup>/s Jan. 31, 1963, gage height, 10.21 ft, present datum; minimum, 9.5 ft<sup>3</sup>/s Nov. 19, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft<sup>3</sup>/s and maximum (\*).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 16	0400	*643	*3.45				
Minimum daily, 16 ft <sup>3</sup> /s, Sept. 11.							

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Peak discharges above base discharge of 1,300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 15	2100	*1,270	*4.16				
Minimum daily, 11 ft <sup>3</sup> /s, Sept. 6, 10-13, 23.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139	80	30	e58	e64	101	178	563	300	125	25	30
2	144	75	45	e58	e64	110	234	468	300	121	26	30
3	126	78	68	e59	e63	110	279	477	288	113	45	31
4	123	82	71	e55	e59	118	217	534	282	109	53	34
5	124	83	70	e64	e58	169	207	567	278	102	53	30
6	127	81	72	e63	e62	182	230	580	290	92	49	15
7	123	63	66	e62	e68	164	291	554	342	84	52	13
8	118	68	44	e60	e65	161	342	578	301	95	53	13
9	115	71	56	e59	e58	149	383	597	292	88	54	13
10	112	76	52	e58	e77	140	424	658	261	80	52	12
11	109	75	56	e57	124	133	439	859	239	79	51	12
12	101	74	63	e56	120	143	433	853	217	79	56	12
13	102	77	66	e56	418	165	431	700	204	95	69	12
14	101	77	66	e55	186	157	501	671	216	83	65	14
15	99	68	68	e54	154	139	539	815	194	105	65	17
16	97	76	e54	e54	127	143	574	877	171	137	57	15
17	94	75	e54	e54	121	136	650	724	156	110	55	16
18	92	73	e54	e55	114	157	593	618	146	95	53	17
19	99	74	e55	e55	111	133	431	541	132	94	40	16
20	94	72	e57	e55	111	123	404	501	125	87	41	16
21	93	74	62	e56	99	131	444	467	117	81	57	15
22	92	59	73	e56	107	118	526	432	112	77	56	13
23	92	69	66	e57	105	126	561	422	108	79	53	12
24	91	63	58	e57	118	128	594	395	108	88	50	18
25	87	65	e59	e58	115	123	641	360	123	85	38	19
26	86	52	e60	e59	110	124	686	341	125	81	39	18
27	86	68	e62	e59	122	127	711	312	126	75	50	19
28	84	62	65	e60	118	122	764	300	129	62	38	20
29	86	62	63	e61	---	123	817	295	125	59	29	19
30	85	44	62	e62	---	132	786	301	117	57	29	20
31	86	---	58	e64	---	153	---	302	---	51	28	---
TOTAL	3207	2116	1855	1796	3118	4240	14310	16662	5924	2768	1481	541
MEAN	103	70.5	59.8	57.9	111	137	477	537	197	89.3	47.8	18.0
MAX	144	83	73	64	418	182	817	877	342	137	69	34
MIN	84	44	30	54	58	101	178	295	108	51	25	12
AC-FT	6360	4200	3680	3560	6180	8410	28380	33050	11750	5490	2940	1070

CAL YR 1986 TOTAL 210419 MEAN 576 MAX 5120 MIN 30 AC-FT 417400  
WTR YR 1987 TOTAL 58018 MEAN 159 MAX 877 MIN 12 AC-FT 115100  
e Estimated.

## CARSON RIVER BASIN

10308200 EAST FORK CARSON RIVER BELOW MARKLEEVILLE CREEK, NEAR MARKLEEVILLE, CA

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	47	52	e80	e70	113	181	265	305	99	74	31
2	21	48	50	e80	e70	112	203	249	294	94	70	28
3	21	55	48	e83	e70	111	227	251	307	91	71	27
4	21	56	48	e86	e70	117	198	257	315	97	68	23
5	22	62	45	e85	e70	124	216	241	282	93	69	20
6	23	70	51	e84	e72	129	272	219	251	91	49	19
7	24	59	56	e82	e74	124	314	210	243	79	52	18
8	24	53	43	e82	e75	126	316	198	229	73	73	16
9	26	51	57	e82	e78	147	271	198	220	69	73	17
10	27	49	70	e80	e84	119	293	230	208	65	68	17
11	28	48	70	e75	86	113	347	323	204	66	63	16
12	44	47	57	e70	84	107	374	442	205	69	62	17
13	59	56	e52	e75	86	108	378	512	202	78	56	18
14	43	61	e44	e80	91	109	372	465	208	74	53	20
15	37	46	e60	e74	91	110	328	521	219	73	51	18
16	35	53	e72	e67	89	100	305	563	227	71	49	18
17	36	57	e72	e62	82	103	322	491	223	71	47	20
18	36	58	e73	e60	83	110	303	421	200	69	44	21
19	36	54	e74	e63	77	122	284	409	191	66	44	21
20	36	53	e74	e66	80	139	264	408	196	66	44	22
21	36	50	e74	e66	82	154	239	435	193	74	42	24
22	38	54	e80	e70	84	153	232	451	174	84	39	25
23	47	46	e84	e70	88	176	215	433	158	101	37	24
24	48	46	e78	e70	92	194	211	437	148	97	38	23
25	43	50	e75	e70	99	214	222	416	159	92	40	22
26	41	43	e74	e70	107	253	250	398	160	90	38	21
27	40	e41	e78	e70	115	278	282	360	131	82	37	21
28	44	e40	e80	e70	121	230	296	357	117	78	34	20
29	65	53	e80	e70	115	211	304	400	106	85	27	20
30	54	56	e80	e70	---	211	315	333	105	87	28	21
31	48	---	e80	e70	---	182	---	310	---	85	30	---
TOTAL	1123	1562	2031	2282	2485	4599	8334	11203	6180	2509	1570	628
MEAN	36.2	52.1	65.5	73.6	85.7	148	278	361	206	80.9	50.6	20.9
MAX	65	70	84	86	121	278	378	563	315	101	74	31
MIN	20	40	43	60	70	100	181	198	105	65	27	16
AC-FT	2230	3100	4030	4530	4930	9120	16530	22220	12260	4980	3110	1250
CAL YR 1987	TOTAL	55556	MEAN	152	MAX	877	MIN	12	AC-FT	110200		
WTR YR 1988	TOTAL	44506	MEAN	122	MAX	563	MIN	16	AC-FT	88280		

e Estimated.

10309025 INDIAN CREEK NEAR WOODFORDS, CA

LOCATION.--Lat 38°44'54", long 119°48'54", in NE 1/4 NE 1/4 sec.6, T.10 N., R.20 E., Alpine County, Hydrologic Unit 16050201, on right bank 2 mi south of Woodfords.

DRAINAGE AREA.--1.7 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--May to September 1987.

GAGE.--Water-stage recorder. Elevation of gage is 5,880 ft, from topographic map.

REMARKS.--Records good. Irrigation above the gage can cause considerable fluctuations. Periodic diversions from Millberry Canyon.

REMARKS.--Records fair except for periods of estimated daily discharge, which are poor. Irrigation above the gage can cause considerable fluctuations. Periodic diversions from Millberry Canyon.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1.6 ft<sup>3</sup>/s, Mar. 2, 1988, gage height, 1.54 ft; minimum daily, no flow many days.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1.6 ft<sup>3</sup>/s, Mar. 2, gage height, 1.54 ft; minimum daily, no flow many days.

EXTREMES FOR PERIOD MAY TO SEPTEMBER 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum discharge during period, May to September, 0.56 ft<sup>3</sup>/s, May 25, gage height, 1.38 ft; minimum daily, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES  
(NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	.05	.00	.00	.00
2	---	---	---	---	---	---	---	---	.05	.00	.00	.00
3	---	---	---	---	---	---	---	---	.05	.00	.00	.00
4	---	---	---	---	---	---	---	---	.05	.00	.00	.00
5	---	---	---	---	---	---	---	---	.04	.00	.00	.00
6	---	---	---	---	---	---	---	---	.06	.00	.00	.00
7	---	---	---	---	---	---	---	---	.06	.00	.00	.00
8	---	---	---	---	---	---	---	---	.06	.00	.00	.00
9	---	---	---	---	---	---	---	---	.05	.00	.00	.00
10	---	---	---	---	---	---	---	---	.04	.00	.00	.00
11	---	---	---	---	---	---	---	---	.03	.00	.00	.00
12	---	---	---	---	---	---	---	---	.03	.00	.00	.00
13	---	---	---	---	---	---	---	---	.02	.00	.00	.00
14	---	---	---	---	---	---	---	---	.03	.00	.00	.00
15	---	---	---	---	---	---	---	---	.03	.00	.00	.00
16	---	---	---	---	---	---	---	---	.02	.00	.00	.00
17	---	---	---	---	---	---	---	---	.04	.00	.00	.00
18	---	---	---	---	---	---	---	---	.09	.00	.00	.00
19	---	---	---	---	---	---	---	---	.11	.00	.00	.00
20	---	---	---	---	---	---	---	---	.09	.00	.00	.00
21	---	---	---	---	---	---	---	.10	.02	.00	.00	.00
22	---	---	---	---	---	---	---	.09	.01	.00	.00	.00
23	---	---	---	---	---	---	---	.09	.01	.00	.00	.00
24	---	---	---	---	---	---	---	.12	.0	.00	.00	.00
25	---	---	---	---	---	---	---	.36	.00	.00	.00	.00
26	---	---	---	---	---	---	---	.26	.00	.00	.00	.00
27	---	---	---	---	---	---	---	.35	.00	.00	.00	.00
28	---	---	---	---	---	---	---	.22	.0	.00	.00	.00
29	---	---	---	---	---	---	---	.08	.00	.00	.00	.00
30	---	---	---	---	---	---	---	.07	.00	.00	.00	.00
31	---	---	---	---	---	---	---	.06	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	---	1.04	0.00	0.00	0.00
MEAN	---	---	---	---	---	---	---	---	.035	.00	.00	.00
MAX	---	---	---	---	---	---	---	---	.11	.00	.00	.00
MIN	---	---	---	---	---	---	---	---	.00	.00	.00	.00
AC-FT	---	---	---	---	---	---	---	---	2.1	.0	.0	.0

## CARSON RIVER BASIN

10309025 INDIAN CREEK NEAR WOODFORDS, CA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.07	.07	e.01	.37	.93	.05	.02	.02	.00	.00	.00
2	.03	.08	.07	e.02	.37	.99	.04	.02	.05	.00	.00	.00
3	.04	.12	.06	e.03	.37	.59	.04	.02	.06	.00	.00	.00
4	.04	.10	.07	e.10	.37	.45	.04	.02	.07	.00	.00	.00
5	.04	.13	.06	.28	.37	.42	.03	.02	.09	.00	.00	.00
6	.04	.12	.13	.28	.37	.40	.03	.02	.11	.00	.00	.00
7	.05	.11	.12	.28	.37	.37	.03	.02	.13	.00	.00	.00
8	.05	.11	.08	.26	.38	.35	.03	.02	.13	.00	.00	.00
9	.05	.11	.22	.24	.39	.34	.03	.02	.12	.00	.00	.00
10	.06	.12	.12	.27	.41	.33	.03	.02	.12	.00	.00	.00
11	.07	.12	.08	.24	.45	.31	.03	.02	.03	.00	.00	.00
12	.10	.12	.07	.24	.52	.30	.03	.01	.02	.00	.00	.00
13	.04	.19	.03	.22	.53	.30	.03	.02	.01	.00	.00	.00
14	.02	.12	.03	.27	.53	.32	.06	.02	.05	.00	.00	.00
15	.01	.11	.02	e.24	.67	.30	.08	.02	.07	.00	.00	.00
16	.01	.11	.05	e.20	.54	.28	.06	.02	.08	.00	.00	.00
17	.01	.16	.06	e.16	.54	.24	.05	.02	.02	.00	.00	.00
18	.01	.13	.07	e.13	.54	.10	.04	.01	.01	.00	.00	.00
19	.0	.11	.08	e.10	.54	.09	.05	.01	.0	.00	.00	.00
20	.00	.11	.08	e.12	.54	.08	.05	.01	.00	.00	.00	.00
21	.0	.09	.09	e.13	.56	.07	.04	.01	.00	.00	.00	.00
22	.02	.08	.32	e.15	.63	.07	.03	.01	.00	.00	.00	.00
23	.04	.07	.25	e.17	.59	.07	.04	.01	.00	.00	.00	.00
24	.03	.06	e.15	e.19	.64	.06	.03	.01	.00	.00	.00	.00
25	.03	.06	e.07	e.22	.64	.06	.03	.01	.00	.00	.00	.00
26	.04	.06	e.02	e.25	.62	.06	.03	.00	.00	.00	.00	.00
27	.04	.05	e.03	e.30	.79	.06	.03	.00	.00	.00	.00	.00
28	.07	.06	e.03	.40	.92	.05	.02	.00	.00	.00	.00	.00
29	.10	.05	e.03	.39	.88	.05	.02	.00	.00	.00	.00	.00
30	.07	.05	e.03	.36	---	.05	.02	.00	.00	.00	.00	.00
31	.07	---	e.02	.37	---	.05	---	.0	---	.00	.00	---
TOTAL	1.21	2.98	2.61	6.62	15.44	8.14	1.12	0.41	1.19	0.00	0.00	0.00
MEAN	.039	.099	.084	.21	.53	.26	.037	.013	.040	.00	.00	.00
MAX	.10	.19	.32	.40	.92	.99	.08	.02	.13	.00	.00	.00
MIN	.00	.05	.02	.01	.37	.05	.02	.00	.00	.00	.00	.00
AC-FT	2.4	5.9	5.2	13	31	16	2.2	.8	2.4	.0	.0	.0

WTR YR 1988 TOTAL 39.72 MEAN .11 MAX .99 MIN .00 AC-FT 79

e Estimated.

## 10309030 INDIAN CREEK AT DIAMOND VALLEY NEAR, PAYNESVILLE, CA

LOCATION.--Lat 38°46'37", long 119°45'53", in NW 1/4 NE 1/4 sec.32, T.11 N., R.20 E., Alpine County, Hydrologic Unit 16050201, on left bank 1 mi southwest of Paynesville.

DRAINAGE AREA.--16.2 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--May to September 1987.

GAGE.--Water-stage recorder. Elevation of gage is 5,440 ft, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40 ft<sup>3</sup>/s, June 14, 1987, gage height, 3.17 ft; minimum daily, 0.29 ft<sup>3</sup>/s, July 19, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37 ft<sup>3</sup>/s, Oct. 6-7, gage height, 2.94 ft; minimum daily, 0.29 ft<sup>3</sup>/s, July 19.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum discharge during period, May to September, 40 ft<sup>3</sup>/s, June 14, gage height, 3.17 ft; minimum daily, 2.2 ft<sup>3</sup>/s, Sept. 19, 22-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	25	4.2	3.6	2.7
2	---	---	---	---	---	---	---	---	6.4	3.8	3.7	2.7
3	---	---	---	---	---	---	---	---	6.0	3.5	3.6	2.6
4	---	---	---	---	---	---	---	---	5.6	3.4	3.7	2.6
5	---	---	---	---	---	---	---	---	5.2	3.3	3.6	2.6
6	---	---	---	---	---	---	---	---	5.4	3.3	3.5	2.8
7	---	---	---	---	---	---	---	---	5.4	3.3	3.5	3.0
8	---	---	---	---	---	---	---	---	5.4	3.3	3.6	2.6
9	---	---	---	---	---	---	---	---	5.8	3.3	3.8	2.5
10	---	---	---	---	---	---	---	---	6.1	3.3	3.9	2.5
11	---	---	---	---	---	---	---	---	5.6	4.2	3.5	2.5
12	---	---	---	---	---	---	---	---	8.8	5.0	3.3	2.4
13	---	---	---	---	---	---	---	---	18	4.4	3.3	2.4
14	---	---	---	---	---	---	---	---	17	3.6	3.3	2.3
15	---	---	---	---	---	---	---	---	6.2	3.6	3.3	2.3
16	---	---	---	---	---	---	---	---	4.4	3.5	3.4	2.3
17	---	---	---	---	---	---	---	---	4.0	3.5	3.4	2.3
18	---	---	---	---	---	---	---	---	3.8	3.6	3.3	2.3
19	---	---	---	---	---	---	---	---	3.6	3.7	3.2	2.2
20	---	---	---	---	---	---	---	---	3.4	3.6	3.0	2.3
21	---	---	---	---	---	---	---	---	3.2	3.6	3.0	2.4
22	---	---	---	---	---	---	---	.10	3.2	3.5	3.0	2.2
23	---	---	---	---	---	---	---	.12	3.1	3.4	3.1	2.2
24	---	---	---	---	---	---	---	8.4	3.0	3.3	3.2	2.2
25	---	---	---	---	---	---	---	4.9	2.9	3.9	2.9	2.2
26	---	---	---	---	---	---	---	5.4	3.8	4.3	3.0	2.2
27	---	---	---	---	---	---	---	5.9	6.2	4.1	3.0	2.2
28	---	---	---	---	---	---	---	5.7	9.2	3.4	2.8	2.2
29	---	---	---	---	---	---	---	16	5.4	3.4	2.8	2.3
30	---	---	---	---	---	---	---	22	4.5	3.4	2.8	2.3
31	---	---	---	---	---	---	---	31	---	3.4	2.8	---
TOTAL	---	---	---	---	---	---	---	---	195.6	113.1	101.9	72.3
MEAN	---	---	---	---	---	---	---	---	6.52	3.65	3.29	2.41
MAX	---	---	---	---	---	---	---	---	25	5.0	3.9	3.0
MIN	---	---	---	---	---	---	---	---	2.9	3.3	2.8	2.2
AC-FT	---	---	---	---	---	---	---	---	388	224	202	143

## CARSON RIVER BASIN

10309030 INDIAN CREEK AT DIAMOND VALLEY NEAR PAYNESVILLE, CA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	11	9.1	3.7	3.2	16	24	7.7	31	3.8	1.3	.91
2	2.4	13	8.4	3.7	3.1	18	25	8.1	32	3.6	1.2	.87
3	3.0	16	9.0	3.8	3.0	15	13	9.8	31	3.3	1.2	.79
4	3.5	15	8.8	4.3	2.8	11	6.4	7.7	3.8	3.1	1.3	.78
5	3.0	15	8.3	4.5	2.7	8.5	4.9	7.2	6.1	4.0	1.3	.75
6	19	14	13	4.2	2.6	9.6	7.6	6.3	6.8	4.8	1.4	.73
7	16	13	12	4.0	3.0	12	10	6.5	6.1	4.2	1.4	.68
8	5.1	12	6.3	4.0	3.2	16	12	8.1	5.0	3.0	1.4	.61
9	5.4	12	4.3	8.2	5.0	15	20	6.7	4.4	2.8	1.4	.59
10	6.7	12	4.0	5.7	5.2	14	25	6.7	4.4	3.0	1.5	.59
11	8.6	13	4.2	5.1	5.1	11	27	6.4	4.0	3.0	1.5	.56
12	13	13	e4.3	4.6	5.2	16	25	6.0	4.2	3.2	1.5	.58
13	13	15	e4.3	4.6	5.2	20	21	5.7	4.3	2.5	1.4	.60
14	12	19	4.3	4.9	5.3	18	15	5.7	3.9	2.1	1.3	.57
15	9.3	14	4.6	4.7	5.4	13	8.6	5.3	2.9	2.2	1.4	.55
16	11	16	4.0	3.8	5.5	4.6	9.8	5.9	3.5	2.5	1.4	.56
17	8.2	19	3.9	e3.8	5.1	7.2	12	12	4.5	2.5	1.3	.57
18	8.4	18	4.2	e3.9	5.8	9.8	14	16	4.9	1.7	1.3	.58
19	8.8	5.5	4.2	e4.0	5.2	14	14	17	4.1	.29	1.2	.56
20	9.5	5.8	4.3	4.1	5.8	9.4	13	16	3.5	.43	1.2	.61
21	9.5	7.1	4.3	4.1	6.1	11	13	27	2.7	.70	1.2	.70
22	10	8.0	5.2	3.8	6.2	16	14	26	2.7	.40	1.2	.74
23	13	7.9	4.3	3.7	7.2	19	15	18	3.0	.73	1.2	.78
24	13	8.9	4.1	3.5	8.1	26	16	16	3.0	.82	1.2	.92
25	12	9.9	e3.9	3.6	8.6	31	17	14	2.9	.83	1.3	.76
26	9.8	7.0	3.7	3.6	9.7	31	17	14	2.7	.84	1.1	.80
27	8.5	7.2	3.5	3.6	10	26	10	17	3.4	.93	.93	.82
28	12	e7.5	3.5	3.8	13	24	11	7.5	3.7	.98	1.0	.89
29	20	8.4	3.7	4.1	13	26	10	7.5	3.6	1.0	1.0	.87
30	14	9.3	3.6	3.8	---	27	10	6.3	3.7	1.1	.98	.82
31	12	---	4.1	3.3	---	26	---	23	---	1.2	.94	---
TOTAL	302.1	352.5	169.4	130.5	169.3	521.1	440.3	347.1	201.8	65.55	38.95	21.14
MEAN	9.75	11.7	5.46	4.21	5.84	16.8	14.7	11.2	6.73	2.11	1.26	.70
MAX	20	19	13	8.2	13	31	27	27	32	4.8	1.5	.92
MIN	2.4	5.5	3.5	3.3	2.6	4.6	4.9	5.3	2.7	.29	.93	.55
AC-FT	599	699	336	259	336	1030	873	688	400	130	77	42

WTR YR 1988 TOTAL 2759.74 MEAN 7.54 MAX 32 MIN .29 AC-FT 5470

e Estimated.



## 10310000 WEST FORK CARSON RIVER AT WOODFORDS, CA

LOCATION.--Lat 38°46'10", long 119°49'55", in NW 1/4 SE 1/4 sec.34, T.11 N., R.19 E., Alpine County, Hydrologic Unit 16050201, in Toiyabe National Forest, on left bank 0.3 mi downstream from bridge on State Highway 88-89, 0.6 mi southwest of Woodfords, and 3.8 mi downstream from Willow Creek.

DRAINAGE AREA.--65.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1900 to May 1907, 1910-11 (fragmentary), October 1938 to current year. January 1890 to March 1892, June 1907 to September 1920 (except parts of 1910-11), at site 0.7 mi downstream; records not equivalent owing to diversions for irrigation. Monthly discharge only for some periods, published in WSP 1314.

REVISED RECORDS.--WDR NV-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,754.5 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, nonrecording gage at about the same site at different datum. Oct. 1, 1938, to Nov. 11, 1958, water-stage recorder at same site at datum 1.02 ft lower. Nov. 13, 1958, to Jan. 30, 1963, water-stage recorder at site 150 ft downstream at datum 3.06 ft lower.

REMARKS.--Records fair. One small diversion above station for irrigation. Flow slightly regulated by several small reservoirs, total capacity, about 1,500 acre-ft.

AVERAGE DISCHARGE.--57 years (1900-1907, 1938-88), 113 ft<sup>3</sup>/s, 81,870 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,890 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 9.0 ft, on basis of slope-area measurement of peak flow; minimum, about 5 ft<sup>3</sup>/s, Dec. 28, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 11, 1937, reached a stage of 8.0 ft, present datum, from floodmarks, discharge, 3,500 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 13	0500	*170	*2.21				
Minimum daily, 6.7 ft <sup>3</sup> /s, Sept. 8-11.							

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 16	0100	*330	*2.57				
Minimum daily, 11 ft <sup>3</sup> /s, Aug. 6-9, 20-23.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	29	28	28	30	35	62	169	78	59	e40	16
2	36	28	28	26	28	35	70	138	70	56	e25	16
3	35	28	28	26	30	36	75	136	70	56	e17	15
4	33	28	28	24	30	38	65	161	69	33	e14	14
5	33	28	28	28	30	43	69	187	71	24	e12	13
6	33	27	28	28	30	47	78	192	77	24	e11	13
7	33	27	28	28	30	51	99	184	88	21	11	25
8	33	27	25	e28	30	52	114	186	75	20	11	37
9	33	27	24	e28	30	51	131	210	64	20	11	30
10	31	28	24	e28	32	49	135	210	61	24	14	25
11	31	28	26	28	34	48	153	233	59	22	47	21
12	31	27	29	28	34	52	143	209	57	22	47	18
13	31	27	29	28	44	52	143	163	55	24	47	17
14	31	27	28	e28	34	48	167	153	63	68	44	15
15	31	27	25	e27	34	44	173	175	56	67	25	13
16	30	28	25	e27	34	44	178	212	54	64	16	13
17	30	27	25	e27	34	45	195	158	50	51	14	13
18	30	27	29	28	34	46	173	137	48	48	13	13
19	30	28	28	27	35	42	126	127	46	24	12	13
20	30	28	28	27	34	46	119	119	43	19	11	12
21	29	29	26	27	36	43	132	117	40	18	11	12
22	29	27	28	28	35	42	163	108	39	17	11	13
23	29	28	28	28	35	43	162	97	39	17	11	13
24	29	27	26	29	35	41	171	90	36	15	27	13
25	28	26	26	29	34	41	184	86	35	14	48	13
26	28	25	27	30	37	42	198	87	35	13	49	12
27	28	26	27	30	40	44	207	78	34	13	48	12
28	27	26	24	28	36	43	219	76	34	49	44	12
29	28	26	28	30	---	43	247	71	47	59	27	12
30	29	23	24	30	---	47	240	71	57	e56	18	12
31	29	---	28	30	---	55	---	76	---	e50	16	---
TOTAL	954	814	833	866	939	1388	4391	4416	1650	1067	752	476
MEAN	30.8	27.1	26.9	27.9	33.5	44.8	146	142	55.0	34.4	24.3	15.9
MAX	36	29	29	30	44	55	247	233	88	68	49	37
MIN	27	23	24	24	28	35	62	71	34	13	11	12
AC-FT	1890	1610	1650	1720	1860	2750	8710	8760	3270	2120	1490	944

CAL YR 1986 TOTAL 61418 MEAN 168 MAX 1230 MIN 23 AC-FT 121800  
WTR YR 1987 TOTAL 18546 MEAN 50.8 MAX 247 MIN 11 AC-FT 36790

e Estimated.

## CARSON RIVER BASIN

10310000 WEST FORK CARSON RIVER AT WOODFORDS, CA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	22	19	e27	34	39	61	88	78	33	16	18
2	12	22	20	29	32	39	67	85	74	32	28	17
3	13	24	20	30	e31	38	83	84	79	30	31	15
4	12	23	20	31	e30	42	78	85	84	34	31	13
5	12	24	19	31	e29	45	78	83	80	59	32	8.6
6	13	23	22	30	e30	47	96	80	73	68	30	7.4
7	13	21	20	31	31	45	114	76	78	67	21	7.0
8	13	20	20	30	32	47	110	72	75	49	14	6.7
9	13	20	29	31	32	53	83	70	70	41	13	6.7
10	13	19	43	33	32	41	85	75	65	32	12	6.7
11	13	18	35	29	32	38	100	86	65	22	12	6.7
12	16	18	27	e27	33	35	103	116	64	20	12	7.5
13	16	20	e25	34	33	35	112	146	65	19	11	14
14	15	21	e24	33	34	35	119	112	65	18	11	13
15	15	18	25	32	34	37	105	117	69	17	14	11
16	15	19	24	30	34	34	86	139	68	16	25	9.2
17	15	21	25	30	33	36	95	119	68	15	25	8.0
18	15	21	25	e28	33	39	95	103	65	14	24	7.4
19	16	20	26	e28	31	46	93	96	62	35	22	7.4
20	16	20	25	e29	32	53	88	93	62	36	21	7.9
21	16	20	26	31	32	57	81	104	66	37	18	8.3
22	17	20	31	30	33	58	84	105	58	44	12	8.5
23	20	18	29	30	34	68	80	105	55	44	11	7.9
24	21	18	e26	32	35	69	82	99	71	31	10	7.8
25	20	17	e25	32	37	77	83	95	72	14	10	7.6
26	19	15	e26	32	38	88	86	91	53	14	9.8	7.4
27	19	17	27	32	41	90	90	86	49	14	9.5	7.3
28	20	18	28	32	43	66	91	87	40	14	9.4	7.3
29	24	17	28	33	43	60	92	97	37	13	11	7.3
30	23	17	28	32	---	62	96	86	35	13	20	7.3
31	21	---	e27	32	---	56	---	77	---	13	20	---
TOTAL	498	591	794	951	978	1575	2716	2957	1945	908	545.7	274.9
MEAN	16.1	19.7	25.6	30.7	33.7	50.8	90.5	95.4	64.8	29.3	17.6	9.16
MAX	24	24	43	34	43	90	119	146	84	68	32	18
MIN	12	15	19	27	29	34	61	70	35	13	9.4	6.7
AC-FT	988	1170	1570	1890	1940	3120	5390	5870	3860	1800	1080	545

CAL YR 1987 TOTAL 17828 MEAN 48.8 MAX 247 MIN 11 AC-FT 35360  
WTR YR 1988 TOTAL 14733.6 MEAN 40.3 MAX 146 MIN 6.7 AC-FT 29220

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA

LOCATION.--Lat 38°55'22", long 119°59'23", in NW 1/4 SE 1/4 sec.4, T.12 N., R.18 E., El Dorado County, Hydrologic Unit 16050101, near center of bridge span on downstream side of U.S. Highway 50 bridge, 1.0 mi northeast of South Lake Tahoe Post Office, and 1.4 mi upstream from Lake Tahoe.

DRAINAGE AREA.--54.9 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to September 1974, October 1976 to June 1977, October 1977 to June 1978, March 1980 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 6,229.04 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 26, 1984, at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Oct. 1-8, Dec. 13, 14, Dec. 24 to Feb. 20, Mar. 23, 24, July 8 to Sept. 30. Records fair except those for October to February and July to September, which are poor. Two small dams may cause slight regulation at times. Some small diversions for domestic use upstream from station. Echo Lake conduit (station 11434500) diverts from Echo Lake, capacity 1,900 acre-ft, to South Fork American River basin.

AVERAGE DISCHARGE.--11 years, (water years 1972-74, 1981-88), 110 ft<sup>3</sup>/s, 79,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,740 ft<sup>3</sup>/s, Mar. 8, 1986, gage height, 9.08 ft; maximum gage height, 10.12 ft, present datum, Feb. 16, 1982; minimum daily, 1.1 ft<sup>3</sup>/s, Sept. 12-17, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	0900	(a)	*4.67	May 16	0245	*170	3.57

(a) Backwater from ice.

Minimum daily, 1.1 ft<sup>3</sup>/s, Sept. 12-17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	7.1	10	20	20	41	29	63	114	15	4.7	1.4
2	2.7	8.2	12	22	20	46	39	56	102	14	4.7	1.3
3	3.0	7.9	9.8	28	20	45	51	53	93	13	4.6	1.3
4	3.5	6.9	8.9	40	19	44	41	56	88	12	4.4	1.3
5	3.3	5.8	8.2	28	19	46	41	54	87	11	4.3	1.3
6	3.5	5.6	13	24	19	48	75	50	71	11	4.2	1.3
7	3.4	5.7	20	22	19	44	90	48	62	10	4.0	1.2
8	3.3	5.8	11	20	18	42	87	46	58	9.8	3.8	1.2
9	3.3	6.8	20	20	18	55	64	44	48	9.0	3.6	1.2
10	3.8	6.7	41	25	18	46	68	49	44	7.8	3.4	1.2
11	3.7	6.9	37	27	18	38	87	77	41	6.6	3.2	1.2
12	5.1	8.0	19	25	18	34	93	111	40	6.4	3.0	1.1
13	6.2	11	16	24	18	29	92	139	39	6.2	2.8	1.1
14	4.5	15	14	23	19	28	89	120	39	6.3	2.6	1.1
15	4.3	11	13	22	19	30	86	127	42	6.2	2.5	1.1
16	3.9	11	11	21	20	28	79	136	51	5.5	2.3	1.1
17	4.2	13	11	21	21	30	80	116	54	5.7	2.2	1.1
18	4.0	15	11	20	22	35	74	117	47	5.6	2.1	1.2
19	3.8	12	11	20	22	42	71	128	38	5.5	2.0	1.3
20	2.8	12	11	20	20	58	72	125	40	5.4	1.9	1.5
21	3.5	12	11	20	17	73	68	129	47	5.3	1.8	1.6
22	4.3	13	32	20	18	65	69	135	40	5.2	1.7	1.7
23	6.4	11	32	20	21	76	66	127	36	5.1	1.6	1.7
24	6.0	9.8	26	21	23	57	63	123	31	5.1	1.5	1.6
25	5.7	10	25	21	26	55	66	115	31	5.0	1.5	1.9
26	5.9	8.8	24	21	28	74	70	105	30	5.1	1.4	1.6
27	5.8	8.9	23	21	33	88	70	88	26	5.1	1.4	1.9
28	6.9	8.9	22	21	41	69	72	88	20	5.1	1.4	1.8
29	8.8	8.4	21	21	40	52	71	110	17	5.0	1.4	1.7
30	7.6	8.6	21	21	---	52	76	98	16	4.9	1.4	1.7
31	7.3	---	20	20	---	37	---	100	---	4.8	1.4	---
TOTAL	143.2	280.8	564.9	699	634	1507	2099	2933	1492	227.7	82.8	41.7
MEAN	4.62	9.36	18.2	22.5	21.9	48.6	70.0	94.6	49.7	7.35	2.67	1.39
MAX	8.8	15	41	40	41	88	93	139	114	15	4.7	1.9
MIN	2.7	5.6	8.2	20	17	28	29	44	16	4.8	1.4	1.1
AC-FT	284	557	1120	1390	1260	2990	4160	5820	2960	452	164	83

CAL YR 1987 TOTAL 13261.0 MEAN 36.3 MAX 300 MIN 1.9 AC-FT 26300  
WTR YR 1988 TOTAL 10705.1 MEAN 29.2 MAX 139 MIN 1.1 AC-FT 21230

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-74, 1978, 1980 to current year.

PERIOD OF DAILY RECORD. --

SPECIFIC CONDUCTANCE: March 1981 to September 1983.

WATER TEMPERATURE: October 1971 to June 1974, October 1977 to June 1978, March 1980 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to June 1974, October 1977 to June 1978, March 1980 to current year.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 312 mg/L, Dec. 29, 1973; minimum daily mean, 0 mg/L, several days during most years.

SEDIMENT LOAD: Maximum daily, 781 tons, Mar. 8, 1986; minimum daily, 0 ton, several days during most years.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 39 mg/L, May 13; minimum daily mean, 2 mg/L, many days.

SEDIMENT LOAD: Maximum daily, 16 tons, May 13; minimum daily, 0.01 ton, many days.

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

[illegible]

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	2.7	5	.04	7.1	3	.06	10	3	.08
2	2.7	3	.02	8.2	2	.04	12	3	.10
3	3.0	3	.02	7.9	2	.04	9.8	3	.08
4	3.5	3	.03	6.9	2	.04	8.9	3	.07
5	3.3	3	.03	5.8	2	.03	8.2	3	.07
6	3.5	3	.03	5.6	2	.03	13	6	.21
7	3.4	3	.03	5.7	2	.03	20	12	.65
8	3.3	4	.04	5.8	2	.03	11	7	.21
9	3.3	4	.04	6.8	3	.06	20	7	.38
10	3.8	4	.04	6.7	2	.04	41	7	.77
11	3.7	4	.04	6.9	2	.04	37	7	.70
12	5.1	5	.07	8.0	3	.06	19	7	.36
13	6.2	5	.08	11	4	.12	16	7	.30
14	4.5	5	.06	15	4	.16	14	6	.23
15	4.3	4	.05	11	4	.12	13	6	.21
16	3.9	4	.04	11	4	.12	11	5	.15
17	4.2	4	.05	13	5	.18	11	5	.15
18	4.0	4	.04	15	4	.16	11	4	.12
19	3.8	4	.04	12	3	.10	11	4	.12
20	2.8	3	.02	12	3	.10	11	4	.12
21	3.5	3	.03	12	3	.10	11	4	.12
22	4.3	3	.03	13	3	.11	32	4	.35
23	6.4	5	.09	11	3	.09	32	4	.35
24	6.0	5	.08	9.8	3	.08	26	4	.28
25	5.7	5	.08	10	3	.08	25	4	.27
26	5.9	5	.08	8.8	3	.07	24	4	.26
27	5.8	5	.08	8.9	3	.07	23	4	.25
28	6.9	4	.07	8.9	3	.07	22	4	.24
29	8.8	4	.10	8.4	3	.07	21	4	.23
30	7.6	4	.08	8.6	3	.07	21	4	.23
31	7.3	3	.06	---	---	---	20	5	.27
TOTAL	143.2	---	1.59	280.8	---	2.37	564.9	---	7.93
JANUARY			FEBRUARY			MARCH			
1	20	7	.38	20	3	.16	41	4	.44
2	22	9	.53	20	3	.16	46	5	.62
3	28	11	.83	20	3	.16	45	4	.49
4	40	12	1.3	19	3	.15	44	4	.48
5	28	12	.91	19	3	.15	46	4	.50
6	24	11	.71	19	3	.15	48	4	.52
7	22	9	.53	19	3	.15	44	4	.48
8	20	8	.43	18	4	.19	42	6	.68
9	20	7	.38	18	5	.24	55	5	.74
10	25	6	.40	18	5	.24	46	5	.62
11	27	5	.36	18	5	.24	38	5	.51
12	25	4	.27	18	5	.24	34	5	.46
13	24	3	.19	18	5	.24	29	5	.39
14	23	3	.19	19	5	.26	28	5	.38
15	22	5	.30	19	5	.26	30	5	.40
16	21	4	.23	20	5	.27	28	5	.38
17	21	3	.17	21	15	.85	30	5	.40
18	20	3	.16	22	5	.30	35	6	.57
19	20	2	.11	22	5	.30	42	7	.79
20	20	2	.11	20	4	.22	58	8	1.3
21	20	2	.11	17	4	.18	73	12	2.4
22	20	2	.11	18	3	.15	65	10	1.8
23	20	2	.11	21	3	.17	76	11	2.3
24	21	3	.17	23	3	.19	57	11	1.7
25	21	3	.17	26	3	.21	55	11	1.6
26	21	3	.17	28	4	.30	74	11	2.2
27	21	3	.17	33	4	.36	88	11	2.6
28	21	3	.17	41	4	.44	69	11	2.0
29	21	3	.17	40	4	.43	52	11	1.5
30	21	3	.17	---	---	---	52	11	1.5
31	20	3	.16	---	---	---	37	10	1.0
TOTAL	699	---	10.17	634	---	7.36	1507	---	31.75

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	29	9	.70	63	3	.51	114	13	4.0
2	39	8	.84	56	2	.30	102	9	2.5
3	51	7	.96	53	2	.29	93	10	2.5
4	41	6	.66	56	3	.45	88	10	2.4
5	41	5	.55	54	3	.44	87	5	1.2
6	75	10	2.0	50	2	.27	71	5	.96
7	90	11	2.7	48	2	.26	62	5	.84
8	87	8	1.9	46	2	.25	58	5	.78
9	64	7	1.2	44	2	.24	48	4	.52
10	68	8	1.5	49	4	.53	44	5	.59
11	87	9	2.1	77	11	2.3	41	4	.44
12	93	12	3.0	111	21	6.6	40	4	.43
13	92	10	2.5	139	39	16	39	4	.42
14	89	8	1.9	120	23	7.9	39	4	.42
15	86	4	.93	127	18	6.2	42	4	.45
16	79	4	.85	136	35	14	51	4	.55
17	80	4	.86	116	14	4.4	54	4	.58
18	74	3	.60	117	17	5.4	47	4	.51
19	71	2	.38	128	19	6.6	38	4	.41
20	72	2	.39	125	17	5.7	40	4	.43
21	68	2	.37	129	18	6.3	47	5	.63
22	69	3	.56	135	19	6.9	40	4	.43
23	66	3	.53	127	15	5.1	36	4	.39
24	63	4	.68	123	13	4.3	31	4	.33
25	66	4	.71	115	13	4.0	31	4	.33
26	70	4	.76	105	11	3.1	30	4	.32
27	70	4	.76	88	9	2.1	26	4	.28
28	72	4	.78	88	9	2.1	20	4	.22
29	71	4	.77	110	11	3.3	17	4	.18
30	76	4	.82	98	7	1.9	16	5	.22
31	---	---	---	100	10	2.7	---	---	---
TOTAL	2099	---	33.26	2933	---	120.44	1492	---	24.26
JULY			AUGUST			SEPTEMBER			
1	15	3	.12	4.7	8	.10	1.4	4	.02
2	14	3	.11	4.7	8	.10	1.3	4	.01
3	13	3	.11	4.6	8	.10	1.3	4	.01
4	12	3	.10	4.4	8	.10	1.3	4	.01
5	11	3	.09	4.3	9	.10	1.3	4	.01
6	11	3	.09	4.2	9	.10	1.3	4	.01
7	10	3	.08	4.0	9	.10	1.2	4	.01
8	9.8	4	.11	3.8	9	.09	1.2	4	.01
9	9.0	4	.10	3.6	11	.11	1.2	4	.01
10	7.8	4	.08	3.4	13	.12	1.2	4	.01
11	6.6	4	.07	3.2	13	.11	1.2	4	.01
12	6.4	5	.09	3.0	12	.10	1.1	4	.01
13	6.2	6	.10	2.8	11	.08	1.1	4	.01
14	6.3	6	.10	2.6	10	.07	1.1	4	.01
15	6.2	6	.10	2.5	9	.06	1.1	4	.01
16	5.5	6	.09	2.3	8	.05	1.1	4	.01
17	5.7	6	.09	2.2	7	.04	1.1	4	.01
18	5.6	6	.09	2.1	6	.03	1.2	4	.01
19	5.5	6	.09	2.0	5	.03	1.3	4	.01
20	5.4	6	.09	1.9	5	.03	1.5	4	.02
21	5.3	7	.10	1.8	5	.02	1.6	5	.02
22	5.2	7	.10	1.7	4	.02	1.7	5	.02
23	5.1	8	.11	1.6	4	.02	1.7	5	.02
24	5.1	8	.11	1.5	4	.02	1.6	4	.02
25	5.0	9	.12	1.5	4	.02	1.9	4	.02
26	5.1	9	.12	1.4	4	.02	1.6	3	.01
27	5.1	8	.11	1.4	4	.02	1.9	3	.02
28	5.1	8	.11	1.4	4	.02	1.8	3	.01
29	5.0	8	.11	1.4	4	.02	1.7	3	.01
30	4.9	8	.11	1.4	4	.02	1.7	3	.01
31	4.8	8	.10	1.4	4	.02	---	---	---
TOTAL	227.7	---	3.10	82.8	---	1.84	41.7	---	0.38
YEAR	10705.1		244.45						

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336610 UPPER TRUCKEE RIVER AT SOUTH LAKE TAHOE, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM
NOV 17...	1300	13	6.0	20	0.70	65	--	--	--
APR 14...	1155	90	5.5	6	1.5	82	--	--	--
MAY 14...	0810	137	6.5	15	5.5	52	86	96	100

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	TEMPER- ATURE WATER (DEG C)	NUMBER OF SAM- PLING POINTS (COUNT)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM
MAY 14...	0800	6.5	3	137	1	4	9

DATE	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM
MAY 14...	20	36	58	83	98	100

LOCATION.--Lat 38°54'00", long 120°04'14", in NE 1/4 SW 1/4 sec.11, T.12 N., R.17 E., El Dorado County, Hydrologic Unit 16050101, Eldorado National Forest, 200 ft north of Cathedral Creek, 1.5 mi south of Fallen Leaf Dam, 2.9 mi southwest of Camp Richardson, and 3.7 mi west of South Lake Tahoe Post Office.

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1973, published as "near Tahoe Valley."

GAGE.--Water-stage recorder. Datum of gage is 6,372.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Lake levels regulated by a concrete dam at the outlet constructed in 1934. Regulation is for maintenance of lake level and enhancement of fishery.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 5.85 ft, Jan. 13, 1980; minimum, 1.49 ft, Jan. 23, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.49 ft, June 18; minimum, 1.63 ft, Dec. 6.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.78	2.20	1.70	1.93	2.03	2.00	2.46	4.13	4.41	4.40	3.99	3.44
2	2.77	2.18	1.71	1.92	2.02	2.01	2.48	4.14	4.40	4.38	3.95	3.43
3	2.75	2.15	1.68	2.03	2.01	2.02	2.51	4.16	4.39	4.37	3.94	3.41
4	2.74	2.13	1.66	2.09	1.99	2.03	2.53	4.17	4.38	4.33	3.92	3.40
5	2.72	2.12	1.64	2.10	1.98	2.04	2.56	4.17	4.37	4.31	3.90	3.38
6	2.70	2.09	1.74	2.10	1.97	2.05	2.61	4.17	4.37	4.30	3.87	3.36
7	2.69	2.07	1.76	2.12	1.97	2.06	2.67	4.17	4.37	4.29	3.86	3.33
8	2.67	2.03	1.78	2.13	1.96	2.07	2.74	4.17	4.36	4.28	3.85	3.31
9	2.65	2.02	1.82	2.13	1.95	2.09	2.78	4.17	4.35	4.26	3.84	3.29
10	2.64	2.01	1.87	2.14	1.94	2.09	2.84	4.18	4.35	4.24	3.82	3.27
11	2.62	1.98	1.90	2.16	1.93	2.09	2.92	4.23	4.37	4.19	3.80	3.23
12	2.64	1.94	1.89	2.15	1.92	2.09	3.02	4.34	4.38	4.18	3.77	3.20
13	2.62	2.02	1.88	2.13	1.92	2.08	3.12	4.39	4.40	4.17	3.73	3.17
14	2.59	2.00	1.87	2.11	1.92	2.08	3.27	4.36	4.41	4.15	3.70	3.16
15	2.56	1.96	1.85	2.14	1.92	2.08	3.34	4.32	4.43	4.14	3.67	3.15
16	2.53	1.95	1.87	2.17	1.93	2.08	3.39	4.30	4.45	4.13	3.66	3.11
17	2.51	1.96	1.86	2.18	1.93	2.08	3.45	4.27	4.48	4.12	3.64	3.09
18	2.48	1.94	1.85	2.18	1.90	2.08	3.53	4.24	4.48	4.10	3.63	3.07
19	2.45	1.92	1.86	2.17	1.88	2.09	3.62	4.25	4.46	4.09	3.61	3.03
20	2.43	1.90	1.85	2.14	1.88	2.09	3.67	4.28	4.47	4.08	3.59	3.01
21	2.40	1.89	1.86	2.13	1.87	2.12	3.71	4.33	4.47	4.07	3.58	2.99
22	2.40	1.88	1.96	2.12	1.87	2.14	3.74	4.37	4.47	4.06	3.57	2.97
23	2.39	1.87	1.94	2.11	1.87	2.19	3.77	4.40	4.46	4.07	3.55	2.96
24	2.37	1.84	1.92	2.11	1.87	2.22	3.79	4.42	4.45	4.07	3.55	2.95
25	2.35	1.81	1.90	2.10	1.87	2.26	3.82	4.42	4.45	4.06	3.54	2.93
26	2.33	1.78	1.90	2.10	1.88	2.31	3.86	4.40	4.44	4.06	3.53	2.90
27	2.31	1.75	1.88	2.08	1.90	2.36	3.92	4.39	4.43	4.06	3.52	2.88
28	2.30	1.74	1.92	2.06	1.92	2.39	3.98	4.43	4.41	4.05	3.51	2.87
29	2.29	1.72	1.93	2.07	1.94	2.42	4.04	4.43	4.41	4.03	3.49	2.86
30	2.26	1.70	1.93	2.06	---	2.45	4.10	4.42	4.41	4.02	3.47	2.86
31	2.24	---	1.93	2.04	---	2.45	---	4.40	---	4.01	3.46	---
MEAN	2.52	1.95	1.84	2.10	1.93	2.15	3.27	4.29	4.42	4.16	3.69	3.13
MAX	2.78	2.20	1.96	2.18	2.03	2.45	4.10	4.43	4.48	4.40	3.99	3.44
MIN	2.24	1.70	1.64	1.92	1.87	2.00	2.46	4.13	4.35	4.01	3.46	2.86



## PYRAMID AND WINNEMUCCA LAKES BASIN

10336626 TAYLOR CREEK NEAR CAMP RICHARDSON, CA

LOCATION.--Lat 38°55'18", long 120°03'37", in NE 1/4 NW 1/4 sec.2, T.12 N., R.17 E., El Dorado County, Hydrologic Unit 16050101, Eldorado National Forest, on left bank 0.1 mi downstream from Fallen Leaf Lake outlet and 1.4 mi southwest of Camp Richardson.

DRAINAGE AREA.--16.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1973, published as "near Tahoe Valley."

GAGE.--Water-stage recorder. Datum of gage is 6,361.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Fallen Leaf Lake (station 10336625).

AVERAGE DISCHARGE (unadjusted).--20 years, 46.0 ft<sup>3</sup>/s, 33,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,530 ft<sup>3</sup>/s, Jan. 14, 1980, gage height, 6.33 ft; minimum daily, 0.20 ft<sup>3</sup>/s, Oct. 4-7, 1970, Sept. 4-6, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 128 ft<sup>3</sup>/s, May 14, gage height, 4.01 ft; minimum daily, 0.84 ft<sup>3</sup>/s, Sept. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	9.9	9.2	9.6	12	11	12	17	44	4.4	3.8	3.7
2	4.0	9.9	8.9	9.6	12	11	12	19	40	4.2	4.0	3.8
3	3.9	9.9	8.9	9.8	12	11	12	20	37	4.1	4.0	4.0
4	4.0	9.7	9.0	9.9	12	11	12	21	39	3.8	3.9	4.0
5	4.6	9.6	9.2	9.9	12	11	12	20	35	4.0	4.0	3.8
6	5.1	9.6	9.3	9.9	12	11	12	20	30	4.0	4.0	3.6
7	5.1	9.6	9.6	10	12	11	12	20	25	4.0	4.0	3.5
8	7.6	9.6	9.6	11	12	11	9.9	21	23	4.2	3.8	3.5
9	9.9	9.6	9.9	11	12	11	8.8	20	20	4.4	3.4	3.3
10	9.9	9.6	9.9	11	12	11	8.9	20	17	4.1	3.5	2.9
11	9.9	9.4	9.9	12	12	10	8.9	21	10	3.9	3.4	3.5
12	9.7	9.2	9.9	12	12	11	8.5	27	10	3.8	3.9	4.2
13	10	9.4	9.9	13	12	11	8.2	68	10	3.7	4.1	2.8
14	11	9.6	9.9	12	12	11	8.2	119	10	3.8	4.1	2.2
15	10	9.6	9.9	13	12	11	8.2	122	11	4.0	4.2	2.2
16	10	9.6	9.9	13	12	11	8.2	119	11	4.0	4.3	1.5
17	10	9.6	9.9	13	12	11	8.2	109	11	4.0	4.1	.84
18	10	9.6	9.9	13	12	11	8.3	93	21	3.9	4.1	.88
19	10	9.6	9.9	13	12	11	7.9	47	33	4.2	4.0	2.1
20	10	9.6	9.9	12	11	11	8.5	34	26	4.2	3.7	3.0
21	9.9	9.6	9.9	11	11	11	10	35	17	4.0	3.8	2.9
22	9.9	9.6	9.9	12	11	11	10	38	17	4.1	4.0	3.0
23	9.9	9.6	9.9	12	11	11	10	39	13	3.8	4.0	2.8
24	9.9	9.6	9.9	12	11	11	10	41	8.6	3.9	3.7	2.8
25	9.6	9.6	9.9	12	11	11	10	44	8.6	4.0	3.3	3.2
26	9.5	9.6	9.7	12	11	11	10	44	8.6	4.2	3.2	3.3
27	9.9	9.5	9.8	12	11	11	9.9	43	6.0	4.1	3.0	3.1
28	9.9	9.2	9.6	12	11	11	9.9	43	3.9	3.7	3.2	3.1
29	9.9	9.2	9.6	11	11	11	10	45	3.4	3.6	3.2	3.0
30	9.9	9.2	9.6	11	---	12	11	45	3.7	3.6	3.3	3.3
31	9.9	---	9.6	11	---	12	---	44	---	3.5	3.5	---
TOTAL	266.1	286.9	299.9	355.7	338	342	295.5	1418	552.8	123.2	116.5	89.82
MEAN	8.58	9.56	9.67	11.5	11.7	11.0	9.85	45.7	18.4	3.97	3.76	2.99
MAX	11	9.9	9.9	13	12	12	12	122	44	4.4	4.3	4.2
MIN	3.2	9.2	8.9	9.6	11	10	7.9	17	3.4	3.5	3.0	.84
AC-FT	528	569	595	706	670	678	586	2810	1100	244	231	178

CAL YR 1987 TOTAL 6127.3 MEAN 16.8 MAX 240 MIN 1.5 AC-FT 12150  
WTR YR 1988 TOTAL 4484.42 MEAN 12.3 MAX 122 MIN .84 AC-FT 8890

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336645 GENERAL CREEK NEAR MEEKS BAY, CA

LOCATION.--Lat 39°03'07", long 120°07'03", in NE 1/4 NE 1/4 sec.20, T.14 N., R.17 E., El Dorado County, Hydrologic Unit 16050101, on right bank 200 ft upstream from State Highway 89, 0.4 mi upstream from Lake Tahoe, and 1.1 mi north of Meeks Bay.

DRAINAGE AREA.--7.44 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 6,250.38 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 12, 13, 25-31, Jan. 5-8, 10-12, 31, Feb. 16, 17, 19-21, Mar. 11-13, June 28 to July 10, July 16 to Aug. 5, Sept. 13-19. Records good except ice periods which are fair and summer months which are poor. No known diversion or regulation upstream from station.

AVERAGE DISCHARGE.--8 years, 18.6 ft<sup>3</sup>/s, 13,480 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 765 ft<sup>3</sup>/s, Dec. 20, 1981, gage height, 5.43 ft, from rating curve extended above 180 ft<sup>3</sup>/s on basis of computation of flow through culvert; minimum daily, 0.48 ft<sup>3</sup>/s, Aug. 26, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 13	2330	*43	*1.51				
Minimum daily, 0.48 ft <sup>3</sup> /s, Aug. 26.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.94	1.1	1.4	1.4	2.6	5.9	11	15	12	.97	.57	.56
2	.92	1.2	1.8	1.4	2.6	5.4	12	13	8.3	.94	.56	.52
3	.91	1.2	1.4	1.6	2.6	5.7	15	13	6.2	.92	.56	.51
4	.92	1.2	1.2	2.7	2.6	6.0	12	13	5.2	.90	.56	.49
5	.95	1.4	1.2	3.2	2.9	7.0	14	12	4.6	.88	.55	.50
6	.97	1.4	2.1	3.0	3.2	7.5	23	11	4.7	.86	.53	.50
7	.98	1.4	1.8	2.8	3.5	7.5	31	10	5.9	.85	.58	.49
8	.93	1.4	1.4	2.7	3.4	7.6	29	10	8.1	.84	.56	.51
9	.96	1.4	2.0	2.6	3.2	8.6	19	9.7	9.7	.83	.55	.52
10	.96	1.4	2.4	3.0	3.2	8.1	21	11	8.2	.82	.55	.55
11	.98	1.4	3.9	2.9	3.2	7.1	30	18	6.5	.82	.57	.62
12	1.4	1.4	2.4	2.8	3.3	6.1	34	24	5.5	.82	.61	.57
13	1.2	2.2	2.1	2.4	3.2	5.9	36	24	4.6	.83	.62	.56
14	1.2	2.1	1.9	2.4	3.5	5.6	37	17	4.0	.83	.63	.56
15	1.2	1.5	1.4	2.6	3.6	5.9	28	16	3.7	.85	.65	.56
16	1.2	1.3	1.4	2.6	3.6	5.8	26	15	3.3	.80	.66	.56
17	1.2	1.7	1.4	2.9	3.6	5.6	29	17	2.9	.76	.66	.56
18	1.0	1.5	1.3	2.6	3.6	6.0	26	13	2.6	.73	.66	.56
19	1.0	1.3	1.4	2.6	3.6	7.3	20	9.9	2.2	.71	.64	.57
20	1.0	1.3	1.4	2.6	3.6	8.9	19	8.5	2.0	.70	.64	.64
21	1.0	1.4	1.4	2.6	3.6	10	16	7.5	2.0	.68	.60	.75
22	1.1	1.3	2.5	2.6	3.5	10	15	7.1	1.7	.66	.55	.80
23	1.5	1.3	2.5	2.6	3.9	14	13	6.5	1.5	.64	.57	.71
24	1.3	1.3	2.1	2.8	4.0	18	14	5.7	1.3	.63	.58	.60
25	1.1	1.3	1.9	2.8	4.2	19	16	5.1	1.3	.62	.54	.61
26	1.0	1.2	1.8	2.8	4.5	23	21	4.5	1.2	.61	.48	.59
27	1.0	1.2	1.7	2.7	4.9	25	26	4.1	1.1	.60	.50	.66
28	1.1	1.2	1.6	2.5	5.6	16	26	4.0	1.1	.60	.55	.61
29	1.5	1.2	1.5	2.4	5.9	13	23	8.2	1.0	.59	.52	.60
30	1.1	1.2	1.5	2.4	---	13	20	8.2	1.0	.58	.52	.61
31	1.0	---	1.4	2.6	---	11	---	11	---	.58	.55	---
TOTAL	33.52	41.4	55.2	79.6	104.7	305.5	662	352.0	123.4	23.45	17.87	17.45
MEAN	1.08	1.38	1.78	2.57	3.61	9.85	22.1	11.4	4.11	.76	.58	.58
MAX	1.5	2.2	3.9	3.2	5.9	25	37	24	12	.97	.66	.80
MIN	.91	1.1	1.2	1.4	2.6	5.4	11	4.0	1.0	.58	.48	.49
AC-FT	66	82	109	158	208	606	1310	698	245	47	35	35

CAL YR 1987 TOTAL 2310.99 MEAN 6.33 MAX 74 MIN .50 AC-FT 4580  
WTR YR 1988 TOTAL 1816.09 MEAN 4.96 MAX 37 MIN .48 AC-FT 3600



## PYRAMID AND WINNEMUCCA LAKES BASIN

10336645 GENERAL CREEK NEAR MEEKS BAY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.94	2	.01	1.1	1	.00	1.4	1	.00
2	.92	2	.00	1.2	1	.00	1.8	1	.00
3	.91	3	.01	1.2	1	.00	1.4	1	.00
4	.92	3	.01	1.2	0	.00	1.2	1	.00
5	.95	4	.01	1.4	0	.00	1.2	1	.00
6	.97	4	.01	1.4	1	.00	2.1	4	.02
7	.98	4	.01	1.4	1	.00	1.8	1	.00
8	.93	4	.01	1.4	2	.01	1.4	1	.00
9	.96	3	.01	1.4	2	.01	2.0	1	.01
10	.96	3	.01	1.4	2	.01	2.4	1	.01
11	.98	2	.01	1.4	2	.01	3.9	1	.01
12	1.4	2	.01	1.4	2	.01	2.4	1	.01
13	1.2	2	.01	2.2	2	.01	2.1	1	.01
14	1.2	2	.01	2.1	1	.01	1.9	1	.01
15	1.2	2	.01	1.5	1	.00	1.4	0	.00
16	1.2	2	.01	1.3	1	.00	1.4	0	.00
17	1.2	2	.01	1.7	1	.00	1.4	0	.00
18	1.0	2	.01	1.5	1	.00	1.3	0	.00
19	1.0	2	.01	1.3	1	.00	1.4	0	.00
20	1.0	2	.01	1.3	1	.00	1.4	0	.00
21	1.0	2	.01	1.4	0	.00	1.4	0	.00
22	1.1	2	.01	1.3	0	.00	2.5	0	.00
23	1.5	2	.01	1.3	0	.00	2.5	0	.00
24	1.3	2	.01	1.3	0	.00	2.1	0	.00
25	1.1	2	.01	1.3	0	.00	1.9	0	.00
26	1.0	2	.01	1.2	0	.00	1.8	0	.00
27	1.0	2	.01	1.2	1	.00	1.7	0	.00
28	1.1	2	.01	1.2	1	.00	1.6	0	.00
29	1.5	2	.01	1.2	1	.00	1.5	0	.00
30	1.1	2	.01	1.2	1	.00	1.5	0	.00
31	1.0	2	.01	---	---	---	1.4	0	.00
TOTAL	33.52	---	0.30	41.4	---	0.07	55.2	---	0.08
JANUARY			FEBRUARY			MARCH			
1	1.4	0	.00	2.6	1	.01	5.9	1	.02
2	1.4	0	.00	2.6	1	.01	5.4	1	.01
3	1.6	0	.00	2.6	1	.01	5.7	1	.02
4	2.7	0	.00	2.6	1	.01	6.0	1	.02
5	3.2	0	.00	2.9	1	.01	7.0	1	.02
6	3.0	0	.00	3.2	1	.01	7.5	1	.02
7	2.8	1	.01	3.5	1	.01	7.5	2	.04
8	2.7	1	.01	3.4	1	.01	7.6	2	.04
9	2.6	1	.01	3.2	1	.01	8.6	2	.05
10	3.0	2	.02	3.2	1	.01	8.1	2	.04
11	2.9	2	.02	3.2	1	.01	7.1	3	.06
12	2.8	2	.02	3.3	1	.01	6.1	3	.05
13	2.4	2	.01	3.2	2	.02	5.9	3	.05
14	2.4	2	.01	3.5	2	.02	5.6	3	.05
15	2.6	2	.01	3.6	2	.02	5.9	3	.05
16	2.6	2	.01	3.6	2	.02	5.8	3	.05
17	2.9	2	.02	3.6	2	.02	5.6	2	.03
18	2.6	1	.01	3.6	2	.02	6.0	2	.03
19	2.6	1	.01	3.6	2	.02	7.3	2	.04
20	2.6	1	.01	3.6	1	.01	8.9	3	.07
21	2.6	1	.01	3.6	1	.01	.	5	.13
22	2.6	1	.01	3.5	1	.01	10	6	.16
23	2.6	1	.01	3.9	1	.01	14	2	.08
24	2.8	1	.01	4.0	1	.01	18	2	.10
25	2.8	1	.01	4.2	1	.01	19	2	.10
26	2.8	1	.01	4.5	1	.01	23	2	.12
27	2.7	1	.01	4.9	1	.01	25	2	.13
28	2.5	1	.01	5.6	1	.02	16	2	.09
29	2.4	1	.01	5.9	1	.02	13	2	.07
30	2.4	1	.01	---	---	---	13	1	.04
31	2.6	1	.01	---	---	---	11	1	.03
TOTAL	79.6	---	0.29	104.7	---	0.38	305.5	---	1.81

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336645 GENERAL CREEK NEAR MEEKS BAY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	11	1	.03	15	1	.04	12	2	.06
2	12	1	.03	13	1	.04	8.3	2	.04
3	15	1	.04	13	1	.04	6.2	2	.03
4	12	1	.03	13	1	.04	5.2	1	.01
5	14	2	.08	12	1	.03	4.6	1	.01
6	23	2	.12	11	1	.03	4.7	0	.00
7	31	2	.17	10	1	.03	5.9	0	.00
8	29	3	.23	10	0	.00	8.1	0	.00
9	19	2	.10	9.7	0	.00	9.7	0	.00
10	21	2	.11	11	1	.03	8.2	0	.00
11	30	2	.16	18	1	.05	6.5	0	.00
12	34	1	.09	24	1	.06	5.5	0	.00
13	36	1	.10	24	2	.13	4.6	0	.00
14	37	2	.20	17	3	.14	4.0	0	.00
15	28	2	.15	16	2	.09	3.7	0	.00
16	26	3	.21	15	2	.08	3.3	0	.00
17	29	3	.23	17	2	.09	2.9	0	.00
18	26	2	.14	13	2	.07	2.6	0	.00
19	20	1	.05	9.9	3	.08	2.2	0	.00
20	19	1	.05	8.5	3	.07	2.0	0	.00
21	16	1	.04	7.5	3	.06	2.0	0	.00
22	15	1	.04	7.1	3	.06	1.7	0	.00
23	13	1	.04	6.5	3	.05	1.5	0	.00
24	14	1	.04	5.7	3	.05	1.3	0	.00
25	16	1	.04	5.1	3	.04	1.3	0	.00
26	21	2	.11	4.5	3	.04	1.2	0	.00
27	26	1	.07	4.1	3	.03	1.1	0	.00
28	26	1	.07	4.0	3	.03	1.1	0	.00
29	23	1	.06	8.2	2	.04	1.0	0	.00
30	20	1	.05	8.2	2	.04	1.0	0	.00
31	---	---	---	11	2	.06	---	---	---
TOTAL	662	---	2.88	352.0	---	1.64	123.4	---	0.15
JULY			AUGUST			SEPTEMBER			
1	.97	0	.00	.57	0	.00	.56	1	.00
2	.94	0	.00	.56	0	.00	.52	1	.00
3	.92	0	.00	.56	0	.00	.51	2	.00
4	.90	0	.00	.56	0	.00	.49	2	.00
5	.88	0	.00	.55	0	.00	.50	2	.00
6	.86	0	.00	.53	0	.00	.50	2	.00
7	.85	0	.00	.58	0	.00	.49	2	.00
8	.84	0	.00	.56	0	.00	.51	2	.00
9	.83	0	.00	.55	0	.00	.52	2	.00
10	.82	0	.00	.55	0	.00	.55	1	.00
11	.82	0	.00	.57	1	.00	.62	0	.00
12	.82	0	.00	.61	1	.00	.57	0	.00
13	.83	0	.00	.62	1	.00	.56	0	.00
14	.83	1	.00	.63	2	.00	.56	0	.00
15	.85	1	.00	.65	2	.00	.56	0	.00
16	.80	1	.00	.66	2	.00	.56	0	.00
17	.76	1	.00	.66	2	.00	.56	0	.00
18	.73	1	.00	.66	3	.01	.56	0	.00
19	.71	1	.00	.64	3	.01	.57	1	.00
20	.70	1	.00	.64	3	.01	.64	1	.00
21	.68	1	.00	.60	2	.00	.75	1	.00
22	.66	0	.00	.55	2	.00	.80	1	.00
23	.64	0	.00	.57	2	.00	.71	1	.00
24	.63	0	.00	.58	1	.00	.60	2	.00
25	.62	0	.00	.54	1	.00	.61	2	.00
26	.61	0	.00	.48	1	.00	.59	2	.00
27	.60	0	.00	.50	1	.00	.66	2	.00
28	.60	0	.00	.55	1	.00	.61	2	.00
29	.59	0	.00	.52	1	.00	.60	2	.00
30	.58	0	.00	.52	1	.00	.61	2	.00
31	.58	0	.00	.55	1	.00	---	---	---
TOTAL	23.45	---	0.00	17.87	---	0.03	17.45	---	0.00
YEAR	1816.09		7.63						

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336645 GENERAL CREEK NEAR MEEKS BAY, CA--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
APR 14...	1320	35	3.5	3	0.28	49

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA

LOCATION.--Lat 39°06'27", long 120°09'40", in NW 1/4 NE 1/4 sec.36, T.15 N., R.16 E., Placer County, Hydrologic Unit 16050101, on right bank 300 ft upstream from bridge on State Highway 89, 1,000 ft upstream from Lake Tahoe, and 4.6 mi south of Tahoe City.

DRAINAGE AREA.--11.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 6,234.59 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1960, to Sept. 30, 1964, at datum 10.25 ft lower and Oct. 1, 1964, to Aug. 27, 1970, at datum 12 ft lower, at site 400 ft downstream.

REMARKS.--Estimated daily discharges: Oct. 12, 16-19, Nov. 27, 29, Dec. 13, 14, 16, 18, 20, 23-25, 29-31, Jan. 1, 3, 5-7, 12, 13, 16-20, 24-26, Feb. 3-6, 17. Records good except those for estimated periods, which are fair. No known diversion or regulation upstream from station.

AVERAGE DISCHARGE.--28 years, 37.7 ft<sup>3</sup>/s, 27,310 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft<sup>3</sup>/s, Dec. 22 or 24, 1964, on basis of computation of flow through culvert; maximum gage height, 9.90 ft, site and datum then in use, Dec. 22, 1964; minimum discharge, 0.30 ft<sup>3</sup>/s, Sept. 19, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 15	2100	*87	*1.74				

Minimum daily, 1.3 ft<sup>3</sup>/s, Oct. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.6	2.5	3.9	4.5	13	25	33	37	6.4	2.2	1.4
2	1.3	1.8	3.6	3.8	4.5	12	28	32	35	5.9	2.1	1.4
3	1.4	1.8	2.7	5.0	4.4	12	30	32	33	5.8	2.2	1.4
4	1.7	1.7	2.4	5.4	4.4	13	28	33	34	5.5	2.2	1.4
5	1.6	1.7	2.1	6.2	4.3	14	30	31	30	5.1	2.2	1.5
6	1.6	1.7	3.8	6.2	4.3	16	37	27	28	4.9	2.4	1.4
7	1.7	1.7	3.3	6.0	4.2	16	42	26	27	4.9	2.1	1.4
8	1.6	1.7	3.9	5.7	4.1	17	39	24	27	4.6	2.2	1.4
9	1.7	1.7	3.6	5.9	4.2	20	35	24	27	4.4	2.1	1.4
10	1.7	1.5	22	8.3	4.4	18	37	29	25	4.1	2.1	1.5
11	1.8	1.4	19	7.8	4.7	16	44	43	24	3.9	2.1	1.4
12	1.9	1.4	8.3	6.3	5.0	15	49	58	23	3.6	2.0	1.4
13	1.8	3.0	6.7	5.9	5.4	15	53	61	23	3.6	1.9	1.4
14	1.8	2.6	5.6	5.7	5.3	15	56	57	22	3.4	2.0	1.4
15	1.7	1.9	4.6	6.5	5.7	16	46	65	22	3.5	1.9	1.4
16	1.7	1.8	4.2	5.7	6.4	16	44	64	22	3.2	1.9	1.4
17	1.7	2.3	3.9	5.6	6.6	16	50	65	20	3.1	1.8	1.4
18	1.6	2.2	3.6	5.6	6.6	16	49	56	19	2.9	1.8	1.4
19	1.6	1.8	3.3	5.6	6.3	19	44	52	17	2.8	1.7	1.4
20	1.5	1.9	3.2	5.6	6.4	23	39	50	16	2.6	1.6	1.5
21	1.5	2.1	3.1	5.5	6.4	25	34	55	16	2.7	1.7	1.5
22	1.6	2.0	4.8	5.0	7.0	23	31	56	14	2.8	1.6	1.5
23	2.0	1.9	4.2	5.0	7.5	31	29	53	13	2.9	1.6	1.5
24	1.7	1.8	4.2	4.9	7.9	35	30	49	12	3.2	1.8	1.5
25	1.6	1.8	4.1	4.9	9.1	35	32	46	11	2.7	1.5	1.5
26	1.5	1.8	4.1	4.8	9.8	39	35	43	11	2.6	1.4	1.5
27	1.5	1.7	4.2	4.8	11	41	40	39	9.7	2.4	1.4	1.5
28	1.6	1.7	4.1	4.7	12	33	43	40	8.8	2.2	1.4	1.5
29	2.0	1.7	4.1	4.7	12	30	41	44	8.0	2.2	1.4	1.5
30	1.7	1.7	4.0	4.7	---	29	40	38	7.0	2.4	1.5	1.5
31	1.6	---	3.9	4.6	---	26	---	36	---	2.4	1.5	---
TOTAL	51.0	55.4	157.1	170.3	184.4	665	1160	1361	621.5	112.7	57.3	43.3
MEAN	1.65	1.85	5.07	5.49	6.36	21.5	38.7	43.9	20.7	3.64	1.85	1.44
MAX	2.0	3.0	22	8.3	12	41	56	65	37	6.4	2.4	1.5
MIN	1.3	1.4	2.1	3.8	4.1	12	25	24	7.0	2.2	1.4	1.4
AC-FT	101	110	312	338	366	1320	2300	2700	1230	224	114	86

CAL YR 1987 TOTAL 5445.0 MEAN 14.9 MAX 123 MIN 1.3 AC-FT 10800  
WTR YR 1988 TOTAL 4639.0 MEAN 12.7 MAX 65 MIN 1.3 AC-FT 9200

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975-78, 1980 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1980 to September 1983.

WATER TEMPERATURE: October 1974 to June 1978 (1977-78 storm season only), October 1979 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1974 to June 1978 (1977-78 storm season only), October 1979 to current year.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

COOPERATION.--Selected sediment samples and water-temperature observations provided by University of California at Davis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 1,200 mg/L, Jan. 13, 1980; minimum daily mean, 0 mg/L, many days during most years.

SEDIMENT LOAD: Maximum daily, 2,710 tons, Mar. 8, 1986; minimum daily, 0 ton, many days during most years.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 26 mg/L, Dec. 10; minimum daily mean, 0 mg/L, many days.

SEDIMENT LOAD: Maximum daily, 3.8 tons, May 15; minimum daily, 0 ton, many days.

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	---	---	---	---	---	---	8.5	---	---	---	---
2	---	---	4.0	---	---	---	---	9.5	---	---	---	---
3	---	7.0	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	4.0	---	5.0	---	---	---	---
5	---	8.0	---	0.0	---	---	9.0	4.0	---	---	15.0	---
6	---	---	2.0	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	4.5	---	5.0	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	2.0	---	---	---	---	7.0	---	---	21.5	12.5
10	---	---	3.0	---	---	1.5	9.5	9.0	---	---	---	---
11	---	---	2.5	---	2.0	5.0	7.0	11.5	---	---	---	---
12	8.5	---	---	---	---	---	8.0	12.5	---	21.0	---	9.0
13	---	4.5	---	---	---	---	5.0	11.5	---	---	---	---
14	---	3.5	---	0.5	---	---	5.0	9.0	---	---	---	---
15	---	---	---	---	---	---	---	8.0	16.0	17.5	---	---
16	---	---	---	---	---	---	---	9.0	---	---	---	---
17	---	---	0.5	---	---	---	8.0	10.5	15.5	---	---	---
18	---	---	---	---	1.5	---	---	10.5	---	---	---	---
19	9.0	---	---	0.0	---	8.0	2.0	8.5	---	---	20.0	---
20	---	---	---	---	---	6.0	---	12.0	---	---	---	---
21	---	---	---	---	---	---	---	10.0	---	---	---	---
22	---	---	---	---	4.0	---	---	11.5	---	---	---	---
23	7.0	---	---	---	---	4.0	---	---	---	---	---	---
24	---	3.0	---	---	---	---	9.5	---	---	---	---	---
25	---	---	---	---	---	6.5	9.0	10.0	---	---	22.0	---
26	8.0	---	---	---	---	4.0	---	---	---	19.0	---	---
27	---	---	---	---	---	---	9.5	---	---	---	---	---
28	---	---	---	---	---	---	5.0	7.0	19.0	---	---	11.0
29	---	---	0.0	1.5	---	---	10.0	---	---	---	---	---
30	---	1.5	---	---	---	2.0	---	---	---	---	---	---
31	---	---	---	---	---	---	---	8.5	---	---	20.5	---



## PYRAMID AND WINNEMUCCA LAKES BASIN

10336600 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	1.3	1	.00	1.6	2	.01	2.5	2	.01
2	1.3	1	.00	1.8	2	.01	3.6	2	.02
3	1.4	1	.00	1.8	2	.01	2.7	2	.01
4	1.7	1	.00	1.7	2	.01	2.4	2	.01
5	1.6	1	.00	1.7	2	.01	2.1	2	.01
6	1.6	1	.00	1.7	2	.01	3.8	4	.04
7	1.7	1	.00	1.7	2	.01	3.3	2	.02
8	1.6	1	.00	1.7	2	.01	3.9	2	.02
9	1.7	2	.01	1.7	2	.01	3.6	2	.02
10	1.7	2	.01	1.5	2	.01	22	26	1.6
11	1.8	2	.01	1.4	2	.01	19	8	.41
12	1.9	2	.01	1.4	2	.01	8.3	1	.02
13	1.8	2	.01	3.0	3	.02	6.7	1	.02
14	1.8	2	.01	2.6	3	.02	5.6	1	.02
15	1.7	1	.00	1.9	2	.01	4.6	1	.01
16	1.7	1	.00	1.8	2	.01	4.2	1	.01
17	1.7	1	.00	2.3	3	.02	3.9	1	.01
18	1.6	1	.00	2.2	2	.01	3.6	1	.01
19	1.6	1	.00	1.8	2	.01	3.3	1	.01
20	1.5	1	.00	1.9	2	.01	3.2	1	.01
21	1.5	2	.01	2.1	2	.01	3.1	1	.01
22	1.6	3	.01	2.0	1	.01	4.8	1	.01
23	2.0	3	.02	1.9	1	.01	4.2	1	.01
24	1.7	2	.01	1.8	1	.00	4.2	1	.01
25	1.6	2	.01	1.8	1	.00	4.1	1	.01
26	1.5	2	.01	1.8	1	.00	4.1	1	.01
27	1.5	2	.01	1.7	1	.00	4.2	0	.00
28	1.6	2	.01	1.7	1	.00	4.1	0	.00
29	2.0	2	.01	1.7	2	.01	4.1	0	.00
30	1.7	2	.01	1.7	2	.01	4.0	0	.00
31	1.6	2	.01	---	---	---	3.9	0	.00
TOTAL	51.0	---	0.18	55.4	---	0.28	157.1	---	2.35
JANUARY			FEBRUARY			MARCH			
1	3.9	0	.00	4.5	0	.00	13	2	.07
2	3.8	0	.00	4.5	0	.00	12	2	.06
3	5.0	0	.00	4.4	0	.00	12	2	.06
4	5.4	1	.01	4.4	0	.00	13	3	.11
5	6.2	3	.05	4.3	0	.00	14	3	.11
6	6.2	1	.02	4.3	0	.00	16	3	.13
7	6.0	1	.02	4.2	0	.00	16	3	.13
8	5.7	1	.02	4.1	0	.00	17	3	.14
9	5.9	1	.02	4.2	0	.00	20	3	.16
10	8.3	2	.04	4.4	0	.00	18	3	.15
11	7.8	2	.04	4.7	0	.00	16	3	.13
12	6.3	2	.03	5.0	0	.00	15	3	.12
13	5.9	2	.03	5.4	0	.00	15	3	.12
14	5.7	2	.03	5.3	0	.00	15	3	.12
15	6.5	2	.04	5.7	1	.02	16	3	.13
16	5.7	1	.02	6.4	2	.03	16	3	.13
17	5.6	1	.02	6.6	2	.04	16	3	.13
18	5.6	0	.00	6.6	3	.05	16	3	.13
19	5.6	0	.00	6.3	3	.05	19	4	.21
20	5.6	0	.00	6.4	2	.03	23	5	.31
21	5.5	0	.00	6.4	2	.03	25	4	.27
22	5.0	0	.00	7.0	2	.04	23	3	.19
23	5.0	0	.00	7.5	2	.04	31	10	.84
24	4.9	0	.00	7.9	2	.04	35	5	.47
25	4.9	0	.00	9.1	2	.05	35	9	.85
26	4.8	0	.00	9.8	2	.05	39	10	1.1
27	4.8	0	.00	11	2	.06	41	9	1.0
28	4.7	0	.00	12	2	.06	33	3	.27
29	4.7	0	.00	12	2	.06	30	1	.08
30	4.7	0	.00	---	---	---	29	1	.08
31	4.6	0	.00	---	---	---	26	1	.07
TOTAL	170.3	---	0.39	184.4	---	0.65	665	---	7.87

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	25	2	.13	33	2	.18	37	2	.20
2	28	4	.30	32	2	.17	35	2	.19
3	30	2	.16	32	2	.17	33	2	.18
4	28	2	.15	33	1	.09	34	2	.18
5	30	7	.57	31	1	.08	30	2	.16
6	37	9	.90	27	1	.07	28	2	.15
7	42	9	1.0	26	1	.07	27	2	.15
8	39	3	.32	24	1	.06	27	4	.29
9	35	5	.47	24	1	.06	27	2	.15
10	37	7	.70	29	4	.31	25	2	.13
11	44	11	1.5	43	8	1.3	24	2	.13
12	49	11	1.6	58	14	2.5	23	2	.12
13	53	9	1.3	61	8	1.3	23	2	.12
14	56	8	1.2	57	7	1.2	22	2	.12
15	46	4	.50	65	18	3.8	22	2	.12
16	44	7	.83	64	11	1.9	22	2	.12
17	50	8	1.1	65	8	1.4	20	2	.11
18	49	5	.66	56	5	.76	19	2	.10
19	44	4	.48	52	5	.70	17	2	.09
20	39	4	.42	50	4	.54	16	2	.09
21	34	3	.28	55	6	.89	16	2	.09
22	31	2	.17	56	5	.76	14	2	.08
23	29	2	.16	53	4	.57	13	2	.07
24	30	2	.16	49	3	.40	12	2	.06
25	32	2	.17	46	2	.25	11	2	.06
26	35	4	.38	43	2	.23	11	3	.09
27	40	4	.43	39	2	.21	9.7	3	.08
28	43	3	.35	40	3	.32	8.8	3	.07
29	41	2	.22	44	2	.24	8.0	3	.06
30	40	2	.22	38	2	.21	7.0	2	.04
31	---	---	---	36	2	.19	---	---	---
TOTAL	1160	---	16.83	1361	---	20.93	621.5	---	3.60
JULY			AUGUST			SEPTEMBER			
1	6.4	2	.03	2.2	2	.01	1.4	1	.00
2	5.9	2	.03	2.1	2	.01	1.4	1	.00
3	5.8	2	.03	2.2	2	.01	1.4	1	.00
4	5.5	2	.03	2.2	2	.01	1.4	1	.00
5	5.1	2	.03	2.2	2	.01	1.5	1	.00
6	4.9	2	.03	2.4	2	.01	1.4	1	.00
7	4.9	2	.03	2.1	2	.01	1.4	1	.00
8	4.6	2	.02	2.2	2	.01	1.4	1	.00
9	4.4	2	.02	2.1	2	.01	1.4	1	.00
10	4.1	2	.02	2.1	2	.01	1.5	1	.00
11	3.9	2	.02	2.1	2	.01	1.4	1	.00
12	3.6	2	.02	2.0	2	.01	1.4	1	.00
13	3.6	2	.02	1.9	2	.01	1.4	1	.00
14	3.4	2	.02	2.0	2	.01	1.4	1	.00
15	3.5	3	.03	1.9	2	.01	1.4	1	.00
16	3.2	2	.02	1.9	2	.01	1.4	1	.00
17	3.1	2	.02	1.8	2	.01	1.4	1	.00
18	2.9	2	.02	1.8	2	.01	1.4	1	.00
19	2.8	2	.02	1.7	2	.01	1.4	1	.00
20	2.6	2	.01	1.6	2	.01	1.5	1	.00
21	2.7	2	.01	1.7	2	.01	1.5	1	.00
22	2.8	2	.02	1.6	2	.01	1.5	1	.00
23	2.9	2	.02	1.6	2	.01	1.5	1	.00
24	3.2	2	.02	1.8	2	.01	1.5	1	.00
25	2.7	2	.01	1.5	2	.01	1.5	1	.00
26	2.6	2	.01	1.4	2	.01	1.5	1	.00
27	2.4	2	.01	1.4	2	.01	1.5	1	.00
28	2.2	2	.01	1.4	2	.01	1.5	1	.00
29	2.2	2	.01	1.4	1	.00	1.5	1	.00
30	2.4	3	.02	1.5	1	.00	1.5	1	.00
31	2.4	2	.01	1.5	1	.00	---	---	---
TOTAL	112.7	---	0.62	57.3	---	0.28	43.3	---	0.00
YEAR	4639.0		53.98						

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336660 BLACKWOOD CREEK NEAR TAHOE CITY, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 10...	2210	35	2.0	25	2.4	84
APR 14...	1350	53	5.0	7	1.0	68
MAY 13...	1805	55	11.5	8	1.2	56

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	TEMPER- ATURE WATER (DEG C)	NUMBER OF SAM- PLING POINTS (COUNT)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM
MAY 13...	1815	11.5	5	55	1	2	3

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM
MAY 13...	5	8	13	24	46	84	100

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA

LOCATION.--Lat 39°07'56", long 120°09'24", in NW 1/4 SE 1/4 sec.24, T.15 N., R.16 E., Placer County, Hydrologic Unit 16050101, Tahoe National Forest, on right bank 165 ft downstream from State Highway 89 bridge, 2.1 mi north of Tahoe Pines, and 2.6 mi southwest of Tahoe City.

DRAINAGE AREA.--9.70 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 27, 29, Dec. 12-16, 20, 22-24, 28, 29, Jan. 4-6, 12, 16-19, Feb. 3. Records good except those for flows below 1 ft<sup>3</sup>/s and estimated periods, which are fair. Minor diversion for local water supply upstream from station.

AVERAGE DISCHARGE.--16 years, 27.2 ft<sup>3</sup>/s, 19,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft<sup>3</sup>/s, Dec. 19, 1981, gage height, 8.05 ft, from rating curve extended above 800 ft<sup>3</sup>/s; no flow many days during 1977-78, 1981, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 13	2015	(a)	*4.92	May 17	0110	*48.	4.76

a Backwater from ice.

No flow Aug. 21 to Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	.91	1.2	2.0	2.8	9.6	19	22	31	3.9	.30	.00
2	.46	.94	2.7	2.2	2.8	8.7	21	21	27	3.3	.22	.00
3	.45	.95	2.1	2.3	2.8	9.2	21	22	26	3.0	.20	.00
4	.47	.98	1.7	3.2	2.8	11	22	21	26	2.8	.18	.00
5	.50	.98	1.7	3.4	2.8	12	24	19	23	2.7	.16	.00
6	.50	.98	3.7	3.2	2.8	12	29	18	22	2.6	.16	.00
7	.52	.97	3.7	3.0	2.8	12	30	17	21	2.4	.14	.00
8	.52	.90	2.4	3.0	2.9	14	27	17	21	2.2	.13	.00
9	.52	.95	6.6	3.4	3.2	15	24	17	19	2.0	.11	.00
10	.52	.98	21	4.9	3.4	13	26	20	17	1.9	.08	.00
11	.52	.98	12	3.7	3.4	12	30	26	17	1.7	.07	.00
12	.56	.98	9.0	3.5	3.8	11	32	33	17	1.6	.07	.00
13	.57	2.3	6.6	3.4	4.2	11	34	35	17	1.4	.05	.00
14	.57	2.0	5.3	3.3	4.2	11	35	33	17	1.4	.05	.00
15	.57	1.1	4.6	3.1	4.6	11	29	37	17	1.3	.06	.00
16	.57	1.1	3.8	3.1	4.9	11	29	37	17	1.1	.06	.00
17	.60	1.5	3.4	2.9	4.8	11	31	41	16	1.0	.04	.00
18	.66	1.5	3.1	2.8	4.8	13	28	34	15	.95	.02	.00
19	.69	1.4	3.0	2.8	4.5	15	26	32	13	.86	.02	.00
20	.69	1.2	2.7	2.8	4.5	18	25	31	13	.75	.01	.00
21	.67	1.2	2.6	2.8	4.8	18	23	33	12	.67	.00	.00
22	.78	1.2	3.2	2.8	5.8	17	21	34	11	.62	.00	.00
23	1.3	.96	3.1	2.8	6.3	27	20	33	9.8	.63	.00	.00
24	1.2	.95	3.1	2.8	6.8	27	20	31	8.6	.87	.00	.01
25	.92	.87	3.0	2.8	8.0	28	22	29	8.1	.81	.00	.02
26	.83	.83	3.0	2.8	9.2	31	24	28	7.7	.70	.00	.03
27	.82	.84	3.2	2.8	9.9	29	26	26	6.4	.71	.00	.10
28	.90	.87	3.2	3.0	10	23	27	27	5.6	.51	.00	.13
29	1.5	.88	2.9	3.0	10	22	25	29	4.7	.40	.00	.15
30	1.2	.89	2.7	3.0	---	20	24	26	4.3	.32	.00	.15
31	1.0	---	2.1	2.9	---	18	---	28	---	.39	.00	---
TOTAL	22.03	33.09	132.4	93.5	143.6	500.5	774	857	470.2	45.49	2.13	0.59
MEAN	.71	1.10	4.27	3.02	4.95	16.1	25.8	27.6	15.7	1.47	.069	.020
MAX	1.5	2.3	21	4.9	10	31	35	41	31	3.9	.30	.15
MIN	.45	.83	1.2	2.0	2.8	8.7	19	17	4.3	.32	.00	.00
AC-FT	44	66	263	185	285	993	1540	1700	933	90	4.2	1.2

CAL YR 1987 TOTAL 4060.82 MEAN 11.1 MAX 93 MIN .06 AC-FT 8050  
WTR YR 1988 TOTAL 3074.53 MEAN 8.40 MAX 41 MIN .00 AC-FT 6100

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973-78, 1980 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1983.

WATER TEMPERATURE: October 1972 to June 1978 (storm season only for water years 1977-78), October 1979 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1972 to June 1978 (storm season only for water years 1977-78), October 1979 to current year.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

COOPERATION.--Selected sediment samples and water-temperature observations provided by University of California at Davis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 1,510 mg/L, Dec. 19, 1981; minimum daily mean, 0 mg/L, many days during each year.

SEDIMENT LOAD: Maximum daily, 3,720 tons, Dec. 19, 1981; minimum daily, 0 ton, many days during each year.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 38 mg/L, Dec. 10; minimum daily mean, 0 mg/L, many days.

SEDIMENT LOAD: Maximum daily, 2.2 tons, Dec. 10; minimum daily, 0 ton, many days.

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	---	---	---	---	---	---	8.0	---	---	---	---
2	---	---	0.0	---	---	---	---	9.5	---	---	---	---
3	---	5.5	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	3.0	---	5.0	---	---	13.5	---
5	---	8.0	---	0.0	---	---	5.0	4.0	---	---	---	---
6	---	---	0.0	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	4.0	---	6.0	---	---	---
8	---	---	---	---	---	---	---	---	6.0	---	---	---
9	---	---	0.0	---	---	---	---	6.0	---	---	22.0	---
10	---	---	1.0	---	---	1.5	9.0	8.0	---	---	---	---
11	---	---	0.0	---	0.0	2.5	5.5	14.0	---	---	---	---
12	7.0	---	---	---	---	---	8.0	11.0	---	21.5	---	---
13	---	3.0	---	---	---	---	4.0	10.5	---	---	---	---
14	---	3.0	---	0.5	---	---	4.5	8.0	---	---	---	---
15	---	---	---	---	---	---	---	7.5	---	---	---	---
16	---	---	---	---	---	---	---	9.0	---	---	---	---
17	---	3.0	0.0	---	---	---	8.0	9.0	12.0	---	---	---
18	---	---	---	---	0.0	---	---	9.0	---	---	---	---
19	8.0	---	---	0.0	---	5.0	2.0	6.5	---	---	---	---
20	---	---	---	---	---	4.0	---	13.5	---	19.0	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	1.0	4.5	---	12.0	---	---	---	---
23	6.0	---	---	---	---	2.5	---	---	15.0	---	---	---
24	---	1.0	---	---	---	---	9.5	---	---	---	---	---
25	---	---	---	---	---	4.5	8.5	9.0	---	---	---	---
26	6.5	---	---	---	---	3.0	---	---	---	17.5	---	---
27	---	---	---	---	---	---	7.0	---	---	---	---	---
28	---	---	---	---	---	---	5.0	6.5	19.0	---	---	---
29	6.0	---	0.0	0.0	---	---	10.5	---	---	---	---	---
30	---	0.5	---	---	---	0.5	---	---	---	---	---	---
31	---	---	---	---	---	---	---	8.5	---	---	---	---

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER				NOVEMBER			DECEMBER		
1	.45	2	.00	.91	2	.00	1.2	2	.01
2	.46	2	.00	.94	2	.01	2.7	2	.01
3	.45	2	.00	.95	2	.01	2.1	2	.01
4	.47	2	.00	.98	2	.01	1.7	2	.01
5	.50	2	.00	.98	2	.01	1.7	2	.01
6	.50	2	.00	.98	2	.01	3.7	4	.04
7	.52	2	.00	.97	2	.01	3.7	3	.03
8	.52	2	.00	.90	2	.00	2.4	3	.02
9	.52	2	.00	.95	2	.01	6.6	7	.12
10	.52	2	.00	.98	2	.01	21	38	2.2
11	.52	2	.00	.98	2	.01	12	4	.13
12	.56	2	.00	.98	2	.01	9.0	4	.10
13	.57	2	.00	2.3	7	.04	6.6	4	.07
14	.57	1	.00	2.0	1	.01	5.3	4	.06
15	.57	1	.00	1.1	1	.00	4.6	3	.04
16	.57	1	.00	1.1	2	.01	3.8	2	.02
17	.60	1	.00	1.5	2	.01	3.4	1	.01
18	.66	1	.00	1.5	2	.01	3.1	1	.01
19	.69	1	.00	1.4	2	.01	3.0	1	.01
20	.69	1	.00	1.2	2	.01	2.7	1	.01
21	.67	2	.00	1.2	2	.01	2.6	1	.01
22	.78	3	.01	1.2	2	.01	3.2	1	.01
23	1.3	2	.01	.96	2	.01	3.1	1	.01
24	1.2	2	.01	.95	2	.01	3.1	1	.01
25	.92	2	.00	.87	2	.00	3.0	1	.01
26	.83	2	.00	.83	2	.00	3.0	1	.01
27	.82	2	.00	.84	2	.00	3.2	1	.01
28	.90	2	.00	.87	2	.00	3.2	1	.01
29	1.5	3	.01	.88	2	.00	2.9	1	.01
30	1.2	2	.01	.89	2	.00	2.7	1	.01
31	1.0	2	.01	---	---	---	2.1	1	.01
TOTAL	22.03	---	0.06	33.09	---	0.24	132.4	---	3.03
JANUARY				FEBRUARY			MARCH		
1	2.0	1	.01	2.8	0	.00	9.6	1	.03
2	2.2	1	.01	2.8	0	.00	8.7	1	.02
3	2.3	1	.01	2.8	0	.00	9.2	1	.02
4	3.2	2	.02	2.8	0	.00	11	1	.03
5	3.4	1	.01	2.8	0	.00	12	1	.03
6	3.2	1	.01	2.8	0	.00	12	1	.03
7	3.0	1	.01	2.8	0	.00	12	1	.03
8	3.0	1	.01	2.9	0	.00	14	6	.23
9	3.4	1	.01	3.2	0	.00	15	3	.12
10	4.9	1	.01	3.4	0	.00	13	2	.07
11	3.7	1	.01	3.4	0	.00	12	2	.06
12	3.5	1	.01	3.8	0	.00	11	2	.06
13	3.4	1	.01	4.2	0	.00	11	2	.06
14	3.3	1	.01	4.2	0	.00	11	2	.06
15	3.1	1	.01	4.6	0	.00	11	2	.06
16	3.1	1	.01	4.9	0	.00	11	2	.06
17	2.9	1	.01	4.8	0	.00	11	2	.06
18	2.8	1	.01	4.8	0	.00	13	5	.18
19	2.8	0	.00	4.5	0	.00	15	6	.24
20	2.8	0	.00	4.5	0	.00	18	5	.24
21	2.8	0	.00	4.8	0	.00	18	3	.15
22	2.8	0	.00	5.8	1	.02	17	3	.14
23	2.8	0	.00	6.3	1	.02	27	9	.66
24	2.8	0	.00	6.8	1	.02	27	7	.51
25	2.8	0	.00	8.0	1	.02	28	6	.45
26	2.8	0	.00	9.2	1	.02	31	9	.75
27	2.8	0	.00	9.9	1	.03	29	4	.31
28	3.0	0	.00	10	1	.03	23	2	.12
29	3.0	0	.00	10	1	.03	22	1	.06
30	3.0	0	.00	---	---	---	20	0	.00
31	2.9	0	.00	---	---	---	18	0	.00
TOTAL	93.5	---	0.19	143.6	---	0.19	500.5	---	4.84

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	19	1	.05	22	1	.06	31	2	.17
2	21	1	.06	21	1	.06	27	2	.15
3	21	1	.06	22	1	.06	26	2	.14
4	22	1	.06	21	1	.06	26	2	.14
5	24	2	.13	19	1	.05	23	2	.12
6	29	2	.16	18	0	.00	22	2	.12
7	30	1	.08	17	0	.00	21	2	.11
8	27	1	.07	17	0	.00	21	2	.11
9	24	2	.13	17	1	.05	19	2	.10
10	26	2	.14	20	1	.05	17	2	.09
11	30	3	.24	26	4	.28	17	2	.09
12	32	3	.26	33	5	.45	17	2	.09
13	34	4	.37	35	5	.47	17	2	.09
14	35	3	.28	33	4	.36	17	2	.09
15	29	2	.16	37	6	.60	17	2	.09
16	29	3	.23	37	5	.50	17	2	.09
17	31	3	.25	41	4	.44	16	2	.09
18	28	2	.15	34	4	.37	15	2	.08
19	26	1	.07	32	3	.26	13	2	.07
20	25	1	.07	31	3	.25	13	2	.07
21	23	1	.06	33	3	.27	12	2	.06
22	21	1	.06	34	3	.28	11	2	.06
23	20	1	.05	33	3	.27	9.8	2	.05
24	20	2	.11	31	3	.25	8.6	2	.05
25	22	2	.12	29	3	.23	8.1	2	.04
26	24	2	.13	28	2	.15	7.7	2	.04
27	26	2	.14	26	2	.14	6.4	2	.03
28	27	1	.07	27	3	.22	5.6	2	.03
29	25	1	.07	29	2	.16	4.7	2	.03
30	24	1	.06	26	2	.14	4.3	2	.02
31	---	---	---	28	3	.23	---	---	---
TOTAL	774	---	3.89	857	---	6.71	470.2	---	2.51
JULY			AUGUST			SEPTEMBER			
1	3.9	2	.02	.30	1	.00	.00	0	.00
2	3.3	1	.01	.22	1	.00	.00	0	.00
3	3.0	1	.01	.20	1	.00	.00	0	.00
4	2.8	1	.01	.18	1	.00	.00	0	.00
5	2.7	1	.01	.16	1	.00	.00	0	.00
6	2.6	1	.01	.16	1	.00	.00	0	.00
7	2.4	1	.01	.14	1	.00	.00	0	.00
8	2.2	1	.01	.13	1	.00	.00	0	.00
9	2.0	1	.01	.11	1	.00	.00	0	.00
10	1.9	1	.01	.08	1	.00	.00	0	.00
11	1.7	1	.00	.07	1	.00	.00	0	.00
12	1.6	1	.00	.07	1	.00	.00	0	.00
13	1.4	1	.00	.05	0	.00	.00	0	.00
14	1.4	1	.00	.05	0	.00	.00	0	.00
15	1.3	1	.00	.06	0	.00	.00	0	.00
16	1.1	1	.00	.06	0	.00	.00	0	.00
17	1.0	1	.00	.04	0	.00	.00	0	.00
18	.95	1	.00	.02	0	.00	.00	0	.00
19	.86	1	.00	.02	0	.00	.00	0	.00
20	.75	1	.00	.01	0	.00	.00	0	.00
21	.67	1	.00	.00	0	.00	.00	0	.00
22	.62	1	.00	.00	0	.00	.00	0	.00
23	.63	1	.00	.00	0	.00	.00	0	.00
24	.87	1	.00	.00	0	.00	.01	0	.00
25	.81	1	.00	.00	0	.00	.02	0	.00
26	.70	1	.00	.00	0	.00	.03	0	.00
27	.71	1	.00	.00	0	.00	.10	0	.00
28	.51	1	.00	.00	0	.00	.13	0	.00
29	.40	1	.00	.00	0	.00	.15	1	.00
30	.32	1	.00	.00	0	.00	.15	1	.00
31	.39	1	.00	.00	0	.00	---	---	---
TOTAL	45.49	---	0.11	2.13	---	0.00	0.59	---	0.00
YEAR	3074.53		21.77						

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336676 WARD CREEK AT STATE HIGHWAY 89, NEAR TAHOE PINES, CA--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC						
10...	1430	25	1.0	86	5.8	82
APR						
14...	1425	33	4.5	3	0.27	75
MAY						
13...	1930	38	10.5	6	0.62	60



## 10336698 THIRD CREEK NEAR CRYSTAL BAY, NV

LOCATION.--Lat 39°14'26", long 119°56'41", in SW 1/4 NE 1/4 sec.22, T.16 N., R.18 E., Washoe County, Hydrologic Unit 16050101, on right bank 50 ft upstream from culvert on Lakeshore Boulevard, 600 ft upstream from mouth, and 3 mi east of Crystal Bay.

DRAINAGE AREA.--6.05 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1969 to September 1973, February to September 1975, October 1977 to current year.

REVISED RECORDS.--WDR NV-78-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,234.03 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges and discharges above 10 ft<sup>3</sup>/s, which are poor. One transmountain diversion to Washoe Valley.

AVERAGE DISCHARGE.--14 years (1970-73, 1978-87), 8.90 ft<sup>3</sup>/s, 6,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 150 ft<sup>3</sup>/s, June 18, 1982, gage height, 3.40 ft; maximum gage height, 3.77 ft, Jan. 23, 1973, backwater from ice; minimum discharge, 0.66 ft<sup>3</sup>/s, Oct. 13, 14, 16-19, 1977.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Peak discharges greater than base discharge of 30 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 29	1715	28	2.56	May 15	1545	*31	*2.60

Minimum daily, 2.1 ft<sup>3</sup>/s, Aug. 6-10, 15, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES (NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	4.1	e3.9	4.4	4.0	3.6	6.0	12	5.0	2.9	2.3	2.4
2	5.0	4.1	e4.1	4.5	4.1	4.3	6.2	11	4.7	2.8	2.2	2.4
3	4.5	3.6	4.6	4.5	4.2	4.6	6.1	12	4.6	2.8	2.2	2.3
4	4.6	3.6	4.3	6.2	e4.3	4.8	5.5	12	4.6	2.7	2.2	2.4
5	5.1	3.5	4.3	e5.1	4.5	5.3	5.4	12	4.5	2.7	2.2	2.4
6	5.2	3.5	4.3	e5.1	4.7	5.8	5.6	12	4.6	2.7	2.1	2.4
7	4.9	3.3	4.2	e4.9	4.7	5.5	6.0	11	5.0	2.7	2.1	2.5
8	4.6	3.7	e4.0	e4.7	4.4	5.3	6.4	11	4.6	2.8	2.1	2.5
9	4.4	3.7	e4.1	e4.7	4.4	5.0	7.1	9.8	4.4	2.7	2.1	2.5
10	4.2	3.8	e4.3	e4.7	4.4	4.8	7.4	9.4	4.3	2.7	2.1	2.5
11	4.5	3.8	4.3	4.7	4.7	4.8	7.4	9.7	4.1	2.7	2.3	2.6
12	4.9	3.7	4.3	e4.7	4.9	4.9	7.2	9.5	3.8	2.7	2.3	2.5
13	5.4	3.7	4.2	5.0	6.3	5.5	7.8	11	3.8	2.6	2.2	2.6
14	4.4	3.6	4.2	e4.5	e4.9	5.0	8.8	11	3.9	3.0	2.2	2.6
15	3.6	4.2	4.1	e4.2	4.8	4.9	9.1	12	4.2	2.5	2.1	2.6
16	3.1	6.4	e4.2	e4.0	e4.9	5.1	9.8	12	4.0	2.5	2.2	2.7
17	3.0	4.0	4.1	e3.5	5.0	5.1	9.8	11	3.8	2.7	2.2	2.7
18	2.7	3.7	4.2	e3.8	5.0	5.1	8.5	8.9	3.6	3.0	2.2	2.7
19	2.7	3.7	4.4	e3.7	e4.9	e4.7	7.6	8.1	3.5	3.0	2.2	2.7
20	2.6	3.7	4.4	e3.6	e4.7	e4.6	7.6	7.3	3.5	2.8	2.2	2.9
21	3.0	3.9	e4.2	e3.5	e4.5	4.5	8.8	6.7	3.4	2.7	2.2	2.8
22	2.8	5.1	4.4	e3.7	e4.4	e4.5	9.4	6.6	3.4	3.0	2.2	3.6
23	3.1	4.5	4.4	e3.8	e4.5	4.4	9.5	6.3	3.3	4.3	2.1	2.7
24	3.6	4.1	e4.3	e4.0	e4.2	4.5	10	5.9	3.3	2.5	2.2	2.8
25	4.6	3.6	e4.4	4.2	e3.7	4.5	13	5.7	3.2	2.5	2.3	2.8
26	4.1	3.9	4.4	4.1	e3.1	4.7	16	6.9	3.1	2.5	2.3	2.7
27	4.0	4.0	4.3	4.1	e2.9	4.7	20	6.9	3.1	4.2	2.4	2.7
28	4.0	3.7	e4.4	4.0	3.0	4.6	21	6.7	3.0	2.5	2.3	2.8
29	4.1	3.8	4.2	4.1	---	4.6	22	6.3	2.9	2.4	2.3	2.6
30	4.1	e3.7	e4.4	4.1	---	5.0	18	5.8	3.2	2.4	2.3	2.5
31	3.9	---	4.2	4.0	---	5.5	---	5.3	---	2.3	2.4	---
TOTAL	125.7	117.7	132.1	134.1	124.1	150.2	293.0	281.8	116.4	86.3	68.7	78.9
MEAN	4.05	3.92	4.26	4.33	4.43	4.85	9.77	9.09	3.88	2.78	2.22	2.63
MAX	5.4	6.4	4.6	6.2	6.3	5.8	22	12	5.0	4.3	2.4	3.6
MIN	2.6	3.3	3.9	3.5	2.9	3.6	5.4	5.3	2.9	2.3	2.1	2.3
AC-FT	249	233	262	266	246	298	581	559	231	171	136	156

CAL YR 1986 TOTAL 4882.0 MEAN 13.4 MAX 79 MIN 2.6 AC-FT 9680  
WTR YR 1987 TOTAL 1709.0 MEAN 4.68 MAX 22 MIN 2.1 AC-FT 3390

e Estimated.

## 10336710 MARLETTE LAKE NEAR CARSON CITY, NV

LOCATION.--Lat 39°10'22", long 119°54'15", in SW 1/4 SE 1/4 sec.12, T.15 N., R.18 E., Washoe County, Hydrologic Unit 16050101, in Toiyabe National Forest, on west shore, about 1,000 ft upstream from left side of dam on Marlette Creek, and 7.5 mi west of Carson City.

DRAINAGE AREA.--2.86 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1973 to current year.

REVISED RECORDS.--WDR NV-80-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (spillway elevation furnished in written communication from Walter Reid, 1971).

REMARKS.--Lake is formed by earthfill dam across the outlet of a small natural lake (at one time called Goodwin Lake) on Marlette Creek, built in 1873 to provide water for fluming lumber from Spooner Summit to Carson City. The dam was built higher in 1876 and used to divert water by flume and siphon to Virginia City, until the flume was abandoned prior to 1963. The dam was raised to its present elevation in 1959. Present capacity, 11,780 acre-ft at spillway; elevation, 7,838.0 ft. Figures given herein represent total contents. Stored water is used for spawning Cutthroat Trout and in dry years is pumped over the mountain to the Hobart system for municipal and domestic use outside the basin in Virginia City and Carson City. Lake freezes over in winter.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded contents, 12,320 acre-ft, Feb. 19, 1986, elevation, 7,839.23 ft; minimum, 10,970 acre-ft, Nov. 10-13, 1976, elevation, 7,835.8 ft.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum recorded contents, 12,040 acre-ft, Feb. 13, elevation, 7,838.59 ft; minimum, 11,430 acre-ft, Sept. 30; elevation, 7,837.05 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)

7,837	11,410	7,839	12,220
7,838	11,790	7,840	12,650

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
INSTANTANEOUS OBSERVATIONS AT 2400  
(NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11830	11850	11870	11940	11930	e11950	e11930	e11950	11880	11810	11680	11540
2	e11830	11850	11870	11930	11950	e11950	e11930	e11950	11880	11810	11680	11540
3	e11830	11860	11870	12000	11950	e11950	e11930	e11950	11870	11810	11680	11530
4	e11830	11860	11850	11990	11950	e11940	e11930	e11940	11880	11800	11680	11530
5	e11840	11850	11880	11980	11940	e11940	e11930	e11940	11870	11800	11670	11520
6	e11840	11850	11890	11980	11940	e11940	e11930	e11940	11870	11790	11660	11520
7	e11840	11850	11880	11980	11930	e11940	e11930	e11930	11870	11790	11660	11520
8	e11840	11850	11880	11970	11930	e11940	e11930	e11930	11870	11790	11650	11510
9	11850	11860	11880	11970	11940	e11940	e11930	e11930	11870	11780	11650	11510
10	11850	11860	11880	11970	11930	e11940	e11930	e11930	11870	11780	11640	11510
11	11850	11860	11880	11960	11940	e11950	e11930	e11930	11870	11770	11630	11500
12	11850	11860	11900	11950	11960	e11950	e11940	e11920	11870	11770	11630	11500
13	11850	11860	11900	11940	12030	e11960	e11940	e11920	11870	11770	11620	11500
14	11850	11860	11890	11940	12010	e11960	e11940	11910	11870	11770	11610	11490
15	11850	11860	11920	11930	12010	e11970	e11940	11910	11860	11760	11610	11490
16	11850	11860	11930	11930	12000	e11970	e11940	11900	11860	11760	11600	11480
17	11850	11860	11900	11930	11990	e11970	e11940	11900	11850	11730	11600	11470
18	11850	11850	11900	11930	11980	e11970	e11950	11890	11850	11720	11600	11470
19	11850	11860	11900	11930	11970	e11970	e11950	11890	11850	11720	11590	11470
20	11860	11850	11900	11940	11960	e11960	e11950	11890	11850	11720	11590	11470
21	11860	11860	11910	11940	11960	e11960	e11950	11890	11840	11710	11580	11460
22	11860	11860	11930	11930	11950	e11960	e11950	11880	11840	11710	11580	11460
23	11860	11870	11930	11930	11970	e11950	e11950	11880	11830	11710	11580	11460
24	11860	11860	11920	11950	11970	e11950	e11950	11870	11830	11710	11570	11450
25	11870	11860	11930	11950	11970	e11950	e11950	11880	11830	11710	11570	11450
26	11860	11860	11930	11950	11960	e11940	e11950	11890	11830	11710	11560	11440
27	11870	11850	11930	11940	11960	e11940	e11950	11890	11830	11700	11560	11440
28	11870	11830	11930	11970	11960	e11940	e11950	11890	11830	11700	11560	11440
29	11860	11860	11930	11970	---	e11930	e11950	11890	11820	11690	11550	11430
30	11860	11860	11930	11960	---	e11930	e11950	11880	11820	11690	11550	11430
31	11840	---	11920	11960	---	e11930	---	11880	---	11690	11550	---
MAX	11870	11870	11930	12000	12030	11970	11950	11950	11880	11810	11680	11540
MIN	11830	11830	11850	11930	11930	11930	11930	11870	11820	11690	11550	11430
a	7838.13	7838.18	7838.32	7838.41	7838.40	--	--	7838.23	7838.07	7837.73	7837.36	7837.05
b	+10	+20	+60	+40	0	-30	+20	-70	-60	-130	-140	-120
CAL YR 1986	MAX 12310	MIN 11760	b +30									
WTR YR 1987	MAX 12030	MIN 11430	b -400									

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

e Estimated.

## 10336715 MARLETTE CREEK NEAR CARSON CITY, NV

LOCATION.--Lat 39°10'20", long 119°54'25", in SE 1/4 SW 1/4 sec.12, T.15 N., R.18 E., Washoe County, Hydrologic Unit 16050101, in Toiyabe National Forest, on left bank about 300 ft below dam on Marlette Lake (station 10336710), 0.7 mi upstream from Marlette Reservoir, and 7 mi west of Carson City.

DRAINAGE AREA.--2.86 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1973 to current year.

REVISED RECORDS.--WDR NV-80-1.

GAGE.--Water-stage recorder. Elevation of gage is 7,760 ft, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by Marlette Lake (station 10336710).

AVERAGE DISCHARGE.--14 years, 3.04 ft<sup>3</sup>/s, 2,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70 ft<sup>3</sup>/s, Feb. 20, 1986, gage height, 3.20 ft, from rating curve extended above 26 ft<sup>3</sup>/s; no flow July 12-15, 1975.

EXTREMES FOR WATER YEAR 1987 (NOT PREVIOUSLY PUBLISHED).--Maximum discharge, 9.4 ft<sup>3</sup>/s, Feb. 13, 15, gage height, 1.94 ft; minimum daily, 0.01 ft<sup>3</sup>/s, many days in July and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES  
(NOT PREVIOUSLY PUBLISHED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	1.1	.87	1.8	3.3	e4.0	3.8	4.9	.67	.16	.06	.05
2	.40	.99	.90	2.1	3.3	e4.0	3.6	4.4	.53	.12	.07	.07
3	.34	.81	.95	3.1	2.9	e4.0	3.9	3.9	.58	.05	.07	.07
4	.43	.78	1.0	5.9	2.7	4.0	3.9	3.3	.63	.07	.10	.08
5	.50	.81	1.2	5.5	2.6	4.1	3.7	2.9	.55	.04	.11	.05
6	.32	.86	1.4	5.1	2.4	4.1	3.7	2.7	.61	.03	.11	.04
7	.32	.81	1.5	5.2	2.3	4.0	3.7	2.5	.84	.04	.10	.04
8	.31	.80	1.4	4.6	2.2	4.0	3.7	2.3	.84	.02	.10	.04
9	.35	.82	1.4	4.2	2.2	3.7	3.7	2.1	.76	.01	.10	.04
10	.40	.90	1.3	3.9	2.3	3.6	3.8	2.0	.86	.01	.10	.04
11	.61	.89	1.3	3.7	2.5	3.1	4.0	1.8	.91	.01	.10	.03
12	.51	.89	1.3	3.6	2.7	2.9	4.0	1.7	1.0	.01	.10	.02
13	.45	.89	1.4	3.2	7.1	4.8	4.0	1.6	1.0	.01	.11	.02
14	.47	.85	1.4	2.8	8.2	5.6	3.9	1.5	1.4	.01	.09	.02
15	.50	.83	e1.3	e2.6	8.2	6.4	4.1	1.4	1.7	.01	.07	.02
16	.55	.88	e1.3	e2.5	7.3	5.9	4.2	1.4	2.0	.13	.06	.02
17	.68	.90	e1.3	e2.4	6.6	5.6	4.4	1.3	.56	.07	.05	.02
18	.72	1.0	1.4	2.4	6.1	5.3	4.8	1.0	.40	.01	.05	.02
19	.75	.98	1.6	e2.3	5.9	5.7	4.8	.82	.43	.02	.05	.02
20	.73	1.1	1.7	2.2	5.4	5.4	4.5	.77	.36	.03	.05	.02
21	.73	1.1	1.7	2.1	5.0	5.2	4.7	.74	.34	.03	.05	.02
22	.74	.97	1.8	2.1	4.5	4.9	4.7	.71	.35	.04	.05	.02
23	.79	1.0	2.0	2.1	e4.2	5.0	4.8	.70	.36	.05	.07	.02
24	.81	1.1	2.0	e2.1	e4.1	5.7	4.4	.68	.41	.06	.06	.02
25	.85	.94	1.9	e2.1	e4.0	5.3	4.4	.65	.37	.07	.05	.02
26	.91	.97	1.9	e2.1	e4.0	5.0	4.6	.94	.32	.06	.04	.01
27	1.0	.96	2.0	2.4	e4.0	4.7	4.6	.98	.28	.07	.05	.01
28	.96	1.0	2.0	3.5	e4.0	4.6	4.8	.92	.24	.05	.05	.02
29	1.2	.94	2.0	3.7	---	4.2	4.7	.86	.21	.05	.05	.01
30	1.1	.87	2.0	3.5	---	4.1	5.3	.84	.16	.05	.05	.01
31	1.1	---	2.1	3.3	---	4.0	---	.77	---	.05	.04	---
TOTAL	19.88	27.74	47.32	98.1	120.0	142.9	127.2	53.08	19.67	1.44	2.21	0.89
MEAN	.64	.92	1.53	3.16	4.29	4.61	4.24	1.71	.66	.046	.071	.030
MAX	1.2	1.1	2.1	5.9	8.2	6.4	5.3	4.9	2.0	.16	.11	.08
MIN	.31	.78	.87	1.8	2.2	2.9	3.6	.65	.16	.01	.04	.01
AC-FT	39	55	94	195	238	283	252	105	39	2.9	4.4	1.8

CAL YR 1986 TOTAL 1609.49 MEAN 4.41 MAX 63 MIN .04 AC-FT 3190  
WTR YR 1987 TOTAL 660.43 MEAN 1.81 MAX 8.2 MIN .01 AC-FT 1310

e Estimated.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336780 TROUT CREEK NEAR TAHOE VALLEY, CA

LOCATION.--Lat 38°55'12', long 119°58'17", in NW 1/4 SE 1/4 sec.3, T.12 N., R.18 E., El Dorado County, Hydrologic Unit 16050101, on left bank 5 ft upstream from Martin Avenue Bridge, 500 ft upstream from Heavenly Valley Creek, and 1.8 mi east of Tahoe Valley.

DRAINAGE AREA.--36.7 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder and sharp-crested weir in culvert at bridge. Datum of gage is 6,241.57 ft (revised) above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 24, 26-29, Dec. 8, 12, 13, 15, 16, 18, 20, 22-25, 29, 30, Jan. 2-4, 12, 15, 17-20, 24-28, 31, Feb. 1-7, 17, 19. Records good except estimated daily discharges, which are fair. Minor diversions for local water supply upstream from station.

AVERAGE DISCHARGE.--28 years, 37.8 ft<sup>3</sup>/s, 27,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 535 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 11.14 ft, from rating curve extended above 250 ft<sup>3</sup>/s on basis of computation of peak flow (weir formula); no flow for part of Sept. 11, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 2	0845	(a)	*6.75	Mar. 24	1325	*42	6.64

(a) Backwater from ice.

Minimum daily, 2.5 ft<sup>3</sup>/s, Sept. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	9.9	12	12	11	13	14	13	15	6.9	3.4	4.9
2	6.2	10	12	12	11	13	15	14	14	6.6	3.0	3.5
3	6.4	11	12	13	11	13	16	13	13	6.4	4.1	3.5
4	6.6	11	12	15	11	13	15	13	14	6.4	4.2	3.7
5	6.7	14	12	14	11	13	15	13	13	6.3	6.1	3.2
6	6.2	13	14	13	11	13	17	13	14	6.4	4.7	2.9
7	6.4	11	13	13	11	13	19	13	15	5.9	5.6	2.5
8	6.7	10	13	12	11	12	18	13	15	5.7	6.6	2.5
9	6.8	10	16	12	12	13	16	13	14	5.7	5.4	2.7
10	6.5	10	18	12	12	11	15	13	13	5.4	4.2	3.9
11	6.7	9.9	16	13	12	12	16	14	13	5.2	4.4	4.3
12	9.3	9.8	14	12	12	13	17	15	12	5.1	4.6	4.8
13	10	12	13	13	12	14	17	16	12	5.1	3.9	5.1
14	9.0	12	13	12	11	11	18	15	10	4.9	3.6	5.6
15	9.3	9.9	13	12	12	11	18	15	10	5.2	3.7	5.0
16	8.6	11	13	12	12	10	17	16	9.7	5.2	3.5	4.8
17	8.6	12	13	12	12	10	17	16	9.7	4.4	3.7	4.9
18	9.3	12	11	12	12	11	16	15	9.6	4.1	3.5	4.9
19	9.1	11	11	12	12	12	15	14	9.2	3.9	3.1	5.1
20	9.0	11	11	11	12	12	15	14	9.3	3.4	2.9	5.2
21	8.9	11	11	11	12	13	15	14	10	3.4	2.9	5.9
22	9.3	11	11	11	13	12	14	14	8.9	3.7	3.1	5.5
23	11	10	11	11	13	13	14	14	8.4	4.1	4.3	5.3
24	9.9	10	11	11	13	15	14	14	8.3	4.1	3.2	5.0
25	9.5	10	11	11	13	13	14	14	8.8	4.6	3.0	3.3
26	9.8	10	11	11	13	16	14	13	9.1	5.2	2.8	4.2
27	9.6	10	11	12	13	17	15	13	8.1	6.4	2.7	7.3
28	10	10	10	12	14	14	15	14	7.6	5.5	3.5	6.4
29	13	11	10	12	13	15	15	17	7.3	5.8	3.4	6.1
30	11	12	9.8	12	---	15	15	16	7.1	5.4	4.3	7.1
31	10	---	9.6	12	---	14	---	16	---	5.2	6.4	---
TOTAL	265.7	325.5	378.4	375	348	400	471	440	328.1	161.6	123.8	139.1
MEAN	8.57	10.8	12.2	12.1	12.0	12.9	15.7	14.2	10.9	5.21	3.99	4.64
MAX	13	14	18	15	14	17	19	17	15	6.9	6.6	7.3
MIN	6.2	9.8	9.6	11	11	10	14	13	7.1	3.4	2.7	2.5
AC-FT	527	646	751	744	690	793	934	873	651	321	246	276

CAL YR 1987 TOTAL 5833.0 MEAN 16.0 MAX 44 MIN 4.7 AC-FT 11570  
WTR YR 1988 TOTAL 3756.2 MEAN 10.3 MAX 19 MIN 2.5 AC-FT 7450

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1981 to September 1983.

WATER TEMPERATURE: October 1971 to June 1974, October 1977 to June 1978, March 1980 to September 1985, October 1987 to September 1988.

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to June 1974, October 1977 to June 1978, March 1980 to September 1985, October 1987 to September 1988.

REMARKS.--Sediment samples were collected during most days where a water temperature is published.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 321 mg/L, Mar. 13, 1983; minimum daily mean, 0 mg/L, Oct. 15, 16, 1973.

SEDIMENT LOAD: Maximum daily, 162 tons, Feb. 16, 1982; minimum daily, 0 ton, Oct. 15, 16, 1973.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 15 mg/L, Dec. 22, Aug. 5; minimum daily mean, 1 mg/L, Feb. 22-27, Mar. 8-20.

SEDIMENT LOAD: Maximum daily, 0.58 tons, Dec. 10; minimum daily, 0.03 ton, Mar. 8, 10, 11, 14-20, Sept. 8.

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

[illegible]

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336780 TROUT CREEK NEAR TAHOE VALLEY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	6.3	4	.07	9.9	4	.11	12	3	.10
2	6.2	4	.07	10	4	.11	12	3	.10
3	6.4	4	.07	11	4	.12	12	3	.10
4	6.6	4	.07	11	4	.12	12	3	.10
5	6.7	4	.07	14	4	.15	12	4	.13
6	6.2	4	.07	13	4	.14	14	5	.19
7	6.4	4	.07	11	4	.12	13	5	.18
8	6.7	4	.07	10	4	.11	13	10	.35
9	6.8	4	.07	10	4	.11	16	11	.48
10	6.5	4	.07	10	4	.11	18	12	.58
11	6.7	4	.07	9.9	4	.11	16	12	.52
12	9.3	4	.10	9.8	4	.11	14	12	.45
13	10	4	.11	12	5	.16	13	13	.46
14	9.0	4	.10	12	6	.19	13	13	.46
15	9.3	4	.10	9.9	7	.19	13	13	.46
16	8.6	4	.09	11	8	.24	13	13	.46
17	8.6	4	.09	12	9	.29	13	13	.46
18	9.3	4	.10	12	8	.26	11	13	.39
19	9.1	4	.10	11	7	.21	11	13	.39
20	9.0	4	.10	11	6	.18	11	13	.39
21	8.9	4	.10	11	5	.15	11	14	.42
22	9.3	4	.10	11	4	.12	11	15	.45
23	11	4	.12	10	3	.08	11	14	.42
24	9.9	4	.11	10	3	.08	11	13	.39
25	9.5	4	.10	10	3	.08	11	12	.36
26	9.8	4	.11	10	3	.08	11	11	.33
27	9.6	4	.10	10	3	.08	11	10	.30
28	10	4	.11	10	3	.08	10	9	.24
29	13	4	.14	11	3	.09	10	9	.24
30	11	4	.12	12	3	.10	9.8	9	.24
31	10	4	.11	---	---	---	9.6	9	.23
TOTAL	265.7	---	2.88	325.5	---	4.08	378.4	---	10.37
JANUARY			FEBRUARY			MARCH			
1	12	8	.26	11	8	.24	13	2	.07
2	12	8	.26	11	10	.30	13	2	.07
3	13	7	.25	11	10	.30	13	2	.07
4	15	7	.28	11	10	.30	13	2	.07
5	14	7	.26	11	10	.30	13	2	.07
6	13	7	.25	11	8	.24	13	2	.07
7	13	7	.25	11	8	.24	13	2	.07
8	12	7	.23	11	5	.15	12	1	.03
9	12	7	.23	12	4	.13	13	1	.04
10	12	7	.23	12	4	.13	11	1	.03
11	13	7	.25	12	4	.13	12	1	.03
12	12	7	.23	12	4	.13	13	1	.04
13	13	10	.35	12	4	.13	14	1	.04
14	12	7	.23	11	4	.12	11	1	.03
15	12	3	.10	12	4	.13	11	1	.03
16	12	3	.10	12	4	.13	10	1	.03
17	12	3	.10	12	5	.16	10	1	.03
18	12	4	.13	12	5	.16	11	1	.03
19	12	5	.16	12	5	.16	12	1	.03
20	11	6	.18	12	5	.16	12	1	.03
21	11	7	.21	12	3	.10	13	3	.11
22	11	6	.18	13	1	.04	12	5	.16
23	11	5	.15	13	1	.04	13	10	.35
24	11	4	.12	13	1	.04	15	13	.53
25	11	4	.12	13	1	.04	13	8	.28
26	11	4	.12	13	1	.04	16	7	.30
27	12	4	.13	13	1	.04	17	7	.32
28	12	4	.13	14	2	.08	14	7	.26
29	12	4	.13	13	2	.07	15	7	.28
30	12	4	.13	---	---	---	15	7	.28
31	12	6	.19	---	---	---	14	7	.26
TOTAL	375	---	5.94	348	---	4.23	400	---	4.04

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336780 TROUT CREEK NEAR TAHOE VALLEY, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	14	7	.26	13	2	.07	15	9	.36
2	15	7	.28	14	2	.08	14	8	.30
3	16	6	.26	13	2	.07	13	7	.25
4	15	6	.24	13	2	.07	14	7	.26
5	15	6	.24	13	2	.07	13	7	.25
6	17	6	.28	13	2	.07	14	7	.26
7	19	5	.26	13	2	.07	15	7	.28
8	18	5	.24	13	2	.07	15	7	.28
9	16	5	.22	13	2	.07	14	7	.26
10	15	4	.16	13	3	.11	13	6	.21
11	16	4	.17	14	3	.11	13	7	.25
12	17	4	.18	15	3	.12	12	7	.23
13	17	4	.18	16	4	.17	12	7	.23
14	18	4	.19	15	4	.16	10	7	.19
15	18	6	.29	15	4	.16	10	7	.19
16	17	5	.23	16	4	.17	9.7	7	.18
17	17	3	.14	16	4	.17	9.7	7	.18
18	16	3	.13	15	3	.12	9.6	7	.18
19	15	2	.08	14	3	.11	9.2	7	.17
20	15	3	.12	14	4	.15	9.3	7	.18
21	15	3	.12	14	3	.11	10	7	.19
22	14	3	.11	14	3	.11	8.9	7	.17
23	14	2	.08	14	3	.11	8.4	7	.16
24	14	2	.08	14	3	.11	8.3	7	.16
25	14	2	.08	14	3	.11	8.8	7	.17
26	14	2	.08	13	3	.11	9.1	7	.17
27	15	2	.08	13	3	.11	8.1	7	.15
28	15	2	.08	14	3	.11	7.6	7	.14
29	15	2	.08	17	5	.23	7.3	7	.14
30	15	2	.08	16	7	.30	7.1	7	.13
31	---	---	---	16	8	.35	---	---	---
TOTAL	471	---	5.02	440	---	3.95	328.1	---	6.27
JULY			AUGUST			SEPTEMBER			
1	6.9	7	.13	3.4	8	.07	4.9	8	.11
2	6.6	6	.11	3.0	8	.06	3.5	8	.08
3	6.4	6	.10	4.1	9	.10	3.5	8	.08
4	6.4	6	.10	4.2	9	.10	3.7	9	.09
5	6.3	5	.09	6.1	15	.25	3.2	7	.06
6	6.4	5	.09	4.7	9	.11	2.9	6	.05
7	5.9	5	.08	5.6	9	.14	2.5	6	.04
8	5.7	4	.06	6.6	9	.16	2.5	5	.03
9	5.7	4	.06	5.4	9	.13	2.7	5	.04
10	5.4	4	.06	4.2	12	.14	3.9	5	.05
11	5.2	4	.06	4.4	9	.11	4.3	5	.06
12	5.1	4	.06	4.6	9	.11	4.8	5	.06
13	5.1	4	.06	3.9	9	.09	5.1	5	.07
14	4.9	4	.05	3.6	9	.09	5.6	5	.08
15	5.2	4	.06	3.7	9	.09	5.0	5	.07
16	5.2	4	.06	3.5	9	.09	4.8	5	.06
17	4.4	4	.05	3.7	9	.09	4.9	5	.07
18	4.1	4	.04	3.5	9	.09	4.9	5	.07
19	3.9	4	.04	3.1	9	.08	5.1	5	.07
20	3.4	4	.04	2.9	9	.07	5.2	5	.07
21	3.4	5	.05	2.9	9	.07	5.9	6	.10
22	3.7	6	.06	3.1	9	.08	5.5	6	.09
23	4.1	7	.08	4.3	9	.10	5.3	6	.09
24	4.1	8	.09	3.2	8	.07	5.0	6	.08
25	4.6	10	.12	3.0	8	.06	3.3	6	.05
26	5.2	10	.14	2.8	8	.06	4.2	6	.07
27	6.4	10	.17	2.7	8	.06	7.3	9	.18
28	5.5	9	.13	3.5	8	.08	6.4	6	.10
29	5.8	8	.13	3.4	8	.07	6.1	6	.10
30	5.4	7	.10	4.3	8	.09	7.1	6	.12
31	5.2	7	.10	6.4	8	.14	---	---	---
TOTAL	161.6	---	2.57	123.8	---	3.05	139.1	---	2.29
YEAR	3756.2		54.69						

## PYRAMID AND WINNEMUCCA LAKES BASIN

10336780 TROUT CREEK NEAR TAHOE VALLEY, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
APR 14...	1220	17	6.0	3	0.14	57
MAY 14...	0900	15	6.0	4	0.16	88

## PARTICLE SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	TEMPER- ATURE WATER (DEG C)	NUMBER OF SAM- PLING POINTS (COUNT)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM
MAY 14...	0900	6.0	3	15	1	3
DATE	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM
MAY 14...	14	28	45	68	90	100



## PYRAMID AND WINNEMUCCA LAKES BASIN

## 10337000 LAKE TAHOE AT TAHOE CITY, CA

LOCATION.--Lat 39°10'51", long 120°07'06", in NE 1/4 NE 1/4 sec.5, T.15 N., R.17 E., Placer County, Hydrologic Unit 16050101, on U.S. Coast Guard pier at Lake Forest, 1.1 mi northeast of Tahoe City, and 1.8 mi northeast of Lake Tahoe outlet dam on Truckee River at Tahoe City.

DRAINAGE AREA.--506 mi<sup>2</sup>, at lake outlet.

PERIOD OF RECORD.--April 1900 to current year. Monthend elevations only for October 1943 to September 1957, published in WSP 1734. Prior to October 1961, published as "at Tahoe."

CHEMICAL DATA: Water year 1969, bimonthly; 1978, biannually; 1979, annually.

REVISED RECORDS.--WDR CA-78-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,220.00 ft above U.S. Bureau of Reclamation datum, 6,218.86 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1957, nonrecording gages at several sites near outlet of lake at same datum. Oct. 1, 1957, to May 8, 1958, water-stage recorder on left wingwall of dam at outlet of lake at same datum. May 9, 1958, to Sept. 30, 1968, water-stage recorder on pier, 1,000 ft east of dam at lake outlet.

REMARKS.--Lake levels regulated by a 17-gate concrete dam at outlet of lake; storage began about 1874. Monthly figures given represent usable contents. Usable capacity, 744,600 acre-ft between elevations 6,223 ft, natural rim of lake, and 6,229.1 ft, maximum permissible elevation by Federal Court decree. Lake elevations are referred to U.S. Bureau of Reclamation datum because that datum is used as the official reference point by all local, State, and Federal agencies. There are minor diversions for domestic purposes, irrigation, and power.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 6,231.26 ft, July 14, 15, 17, 18, 1907; minimum, 6,221.74 ft, Dec. 26, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 6,225.56 ft, Oct. 1; minimum, 6,223.10 ft, Sept. 29, 30.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on topographic information available in April 1959)

6,223	0	6,227	486,800
6,224	121,400	6,228	609,300
6,225	243,000	6,229.1	744,600
6,226	364,800		

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.54	5.26	5.00	4.84	4.93	4.81	4.67	4.64	4.64	4.38	4.04	3.62
2	5.54	5.26	4.97	4.85	4.92	4.82	4.67	4.65	4.67	4.36	4.01	3.62
3	5.52	5.25	4.97	4.94	4.91	4.82	4.72	4.67	4.68	4.32	4.00	3.61
4	5.51	5.21	4.93	4.95	4.90	4.82	4.67	4.70	4.68	4.31	3.99	3.61
5	5.50	5.21	4.92	4.94	4.88	4.82	4.65	4.64	4.64	4.29	3.97	3.59
6	5.48	5.19	4.95	4.94	4.88	4.82	4.68	4.65	4.63	4.27	3.97	3.58
7	5.47	5.19	5.00	4.93	4.88	4.81	4.73	4.62	4.60	4.27	3.94	3.56
8	5.47	5.16	4.97	4.93	4.87	4.83	4.65	4.65	4.56	4.27	3.94	3.54
9	5.45	5.16	4.98	4.93	4.87	4.81	4.64	4.60	4.58	4.25	3.93	3.52
10	5.45	5.14	4.99	4.93	4.89	4.80	4.63	4.57	4.55	4.24	3.91	3.49
11	5.43	5.15	4.98	4.95	4.87	4.80	4.63	4.58	4.55	4.20	3.88	3.50
12	5.44	5.11	4.95	4.94	4.86	4.77	4.65	4.62	4.53	4.21	3.86	3.42
13	5.43	5.16	4.91	4.94	4.86	4.77	4.65	4.61	4.52	4.19	3.85	3.38
14	5.42	5.13	4.88	4.94	4.85	4.77	4.67	4.59	4.52	4.19	3.81	3.37
15	5.41	5.13	4.88	4.99	4.85	4.75	4.68	4.60	4.51	4.17	3.81	3.34
16	5.40	5.10	4.90	4.99	4.86	4.75	4.69	4.64	4.50	4.17	3.77	3.32
17	5.38	5.14	4.90	4.99	4.83	4.75	4.70	4.61	4.50	4.16	3.77	3.29
18	5.37	5.12	4.88	4.98	4.84	4.74	4.72	4.60	4.49	4.15	3.76	3.27
19	5.36	5.12	4.88	4.96	4.81	4.75	4.73	4.59	4.49	4.13	3.75	3.24
20	5.34	5.10	4.87	4.96	4.79	4.75	4.70	4.58	4.48	4.12	3.75	3.23
21	5.33	5.08	4.90	4.97	4.78	4.74	4.70	4.59	4.47	4.10	3.74	3.22
22	5.33	5.08	4.91	4.95	4.78	4.76	4.73	4.60	4.46	4.10	3.73	3.19
23	5.34	5.08	4.88	4.95	4.77	4.74	4.68	4.60	4.45	4.09	3.72	3.19
24	5.33	5.05	4.89	4.95	4.77	4.70	4.69	4.60	4.45	4.09	3.70	3.16
25	5.32	5.05	4.88	4.95	4.77	4.69	4.65	4.61	4.44	4.08	3.70	3.15
26	5.30	5.02	4.84	4.95	4.76	4.71	4.65	4.62	4.43	4.08	3.68	3.12
27	5.29	5.01	4.84	4.96	4.76	4.70	4.69	4.62	4.42	4.08	3.67	3.12
28	5.29	5.00	4.88	4.96	4.77	4.69	4.70	4.74	4.39	4.06	3.66	3.11
29	5.31	4.98	4.88	4.97	4.78	4.72	4.71	4.62	4.38	4.05	3.65	3.10
30	5.30	4.98	4.87	4.94	---	4.71	4.65	4.62	4.38	4.05	3.64	3.10
31	5.28	---	4.88	4.93	---	4.70	---	4.65	---	4.05	3.64	---
MEAN	5.40	5.12	4.91	4.95	4.84	4.76	4.68	4.62	4.52	4.18	3.81	3.35
MAX	5.54	5.26	5.00	4.99	4.93	4.83	4.73	4.74	4.68	4.38	4.04	3.62
MIN	5.28	4.98	4.84	4.84	4.76	4.69	4.63	4.57	4.38	4.05	3.64	3.10
a	277100	240600	228400	234500	216300	206500	200400	200400	167600	127500	77700	12100
b	-34100	-36500	-12200	+6100	-18200	-9800	-6100	0	-32800	-40100	-49800	-65600

CAL YR 1987 MEAN 6.40 MAX 7.38 MIN 4.84 b -249900

WTR YR 1988 MEAN 4.60 MAX 5.54 MIN 3.10 b -299100

a Usable contents, in acre-feet, at end of month.

b Change in contents, in acre-feet.

NOTE.--Add 6,220 ft to obtain elevation, U.S. Bureau of Reclamation datum, at 2400 hours.

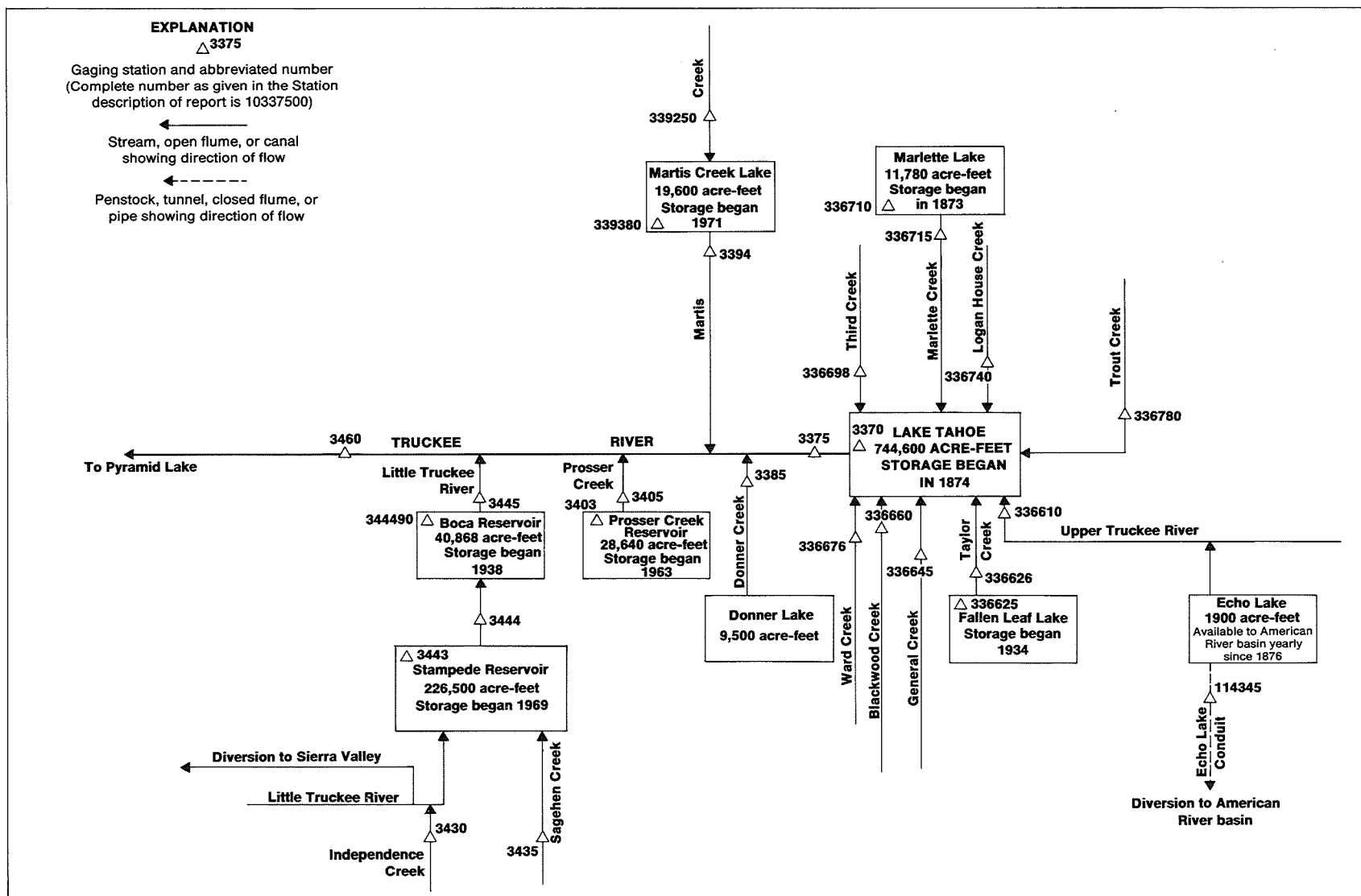


Figure 26.--Schematic diagram showing diversions and storage in Truckee River basin.

## PYRAMID AND WINNEMUCCA LAKES BASIN

## 10337500 TRUCKEE RIVER AT TAHOE CITY, CA

LOCATION.--Lat 39°09'59", long 120°08'36", in NE 1/4 NW 1/4 sec.7, T.15 N., R.17 E., Placer County, Hydrologic Unit 16050102, on left bank 510 ft downstream from dam at outlet of Lake Tahoe at Tahoe City.

DRAINAGE AREA.--507 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1895 to February 1896, March 1900 to current year. Monthly discharge only for some periods, published in WSP 1314 and 1734. Prior to October 1961, published as "at Tahoe."  
CHEMICAL DATA: Water years 1978 to 1981, monthly.

REVISED RECORDS.--WDR CA-78-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,216.59 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 12, 1912, nonrecording gage at site 370 ft upstream at different datum. Nov. 12, 1912, to Sept. 30, 1937, nonrecording gage; Oct. 1, 1937, to Aug. 21, 1957, water-stage recorder at datum 2.26 ft higher; and Aug. 22, 1957, to July 10, 1960, at datum 2.42 ft higher; all at site 270 ft upstream.

REMARKS.--No estimated daily discharges. Records excellent, except those less than 100 ft<sup>3</sup>/s, which are good. Flow completely regulated by dam at outlet of Lake Tahoe (station 10337000), 510 ft upstream. There are several diversions for irrigation, power, and domestic water supply. In addition, sewer effluent is pumped from the Lake Tahoe basin.

AVERAGE DISCHARGE (unadjusted).--88 years (water years 1901-88), 260 ft<sup>3</sup>/s, 188,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,630 ft<sup>3</sup>/s, June 19, 1969, gage height, 9.32 ft; no flow for parts of many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 413 ft<sup>3</sup>/s, June 24, gage height, 4.16 ft; minimum daily, 6.1 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	256	131	44	36	39	35	216	254	267	367	231	95
2	202	130	43	36	40	36	264	290	248	361	219	92
3	195	130	43	36	38	45	261	325	247	354	217	89
4	195	84	43	37	39	52	262	334	246	334	208	86
5	195	55	42	36	110	52	261	332	248	327	207	83
6	96	41	43	37	149	53	268	332	280	329	196	81
7	52	40	44	37	151	53	244	332	302	320	193	75
8	52	40	44	36	156	52	227	331	301	322	188	73
9	53	40	44	36	184	48	225	350	301	316	183	65
10	54	40	46	37	185	50	224	364	301	308	177	61
11	57	44	45	38	182	50	228	333	300	295	172	56
12	56	44	45	38	184	50	245	259	300	296	164	44
13	54	44	44	37	184	62	240	179	300	288	152	39
14	53	44	43	38	184	77	178	171	300	286	148	35
15	54	44	42	37	184	105	178	198	300	284	137	32
16	37	44	42	38	184	109	197	131	300	279	134	28
17	41	45	43	38	207	106	197	102	314	279	129	25
18	47	44	44	38	202	108	198	130	326	272	124	21
19	47	45	42	38	182	108	212	153	326	271	124	18
20	51	44	44	39	169	109	228	163	326	265	118	18
21	52	45	39	38	169	108	233	171	327	262	117	14
22	60	45	34	38	169	108	269	171	340	257	114	13
23	64	45	34	38	169	93	279	170	357	258	110	12
24	57	45	36	38	169	61	279	187	382	254	108	11
25	56	45	36	38	165	45	299	199	403	257	105	9.2
26	56	44	36	38	135	45	309	199	394	253	102	8.6
27	56	44	35	38	131	45	287	212	391	252	100	7.3
28	56	44	35	38	130	44	264	221	381	250	97	7.3
29	83	45	35	38	64	44	254	273	374	243	95	6.7
30	122	44	36	38	---	42	255	335	372	241	94	6.1
31	131	---	36	38	---	63	---	322	---	236	91	---
TOTAL	2640	1619	1262	1161	4254	2058	7281	7523	9554	8916	4554	1211.2
MEAN	85.2	54.0	40.7	37.5	147	66.4	243	243	318	288	147	40.3
MAX	256	131	46	39	207	109	309	364	403	367	231	95
MIN	37	40	34	36	38	35	178	102	246	236	91	6.1
AC-FT	5240	3210	2500	2300	8440	4080	14440	14920	18950	17680	9030	2400

CAL YR 1987 TOTAL 72931 MEAN 200 MAX 412 MIN 34 AC-FT 144700  
WTR YR 1988 TOTAL 52032.2 MEAN 142 MAX 403 MIN 6.1 AC-FT 103200

LOCATION.--Lat 39°19'25", long 120°14'00", in SW 1/4 NW 1/4 sec.17, T.17 N., R.16 E., Nevada County, Hydrologic Unit 16050102, in Donner Memorial State Park, on left bank 10 ft downstream from bridge on Donner Memorial State Park road, 0.2 mi downstream from outlet of Donner Lake, 0.7 mi upstream from Cold Creek, and 2.5 mi west of Truckee.

PERIOD OF RECORD.--November 1909 to August 1910, January 1929 to October 1935, January 1936 to March 1938, July to October 1938, January 1939 to February 1943, June 1943 to December 1953, May 1955 to December 1957, October 1958 to current year. Monthly discharge only prior to October 1958, published in WSP 1314 and 1734.

GAGE.--Water-stage recorder. Datum of gage is 5,924.40 ft above National Geodetic Vertical Datum of 1929. Nov. 1, 1909, to Aug. 31, 1910, nonrecording gage at different datum. January 1929, to December 1957, water-stage recorder at same site at unknown datum.

AVERAGE DISCHARGE (unadjusted), --51 years (water years 1930-35, 1937, 1940-42, 1944-52, 1956-57, 1959-88),  
34.9 ft<sup>3</sup>/s, 25,290 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 106 ft<sup>3</sup>/s, Oct. 8, gage height, 3.18 ft; minimum daily, 1.4 ft<sup>3</sup>/s, on several days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	9.1	3.3	8.9	11	18	5.7	2.5	1.9	2.2	2.9	3.3
2	82	8.4	5.4	8.5	10	18	5.8	2.4	1.9	2.2	2.9	3.2
3	80	7.7	5.8	11	9.9	18	5.8	3.9	2.1	2.2	2.9	3.1
4	77	7.1	5.6	13	9.7	11	5.8	5.3	2.0	2.2	2.7	2.9
5	74	6.6	5.4	14	9.3	3.4	6.1	4.6	1.9	2.3	2.9	3.0
6	76	6.2	8.9	13	9.3	3.3	5.0	3.1	1.9	2.1	3.2	3.1
7	76	5.5	13	13	9.2	3.3	3.3	1.5	1.6	2.2	3.1	3.3
8	86	5.2	14	13	8.8	3.2	1.6	1.4	1.6	2.2	3.2	3.2
9	86	5.0	15	13	8.5	3.3	1.5	1.4	1.5	2.0	3.3	3.5
10	77	4.4	19	13	8.8	3.3	1.5	2.1	1.4	1.9	3.4	3.2
11	68	4.2	23	16	9.0	3.3	1.4	3.1	1.4	1.9	3.3	3.1
12	31	3.9	21	15	9.3	3.2	1.4	3.1	1.4	1.8	2.9	21
13	4.4	5.3	18	14	9.7	3.1	1.9	2.9	1.4	1.8	2.4	50
14	4.8	6.1	17	13	10	3.1	2.1	2.7	1.9	1.9	2.3	55
15	5.1	5.6	15	14	10	3.1	1.9	2.6	2.3	1.8	2.4	54
16	32	5.2	15	19	11	3.1	1.9	2.8	2.2	2.1	3.0	47
17	55	5.4	15	18	11	3.1	2.0	2.8	2.1	1.6	4.0	37
18	47	5.4	13	17	11	3.1	1.8	2.6	1.7	1.8	3.8	36
19	39	5.2	13	15	11	3.2	2.9	2.4	1.7	2.8	3.6	35
20	33	5.1	12	14	10	3.3	3.9	2.4	1.8	3.3	3.8	33
21	28	5.2	11	13	10	3.2	3.9	2.5	1.7	3.2	3.9	33
22	25	4.9	12	13	11	2.6	3.9	2.6	2.2	3.3	3.8	33
23	23	4.6	12	12	11	2.6	3.7	2.6	2.6	3.3	3.8	33
24	19	4.1	11	11	11	2.5	3.6	2.5	2.4	3.2	3.9	32
25	17	3.6	9.5	11	12	2.5	3.6	2.4	2.1	3.1	3.8	32
26	15	3.2	8.9	11	13	2.6	3.6	2.4	2.0	3.1	3.7	31
27	14	3.1	8.2	10	14	2.6	3.6	2.4	2.1	2.9	3.7	31
28	13	2.9	8.7	10	15	2.6	3.5	2.4	2.1	3.0	3.4	35
29	12	2.8	11	11	16	4.0	3.2	2.1	2.2	3.1	3.3	38
30	10	2.7	11	12	---	5.8	2.8	2.1	2.3	2.9	3.3	31
31	9.9	---	9.6	11	---	5.8	---	2.0	---	2.9	3.3	---
TOTAL	1296.2	153.7	370.3	400.4	309.5	153.2	98.7	81.6	57.4	76.3	101.9	731.9
MEAN	41.8	5.12	11.9	12.9	10.7	4.94	3.29	2.63	1.91	2.46	3.29	24.4
MAX	86	9.1	23	19	16	18	6.1	5.3	2.6	3.3	4.0	55
MIN	4.4	2.7	3.3	8.5	8.5	2.5	1.4	1.4	1.4	1.6	2.3	2.9
AC-FT	2570	305	734	794	614	304	196	162	114	151	202	1450
CAL YR 1987	TOTAL	4644.39	MEAN	12.7	MAX	86	MIN	.64	AC-FT	9210		
WTR YR 1988	TOTAL	3831.1	MEAN	10.5	MAX	86	MIN	1.4	AC-FT	7600		

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339250 MARTIS CREEK AT STATE HIGHWAY 267, NEAR TRUCKEE, CA

## WATER-QUALITY RECORDS

LOCATION.--Lat 39°18'08", long 120°07'13", in SW 1/4 SW 1/4 sec.20, T.17 N., R.17 E., Placer County, Hydrologic Unit 16050102, 4.0 mi southeast of Truckee. Water-quality samples are collected 10 ft upstream from State Highway 267. Temperature records are obtained about 300 ft upstream from highway, off left bank immediately downstream from confluence of main stem and Middle Martis Creek.

DRAINAGE AREA.--25.8 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1975 to current year.

CHEMICAL DATA: Water years 1975 to current year.

WATER TEMPERATURE: Water years 1975 to September 1988 (discontinued).

SEDIMENT DATA: Water years 1975, 1977 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October to November 1974, August 1975 to September 1988 (discontinued).

REVISED RECORDS.--WDR CA-80-3: Drainage area.

INSTRUMENTATION.--Digital water-temperature recorder October to November 1974 and August 1975 to September 1988.

REMARKS.--No temperature record June 9, 30, July 1.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 27.5 °C, July 30, Aug. 3, 1977; minimum recorded, -0.5 °C, Jan. 5, 10-16, 1979.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 24.0 °C, June 21; minimum recorded, 0.0 °C, on many days.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED CENT SATUR- ATION)	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3
OCT										
09...	0945	3.7	139	8.0	6.5	1.5	620	9.9	99	49
APR										
08...	1040	6.7	130	8.0	4.5	3.7	620	10.6	101	56
JUN										
09...	1015	4.2	143	7.9	9.5	2.4	615	9.4	102	62
AUG										
23...	0945	2.3	152	7.8	14.5	3.8	620	8.1	98	76

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)
OCT									
09...	<0.100	<0.010	--	0.30	--	0.040	0.020	3	1
APR									
08...	<0.100	0.020	--	<0.20	--	0.110	0.100	6	1
JUN									
09...	<0.100	0.020	--	<0.20	--	0.090	0.070	3	1
AUG									
23...	0.600	0.030	0.47	0.50	1.1	0.060	0.040	4	2

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT									
09...	430	280	<5	<5	6	30	28	10	<3
APR									
08...	330	160	<5	<5	<4	30	21	60	5
JUN									
09...	430	300	<5	<5	<4	30	24	<10	5
AUG									
23...	640	250	6	<5	<4	50	36	30	4

< Actual value is known to be less than the value shown.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339250 MARTIS CREEK AT STATE HIGHWAY 267, NEAR TRUCKEE, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	13.5	5.5	7.0	4.0	6.0	3.0	1.0	1.0	.5	.0	3.0	1.0
2	12.5	6.0	6.5	3.5	6.5	4.0	1.0	1.0	.5	.0	7.0	1.0
3	13.5	6.0	7.0	4.0	7.0	4.0	1.0	.5	.5	.0	5.5	.0
4	13.5	6.0	7.5	2.5	6.5	4.0	.5	.5	.0	.0	7.5	1.0
5	13.5	6.0	7.5	3.5	6.5	3.5	1.0	.5	.0	.0	8.5	.5
6	13.0	6.0	7.5	5.0	4.0	2.0	1.0	.5	.0	.0	8.5	1.5
7	13.0	6.0	7.5	3.5	4.0	1.5	1.0	.5	.5	.0	8.5	1.0
8	12.5	5.5	7.0	2.0	1.5	1.5	1.0	.5	.5	.0	9.0	.5
9	12.5	5.5	8.5	4.0	4.5	1.5	2.5	1.0	1.0	.0	5.5	1.0
10	12.0	6.0	7.0	2.5	5.5	3.5	2.0	.5	2.0	.0	5.5	.0
11	11.5	5.0	7.0	2.0	5.0	2.0	1.5	.5	3.0	.0	5.0	.0
12	11.5	7.5	7.0	2.0	2.0	1.5	1.0	.5	3.0	.0	6.0	.0
13	11.5	6.0	6.5	4.5	1.5	1.0	1.0	.5	4.0	.0	7.5	.0
14	10.5	3.5	5.5	1.5	1.5	1.0	1.5	.5	3.0	.0	8.5	.5
15	10.0	3.0	4.0	.5	1.5	1.0	1.5	.5	4.0	.0	8.5	1.0
16	10.0	3.0	6.5	3.0	1.0	1.0	.5	.5	3.0	.0	8.5	.5
17	9.5	2.5	5.0	4.5	1.0	1.0	.5	.5	2.0	.0	9.5	.5
18	9.5	2.5	6.0	4.0	1.0	1.0	.5	.5	4.0	.0	10.5	1.0
19	9.0	2.5	7.5	4.0	1.0	1.0	.5	.5	3.0	.0	10.5	2.0
20	8.5	2.5	5.0	2.5	1.0	1.0	.5	.5	4.0	.0	11.0	2.5
21	9.0	3.0	6.5	3.0	1.5	1.0	.5	.5	4.5	.0	6.5	3.5
22	8.0	5.0	6.0	2.0	1.5	1.0	.5	.5	5.0	.0	11.0	2.0
23	8.5	6.0	4.0	1.0	1.0	1.0	.5	.5	5.0	.0	12.0	5.0
24	10.0	5.5	4.0	1.0	1.0	1.0	.5	.5	6.0	.0	11.5	2.0
25	9.5	4.0	4.0	1.0	1.0	1.0	.5	.0	6.0	.0	12.5	3.0
26	9.5	3.5	2.5	1.0	1.0	1.0	.0	.0	6.0	.0	13.0	3.5
27	9.0	4.5	2.5	1.0	1.0	1.0	.0	.0	4.5	1.0	10.5	4.0
28	9.5	7.0	3.0	1.5	1.0	1.0	.5	.0	5.5	1.5	10.0	1.0
29	8.5	6.5	2.5	1.5	1.0	1.0	1.0	.0	4.0	1.5	10.0	1.5
30	9.5	5.0	3.5	1.5	1.0	1.0	1.0	.0	---	---	9.5	1.5
31	8.5	5.0	---	---	1.0	1.0	.5	.0	---	---	10.5	1.0
MONTH	13.5	2.5	8.5	.5	7.0	1.0	2.5	.0	6.0	.0	13.0	.0
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	12.0	1.5	13.0	1.5	13.5	10.0	---	---	22.0	13.5	19.5	12.0
2	12.5	3.0	13.0	3.5	19.0	8.0	22.0	11.0	21.0	13.5	19.5	12.5
3	7.5	5.0	14.5	4.0	19.5	10.0	21.0	11.5	20.5	13.5	19.5	12.0
4	12.5	3.0	14.0	5.5	17.0	10.5	19.5	12.0	21.5	13.0	18.5	12.0
5	13.5	3.0	8.0	4.5	15.5	8.0	19.5	11.0	22.5	16.0	18.0	12.0
6	14.0	5.0	8.5	2.5	12.5	6.0	21.0	10.0	19.0	13.0	18.0	12.0
7	13.5	5.5	9.5	4.5	12.0	5.5	21.5	11.0	20.5	11.5	17.0	9.5
8	12.0	3.0	13.5	3.5	15.0	5.5	22.0	11.5	21.0	12.0	17.0	10.0
9	13.5	3.0	15.0	6.0	---	---	23.0	12.5	20.5	12.5	15.5	10.5
10	14.5	4.0	18.5	6.5	19.0	9.5	22.5	13.0	20.5	12.0	16.5	10.0
11	15.5	6.0	20.0	8.0	17.5	9.5	20.5	13.0	18.0	12.5	14.5	8.5
12	14.0	6.0	18.5	8.5	19.0	8.0	21.5	11.5	19.5	10.5	14.0	8.0
13	12.0	7.0	18.5	8.5	21.0	9.5	22.0	12.0	19.0	10.5	13.5	6.5
14	9.5	6.5	20.0	7.5	21.5	11.0	22.0	11.5	17.5	10.0	14.0	7.0
15	9.5	5.0	20.0	9.0	20.5	12.5	23.0	12.5	18.5	10.0	14.5	8.0
16	12.5	4.5	16.0	10.0	19.5	11.0	22.5	12.0	19.0	10.0	14.5	7.5
17	13.0	7.0	16.0	8.5	21.0	10.5	23.0	13.0	19.0	10.5	13.0	6.5
18	12.5	4.5	18.0	6.5	22.5	11.5	22.5	13.0	19.0	10.5	12.0	5.0
19	10.5	6.0	18.5	7.0	22.0	12.0	22.5	12.0	19.0	11.5	10.0	5.5
20	11.0	5.0	19.5	7.0	22.5	14.0	22.5	12.0	19.5	12.0	12.5	8.0
21	10.5	4.0	20.5	9.0	24.0	12.5	20.5	13.5	20.0	12.5	12.5	6.0
22	9.0	4.0	19.5	9.5	23.0	13.5	21.0	13.5	20.5	12.5	13.0	5.5
23	13.0	4.0	20.0	9.5	22.5	12.5	19.5	13.0	19.5	13.0	13.0	6.0
24	13.5	4.5	20.0	8.5	23.0	13.5	20.0	13.5	19.0	14.0	13.0	6.0
25	11.5	4.0	20.0	9.0	18.5	15.5	21.5	14.5	20.0	13.0	13.0	6.0
26	15.0	4.5	18.0	9.0	22.5	12.0	18.0	13.5	20.5	13.5	12.5	5.5
27	13.0	6.5	19.0	8.5	21.5	11.5	22.0	13.0	19.5	13.5	12.0	6.0
28	14.0	7.5	15.5	8.5	21.0	11.0	22.5	12.5	20.0	13.0	12.0	5.0
29	15.0	7.0	9.0	5.5	21.5	9.5	23.5	13.0	18.5	14.0	12.0	5.5
30	8.5	4.5	16.0	4.0	---	---	20.0	14.0	19.0	12.5	13.0	5.5
31	---	---	17.5	6.5	---	---	22.0	13.0	18.5	12.5	---	---
MONTH	15.5	1.5	20.5	1.5	---	---	---	---	22.5	10.0	19.5	5.0

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339250 MARTIS CREEK AT STATE HIGHWAY 267, NEAR TRUCKEE, CA--Continued

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)
OCT					
09...	0950	3.7	6.5	4	0.04
APR					
08...	1110	6.7	4.5	7	0.13
JUN					
09...	1010	4.2	9.5	5	0.06
AUG					
23...	0955	2.3	14.5	6	0.04

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339380 MARTIS CREEK LAKE NEAR TRUCKEE, CA

LOCATION.--Lat 39°19'38", long 120°06'48", in NE 1/4 NW 1/4 sec.17, T.17 N., R.17 E., Nevada County, Hydrologic Unit 16050102, in control house at Martis Creek Dam, 2.0 mi upstream from mouth, and 3.5 mi east of Truckee.  
DRAINAGE AREA.--39.6 mi<sup>2</sup>.

## WATER-CONTENT RECORDS

PERIOD OF RECORD.--March to May 1972 (occasional readings only), June 1972 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by rolled-earthfill dam. Storage began Oct. 7, 1971. Usable capacity, 19,600 acre-ft between elevations 5,780 ft, bottom of intake tower, and 5,838 ft, crest of spillway. Dead contents, below elevation 5,780 ft, 775 acre-ft. Figures given herein, including extremes, represent total contents. Reservoir is used for flood control, enhancement of fishery, and recreation.

COOPERATION.--Capacity tables were provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 7,700 acre-ft, May 11, 12, 1980, elevation, 5,815.16 ft; minimum since reservoir first filled, 768 acre-ft, Aug. 24, 1977, elevation, 5,779.88 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 803 acre-ft, Mar. 4, 5, elevation, 5,780.45 ft; minimum, 776 acre-ft, July 18, 19, elevation, 5,780.02 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated September 1975 provided by U.S. Army Corps of Engineers)

5,779	716	5,800	3,260
5,780	775	5,810	5,880
5,785	1,140	5,820	9,720
5,790	1,650		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	784	787	789	785	789	799	792	789	790	781	779	779
2	783	787	789	786	787	801	792	790	787	780	777	779
3	783	787	788	790	787	802	793	789	786	779	777	778
4	783	787	787	793	787	803	792	789	784	779	778	778
5	784	787	787	793	787	801	793	788	784	778	777	778
6	784	787	802	791	787	800	792	789	786	779	777	777
7	784	787	795	790	787	798	792	790	789	779	777	777
8	784	787	790	789	788	797	792	789	789	779	777	777
9	784	787	795	789	789	796	791	789	787	779	778	777
10	784	787	798	790	789	794	791	788	787	779	778	778
11	784	787	794	789	789	792	791	787	786	777	779	778
12	787	787	789	789	790	792	791	786	786	777	779	779
13	786	793	787	789	789	791	792	787	785	777	778	779
14	786	790	786	789	789	791	798	787	785	777	778	780
15	786	789	787	790	790	791	797	786	785	777	778	781
16	786	788	789	788	789	790	795	786	785	777	778	781
17	786	792	787	789	790	790	793	787	784	777	777	781
18	786	790	789	788	789	791	792	787	784	776	777	781
19	786	789	788	787	789	792	795	786	784	776	777	781
20	786	788	788	788	790	792	795	786	783	777	777	782
21	786	787	788	788	790	793	794	785	783	777	777	783
22	787	787	789	788	791	792	792	785	782	777	777	783
23	792	787	787	788	792	792	792	784	782	771	777	783
24	789	787	786	788	793	794	791	784	782	781	777	782
25	787	787	786	788	795	794	790	784	786	782	777	782
26	787	786	786	788	796	793	790	784	785	787	777	782
27	786	787	786	789	796	793	789	784	783	785	777	782
28	789	787	788	789	801	792	789	786	782	782	777	783
29	789	787	787	789	801	792	788	792	782	781	779	782
30	787	787	787	789	---	790	789	791	781	781	780	782
31	787	---	786	788	---	790	---	790	---	780	779	---
MAX	792	793	802	793	801	803	798	792	790	787	780	783
MIN	783	786	786	785	787	790	788	784	781	776	777	777
a	5780.20	5780.20	5780.18	5780.21	5780.42	5780.25	5780.22	5780.24	5780.10	5780.08	5780.07	5780.12
b	+4	0	-1	+2	+13	-11	-1	+1	-9	-1	-1	+3

CAL YR 1987 MAX 854 MIN 779 b -7  
WTR YR 1988 MAX 803 MIN 776 b -1

a Elevation, in feet, at end of month.  
b Change in contents, in acre-feet.



## PYRAMID AND WINNEMUCCA LAKES BASIN

10339380 MARTIS CREEK LAKE NEAR TRUCKEE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

CHEMICAL DATA: Water years 1975 to current year.

SEDIMENT DATA: Water years 1975-76, 1978 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	CAR- BONATE WATER WH FET FIELD MG/L AS CO3	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3
OCT 09...	1110	132	10.1	14.5	4.2	620	11.9	144	28	49
APR 08...	1300	140	8.8	11.5	4.6	620	9.6	109	5	62
JUN 09...	1145	139	9.4	14.0	3.2	620	9.6	115	17	62
AUG 23...	1130	155	9.8	20.5	2.6	625	10.8	147	29	70

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)
OCT 09...	<0.100	0.020	1.7	1.7	--	0.080	0.030	8	3
APR 08...	<0.100	0.020	0.28	0.30	--	0.030	0.020	6	2
JUN 09...	0.400	0.030	0.17	0.20	0.60	0.030	0.020	3	2
AUG 23...	<0.100	0.030	0.87	0.90	--	0.050	0.020	5	3

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 09...	310	140	--	<5	6	20	10	10	7
APR 08...	370	75	17	<5	<4	20	2	20	7
JUN 09...	240	83	8	<5	<4	30	3	<10	<3
AUG 23...	160	20	33	<5	<4	20	5	10	12

&lt; Actual value is known to be less than the value shown.

## SUSPENDED SEDIMENT CONCENTRATION, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)
OCT 09...	1115	14.5	4
APR 08...	1305	11.5	8
JUN 09...	1150	14.0	5
AUG 23...	1135	20.5	4

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339400 MARTIS CREEK NEAR TRUCKEE, CA

LOCATION.--Lat 39°19'44", long 120°07'00", in NE 1/4 NW 1/4 sec.17, T.17 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 0.2 mi downstream from Martis Creek Lake Dam, 1.8 mi upstream from mouth, and 3.5 mi east of Truckee.

DRAINAGE AREA.--39.9 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,730 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 10, 1972, at site 1.0 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Feb. 6-9. Records good. Low and medium flow may be regulated and high flow completely regulated by Martis Creek Lake (station 10339380) since Oct. 7, 1971.

AVERAGE DISCHARGE (unadjusted).--30 years, 26.5 ft<sup>3</sup>/s, 19,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,880 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 6.16 ft, site and datum then in use; minimum, 1.1 ft<sup>3</sup>/s, July 19, 20, 1961. Maximum discharge since construction of Martis Creek Lake Dam in 1971, 663 ft<sup>3</sup>/s, Feb. 28, 1986, gage height, 5.66 ft; maximum gage height, 6.01 ft, Apr. 2, 1974; minimum daily, 0.20 ft<sup>3</sup>/s, Nov. 9-14, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20 ft<sup>3</sup>/s, Dec. 6, 7, gage height, 2.17 ft; minimum daily, 3.4 ft<sup>3</sup>/s, July 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	8.9	9.9	11	11	18	11	9.3	9.2	4.8	4.9	4.9
2	6.2	8.9	10	11	11	17	11	9.4	8.9	4.7	4.7	5.0
3	6.0	8.8	10	11	10	18	11	9.0	7.9	4.6	4.6	5.1
4	6.0	8.8	10	12	10	19	11	8.7	7.3	4.5	4.5	5.0
5	6.0	8.9	9.9	14	11	18	11	8.2	6.5	4.4	4.6	5.0
6	6.1	8.9	13	13	11	18	11	8.6	6.7	4.4	4.6	4.8
7	6.0	8.8	16	11	11	17	11	9.1	7.8	4.4	4.6	4.7
8	6.1	8.6	12	11	11	15	11	9.5	8.4	4.4	4.6	4.6
9	6.3	8.6	12	10	11	15	10	8.9	7.9	4.4	4.6	4.6
10	6.3	8.9	15	11	11	13	10	8.4	7.5	4.3	4.6	4.7
11	6.4	8.9	14	12	11	12	10	8.2	7.1	4.2	4.7	4.7
12	7.3	8.9	12	9.9	11	11	9.9	8.0	6.9	4.0	4.8	4.8
13	7.4	10	9.9	11	11	11	10	7.6	6.6	4.1	4.8	4.9
14	7.1	12	9.1	11	11	11	13	7.7	6.6	4.0	4.7	5.0
15	6.9	10	9.6	12	11	11	15	7.6	6.4	4.1	4.6	5.2
16	7.1	9.6	10	11	11	11	14	7.4	6.4	4.1	4.6	5.2
17	7.1	10	10	10	11	11	12	7.3	6.4	4.0	4.6	5.1
18	7.1	11	9.8	11	11	11	11	7.6	6.2	4.0	4.6	5.1
19	7.2	10	10	10	11	11	12	7.4	6.0	3.9	4.5	5.0
20	7.4	9.7	10	10	11	12	13	7.1	5.8	3.4	4.4	5.0
21	7.3	9.5	10	10	12	12	12	6.9	5.7	4.0	4.4	5.4
22	7.4	9.5	11	10	12	12	12	6.8	5.5	4.2	4.4	5.7
23	9.2	9.1	10	11	12	12	11	6.8	5.4	4.4	4.5	5.6
24	9.7	9.2	9.7	11	13	13	10	6.7	5.4	5.1	4.6	5.4
25	8.7	9.6	9.5	11	14	13	10	6.6	6.0	5.2	4.6	5.4
26	8.2	9.1	9.5	11	15	13	9.8	6.6	6.5	6.0	4.5	5.1
27	8.0	9.0	9.5	12	15	13	9.5	6.8	5.8	7.1	4.5	5.0
28	8.5	9.4	9.9	12	17	12	9.3	7.0	5.4	6.2	4.5	5.0
29	9.2	9.2	11	12	18	12	9.0	9.1	5.2	5.6	4.7	5.0
30	9.1	9.4	11	12	---	11	8.8	9.9	5.0	5.3	5.1	4.9
31	8.9	---	11	11	---	11	---	9.6	---	5.1	4.9	---
TOTAL	226.2	281.2	334.3	345.9	346	414	329.3	247.8	198.4	142.9	143.3	150.9
MEAN	7.30	9.37	10.8	11.2	11.9	13.4	11.0	7.99	6.61	4.61	4.62	5.03
MAX	9.7	12	16	14	18	19	15	9.9	9.2	7.1	5.1	5.7
MIN	6.0	8.6	9.1	9.9	10	11	8.8	6.6	5.0	3.4	4.4	4.6
AC-FT	449	558	663	686	686	821	653	492	394	283	284	299

CAL YR 1987 TOTAL 4193.8 MEAN 11.5 MAX 112 MIN 4.7 AC-FT 8320  
WTR YR 1988 TOTAL 3160.2 MEAN 8.63 MAX 19 MIN 3.4 AC-FT 6270

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339400 MARTIS CREEK NEAR TRUCKEE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

CHEMICAL DATA: Water years 1975 to current year.

WATER TEMPERATURE: Water years 1975 to current year.

SEDIMENT DATA: Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1974 to current year.

INSTRUMENTATION.--Digital water-temperature recorder since October 1974.

REMARKS.--Temperature record complete for year. Unpublished chemical-quality, water temperature, and sediment data prior to October 1974, available at U.S. Geological Survey office in Carson City, Nevada.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 24.0 °C, on several days in 1977 and 1979; minimum recorded, 0.0 °C, Feb. 16, 17, 1982.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.0 °C, Jul. 21, 22, Aug. 3, 5, 8; minimum recorded, 1.5 °C, Feb. 3-6.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION)	CAR- BONATE WATER WH FET FIELD MG/L AS CO3
OCT										
09...	1300	6.2	139	9.5	14.5	5.9	620	10.1	122	22
APR										
08...	1420	11	147	8.8	12.0	4.0	620	9.5	109	3
JUN										
09...	1330	8.2	141	9.4	14.5	2.7	620	9.1	110	16
AUG										
23...	1220	4.4	150	9.3	20.0	4.5	625	9.6	130	14

DATE	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)
OCT										
09...	48	0.400	0.030	0.67	0.70	1.1	0.080	0.050	2	1
APR										
08...	58	<0.100	0.010	0.19	0.20	--	0.030	0.020	4	<1
JUN										
09...	63	<0.100	0.030	0.27	0.30	--	0.040	0.020	6	1
AUG										
23...	69	<0.100	0.030	0.47	0.50	--	0.070	0.050	3	1

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT									
09...	360	110	6	<5	7	40	14	<10	<3
APR									
08...	280	62	7	<5	<4	30	6	<10	<3
JUN									
09...	250	94	14	<5	<4	20	9	<10	<3
AUG									
23...	380	<3	5	<5	<4	50	10	<20	<3

&lt; Actual value is known to be less than the value shown.

PYRAMID AND WINNEMUCCA LAKES BASIN  
10339400 MARTIS CREEK NEAR TRUCKEE, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	16.5	11.5	10.5	9.5	6.0	5.0	4.0	3.0	3.5	2.0	5.0	4.5
2	15.0	12.0	11.0	9.0	5.5	5.0	4.0	3.5	3.5	2.0	6.0	4.5
3	15.0	12.0	10.0	8.5	6.0	5.0	4.0	3.0	3.5	1.5	5.5	4.0
4	15.0	12.0	10.5	8.5	6.0	5.0	4.0	3.5	3.5	1.5	5.5	4.0
5	15.0	12.0	9.5	8.5	6.0	5.0	4.0	3.0	3.5	1.5	5.5	4.0
6	15.0	11.5	9.5	8.5	5.0	4.5	4.0	3.0	3.5	1.5	5.5	4.5
7	14.5	12.0	9.5	8.0	5.0	4.0	4.0	3.0	4.0	2.0	5.5	4.0
8	14.5	12.0	9.5	8.0	4.5	3.0	4.0	3.0	4.0	2.0	6.0	4.0
9	14.5	12.0	9.5	8.0	5.0	3.5	4.0	3.0	4.0	2.0	5.5	4.0
10	14.5	12.0	9.5	8.0	5.0	4.5	4.5	2.5	4.0	2.0	5.5	4.0
11	14.5	12.0	9.5	7.5	5.0	3.5	4.0	2.5	4.0	2.0	6.0	4.0
12	14.5	12.0	9.0	7.5	4.5	3.5	4.0	2.5	4.0	2.0	6.0	4.0
13	14.0	11.5	8.5	7.5	5.0	3.5	4.0	3.0	4.0	2.0	6.0	4.0
14	13.5	11.0	8.0	7.0	5.0	4.0	4.0	3.0	4.0	2.0	6.5	4.0
15	13.0	10.5	8.0	6.5	4.5	4.0	3.5	2.0	4.5	2.5	6.0	4.5
16	13.0	10.0	8.0	7.0	4.5	4.0	3.5	2.5	4.0	2.5	6.5	4.0
17	13.0	10.5	7.5	7.0	5.0	3.5	3.5	2.5	4.5	2.5	6.5	4.5
18	12.5	10.0	7.5	7.0	5.0	3.5	3.5	2.0	4.5	3.0	7.0	5.0
19	12.0	9.5	7.5	6.5	5.0	3.5	3.5	2.0	5.0	3.0	8.5	5.5
20	12.0	9.5	8.0	6.5	4.5	3.5	3.5	2.0	5.0	3.0	9.0	6.0
21	12.0	9.5	7.5	6.5	4.5	4.0	3.5	2.0	5.0	3.0	7.5	6.5
22	11.0	10.0	7.0	6.0	4.5	3.5	3.5	2.0	5.0	3.0	8.5	6.0
23	11.5	10.5	7.0	5.5	4.0	3.0	4.0	2.0	5.5	3.5	9.5	7.0
24	11.5	10.0	6.5	5.5	4.0	3.0	3.5	2.0	5.5	3.5	9.0	7.0
25	11.5	9.5	6.5	5.0	4.5	3.0	3.5	2.0	5.5	3.5	9.5	7.0
26	11.5	9.5	6.0	4.5	4.5	3.0	3.5	2.0	5.5	4.0	10.0	7.5
27	11.5	10.0	5.5	4.0	4.0	3.0	4.0	2.5	5.0	4.5	9.5	8.0
28	11.5	10.0	5.5	4.5	4.5	3.5	3.5	2.5	5.5	4.5	9.5	7.5
29	11.0	10.0	5.5	4.0	4.0	3.5	3.5	2.5	5.5	4.5	10.0	7.5
30	11.5	10.0	6.0	4.5	4.0	2.5	3.5	2.0	---	---	9.5	7.5
31	11.0	10.0	---	---	4.0	2.5	3.5	2.0	---	---	10.0	7.5
MONTH	16.5	9.5	11.0	4.0	6.0	2.5	4.5	2.0	5.5	1.5	10.0	4.0

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.5	7.5	12.0	9.5	16.5	14.5	22.0	16.0	22.5	17.0	20.5	15.5
2	11.0	8.0	12.0	9.0	18.0	14.0	22.0	16.0	21.5	17.0	21.0	15.5
3	10.5	9.0	13.0	9.5	18.0	14.5	22.0	16.0	23.0	17.0	21.0	15.5
4	11.0	8.5	13.0	10.5	17.0	14.0	22.0	16.5	22.5	17.0	21.0	15.5
5	12.0	8.5	11.5	10.0	17.0	13.0	21.5	16.5	23.0	17.5	20.5	15.5
6	13.0	9.5	11.0	9.5	15.5	12.5	22.0	16.0	21.5	17.0	21.0	15.5
7	12.5	10.0	10.5	9.5	14.5	12.5	22.0	15.5	22.5	17.0	20.5	14.5
8	12.0	9.5	12.0	9.0	15.0	12.0	21.5	15.5	23.0	16.5	20.5	15.0
9	11.5	9.0	13.0	9.5	16.0	12.5	22.0	15.5	22.5	16.5	20.5	15.0
10	13.0	9.5	13.5	9.5	16.5	13.0	21.5	15.5	22.5	17.0	20.0	15.0
11	13.0	10.0	14.5	10.0	16.5	13.0	20.5	15.5	21.5	17.0	19.0	14.0
12	13.5	10.5	15.5	10.5	17.0	12.5	22.0	15.5	22.0	16.5	18.5	14.0
13	13.0	11.0	15.5	12.0	17.5	13.0	22.0	15.5	22.0	16.0	18.5	13.0
14	12.5	11.0	16.5	12.0	18.0	13.5	22.0	15.5	20.5	16.0	18.0	13.0
15	12.5	11.0	16.5	12.5	18.0	14.0	22.0	16.0	21.0	15.5	18.0	13.0
16	13.0	10.5	16.5	13.0	18.0	14.0	22.5	15.5	21.5	15.5	18.0	13.0
17	13.0	10.5	16.5	13.0	19.0	14.5	22.5	16.0	21.0	15.5	17.5	13.0
18	13.0	10.5	16.5	13.0	19.5	14.5	22.5	16.0	21.5	15.0	17.0	12.5
19	12.5	10.5	17.0	12.5	20.0	15.0	22.5	15.5	21.0	15.5	15.5	12.5
20	12.0	10.5	17.5	13.0	19.5	15.5	22.5	15.5	21.5	15.5	15.5	12.0
21	11.5	10.0	18.0	13.5	20.5	15.5	23.0	16.0	21.5	15.5	15.5	11.5
22	11.0	9.5	18.0	14.0	21.0	15.5	23.0	16.5	21.5	15.5	16.0	11.5
23	11.5	9.5	18.5	14.5	21.0	15.5	22.0	16.5	21.0	15.5	15.5	11.5
24	12.0	9.5	19.0	14.0	21.5	16.0	20.5	17.5	20.5	16.0	15.5	11.5
25	12.5	9.5	19.0	14.5	19.0	17.0	21.5	17.5	20.5	15.5	15.5	11.5
26	13.0	10.0	19.0	15.0	21.5	17.5	21.0	17.5	21.5	15.5	16.0	11.5
27	13.0	10.5	18.5	15.0	21.5	16.5	22.0	18.0	21.0	15.5	15.5	11.5
28	14.0	10.5	17.5	15.0	21.5	16.5	22.0	17.5	21.5	15.5	15.5	11.5
29	14.0	11.0	15.5	14.0	21.5	16.0	22.5	17.5	21.0	16.0	15.5	11.5
30	12.0	10.0	16.5	13.5	22.0	16.5	22.0	17.5	21.0	15.5	16.0	11.5
31	---	---	16.5	13.5	---	---	22.5	17.5	20.5	15.5	---	---
MONTH	14.0	7.5	19.0	9.0	22.0	12.0	23.0	15.5	23.0	15.0	21.0	11.5

## PYRAMID AND WINNEMUCCA LAKES BASIN

10339400 MARTIS CREEK NEAR TRUCKEE, CA--Continued

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)
OCT					
09...	1305	6.2	14.5	10	0.17
APR					
08...	1425	11	12.0	8	0.24
JUN					
09...	1335	8.2	14.5	7	0.15
AUG					
23...	1225	4.4	20.5	11	0.13

## PYRAMID AND WINNEMUCCA LAKES BASIN

## 10340300 PROSSER CREEK RESERVOIR NEAR TRUCKEE, CA

LOCATION.--Lat 39°22'46", long 120°08'12", in NW 1/4 SW 1/4 sec.30, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, in control house on Prosser Creek Dam on Prosser Creek, 1.4 mi upstream from mouth, and 4.2 mi northeast of Truckee.

DRAINAGE AREA.--50.3 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1963 to current year. January 1963 to September 1987 (monthend elevations and contents only). Prior to October 1976, published as "near Boca."

GAGE.--Nonrecording gage read three times weekly. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REVISED RECORDS.--WDR CA-76-3: 1975. WDR CA-79-3: Drainage area.

REMARKS.--Reservoir is formed by rolled-earth and rockfill dam. Storage began Jan. 30, 1963. Usable capacity, 28,641 acre-ft between elevations 5,660.6 ft, top of inactive contents, and 5,741.2 ft, crest of spillway. Inactive contents, 1,201 acre-ft, includes 83 acre-ft dead contents below elevation 5,637.0 ft. Figures given represent total contents at 0800 hours. Reservoir is used for flood control, enhancement of fishery, and recreation.

COOPERATION.--Gage readings and capacity table were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents, 32,269 acre-ft, June 1, 1973, elevation, 5,744.33 ft; minimum since reservoir first filled, 66 acre-ft, Oct. 10-12, 1983, elevation, 5,635.75 ft.

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents observed, 13,425 acre-ft, Oct. 2, elevation, 5,713.09 ft; minimum observed, 3,844 acre-ft, Sept. 30, elevation, 5,680.29 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated August 1962, provided by U.S. Bureau of Reclamation)

5,630	17	5,670	2,230	5,710	12,147
5,640	143	5,680	3,791	5,720	16,643
5,650	491	5,690	5,901	5,730	22,220
5,660	1,148	5,700	8,636	5,740	28,949
				5,750	37,046

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	9797	---	9740	---	9895	9838	9804	---
2	13425	9862	9662	---	---	10091	---	9960	---	---	---	3990
3	---	---	---	---	9767	---	---	---	10071	---	9787	---
4	---	9858	9730	9797	---	10032	9727	9994	---	---	---	---
5	13389	---	---	---	9744	---	---	---	---	9875	9767	3973
6	---	9858	---	9865	---	---	9723	10057	10140	9875	---	---
7	13364	---	9831	---	---	9984	---	---	---	---	---	3957
8	---	---	---	9922	9713	---	9898	---	10126	9885	9737	---
9	13347	9862	9895	---	---	9981	---	9936	---	---	---	3943
10	---	---	---	---	9740	---	---	---	10095	---	9011	---
11	---	---	10188	9929	---	9939	10064	9960	---	9888	---	---
12	---	---	---	---	9814	---	---	---	---	---	8137	3918
13	13326	9865	---	9915	---	---	10251	10178	10043	9882	---	---
14	13318	---	10091	---	---	9797	---	---	---	---	---	3907
15	---	---	---	9922	---	---	10410	---	10029	9872	6706	---
16	13301	9918	9858	---	9984	9750	---	10413	---	---	---	3898
17	---	---	---	---	10022	---	---	---	10043	---	5708	---
18	---	9950	9800	---	---	9831	10258	10300	---	9862	---	---
19	12682	---	---	---	10054	---	---	---	---	---	4661	3879
20	---	9970	---	---	---	---	10150	10115	10001	9848	---	---
21	12188	---	9516	---	---	---	---	---	---	---	---	3874
22	---	---	---	9882	10032	---	10004	---	9946	9831	4046	---
23	11728	9891	9559	---	---	10202	---	9946	---	---	---	3869
24	---	---	---	---	10036	---	---	---	9918	---	4035	---
25	---	9824	---	9845	---	10164	10043	9974	---	9821	---	---
26	11009	---	---	---	10068	---	---	---	---	---	4025	3857
27	---	---	---	9824	---	---	10095	9950	9807	9828	---	---
28	10541	---	9639	---	---	10068	---	---	---	---	---	3850
29	---	---	---	9814	10150	---	10143	---	9804	9817	4007	---
30	10085	9649	9686	---	---	9922	---	---	---	---	---	3844
31	---	---	---	---	---	---	---	9878	---	---	4002	---

## PYRAMID AND WINNEMUCCA LAKES BASIN

10340500 PROSSER CREEK BELOW PROSSER CREEK DAM, NEAR TRUCKEE, CA

LOCATION.--Lat 39°22'24", long 120°07'50", in NW 1/4 NE 1/4 sec.31, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 300 ft downstream from Station Creek, 0.5 mi downstream from Prosser Creek Dam, 0.9 mi upstream from mouth, and 4.2 mi northeast of Truckee.

DRAINAGE AREA.--52.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1902 to June 1903 (gage heights only), October 1942 to December 1950, June 1951 to current year. Prior to October 1976, published as "near Boca." Monthly discharge only for October 1942 to December 1950, published in WSP 1734. Records for April 1889 to November 1890, published in the 11th and 12th Annual Reports, Part 2, have been found to be unreliable and should not be used.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,602.31 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). See WSP 2127 for history of changes prior to September 1956. October 1956 to May 1976, water-stage recorder at site 0.8 mi downstream at datum 29.69 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Prosser Creek Reservoir since Jan. 31, 1963.

AVERAGE DISCHARGE (adjusted for change in contents in Prosser Creek Reservoir since 1963).--45 years (water years 1943-50, 1952-88), 88.8 ft<sup>3</sup>/s, 64,340 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (water years 1943-88).--Maximum discharge, 4,560 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 10.13 ft, present datum, from rating curve extended above 910 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; maximum gage height, 11.0 ft from floodmarks, present datum, Nov. 20, 1950; minimum discharge, 0.4 ft<sup>3</sup>/s, July 18, 1961, result of work on dam upstream. Maximum discharge since construction of Prosser Creek Dam in 1963, 1,790 ft<sup>3</sup>/s, Feb. 20-22, 1986, gage height, 6.66 ft, from rating curve extended above 880 ft<sup>3</sup>/s on basis of valve setting at Prosser Creek Dam; minimum daily, 0.02 ft<sup>3</sup>/s, Jan. 2, 1975, result of temporary closing of Prosser Creek Dam for spillway maintenance.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 278 ft<sup>3</sup>/s, Aug. 12, gage height, 4.02 ft; minimum daily, 6.1 ft<sup>3</sup>/s, Sept. 26, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	44	8.9	11	25	58	63	80	46	7.6	7.5	8.9
2	11	23	8.9	11	25	58	53	62	47	7.8	7.6	8.7
3	11	7.5	9.0	12	25	58	53	29	52	7.7	7.8	8.7
4	11	8.6	8.9	11	25	58	53	29	56	7.7	7.7	8.7
5	11	8.9	8.9	11	25	58	53	29	56	8.1	7.8	8.1
6	11	8.9	9.5	11	25	58	40	46	57	8.3	7.8	8.1
7	11	8.9	8.9	11	25	58	25	56	57	8.3	7.9	8.5
8	11	9.1	8.9	18	26	58	30	56	57	8.3	96	8.7
9	12	8.9	9.5	25	15	58	34	46	57	8.3	178	8.7
10	11	8.9	9.5	25	8.6	58	34	30	58	8.0	193	8.4
11	12	9.2	22	25	8.9	57	34	30	57	7.9	204	8.2
12	12	9.2	54	25	8.9	58	34	30	57	7.8	229	8.2
13	11	9.9	54	25	8.9	57	43	39	57	7.8	233	7.7
14	11	9.4	64	26	8.9	58	61	57	57	8.1	230	7.8
15	11	9.1	81	25	8.9	46	81	58	58	7.8	245	7.3
16	35	9.5	50	25	8.9	21	92	77	58	7.7	252	6.8
17	118	9.6	32	25	17	21	90	121	58	7.6	256	6.7
18	118	9.5	51	25	21	21	90	122	57	7.7	240	6.7
19	116	8.9	62	24	27	21	90	113	57	7.3	235	6.8
20	116	18	62	24	31	21	90	110	57	7.3	125	6.6
21	116	26	34	25	31	21	90	104	57	7.6	7.8	6.5
22	115	26	11	25	31	21	63	103	54	7.4	7.7	6.6
23	115	25	11	25	32	59	43	85	47	7.3	7.7	6.6
24	114	26	11	25	31	84	43	74	48	7.2	7.9	6.6
25	114	26	11	25	31	84	43	75	48	7.3	7.9	6.6
26	113	25	12	25	31	84	43	76	47	7.2	7.9	6.1
27	113	26	12	25	31	84	45	75	41	7.1	8.4	6.1
28	113	25	12	25	31	84	51	76	11	7.1	8.4	6.6
29	113	25	12	25	48	84	63	76	10	7.4	8.6	7.0
30	67	20	12	25	---	83	79	75	7.7	7.6	8.5	7.1
31	44	---	11	25	---	83	---	66	---	7.4	8.7	---
TOTAL	1808	489.0	771.9	670	671.0	1732	1706	2105	1486.7	237.7	2859.6	224.1
MEAN	58.3	16.3	24.9	21.6	23.1	55.9	56.9	67.9	49.6	7.67	92.2	7.47
MAX	118	44	81	26	48	84	92	122	58	8.3	256	8.9
MIN	11	7.5	8.9	11	8.6	21	25	29	7.7	7.1	7.5	6.1
AC-FT	3590	970	1530	1330	1330	3440	3380	4180	2950	471	5670	445

CAL YR 1987 TOTAL 12762.7 MEAN 35.0 MAX 149 MIN 7.5 AC-FT 25310 MEAN a 34.8 AC-FT a 25210  
WTR YR 1988 TOTAL 14761.0 MEAN 40.3 MAX 256 MIN 6.1 AC-FT 29280 MEAN a 27.1 AC-FT a 19680

a Adjusted for change in contents in Prosser Creek Reservoir.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10343000 INDEPENDENCE CREEK NEAR TRUCKEE, CA

LOCATION.--Lat 39°27'24", long 120°17'10", in SW 1/4 NW 1/4 sec.35, T.19 N., R.15 E., Sierra County, Hydrologic Unit 16050102, on left bank 0.4 mi downstream from Independence Lake outlet and 10.5 mi northwest of Truckee.

DRAINAGE AREA.--8.10 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1902 to September 1907, November 1909 to June 1910, August 1968 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 6,940 ft above National Geodetic Vertical Datum of 1929, from topographic map. July 1, 1904, to June 30, 1910, nonrecording gage 75 ft downstream from Independence Lake outlet; prior to July 1, 1904, nonrecording gage 600 ft downstream at approximately same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by dam at outlet of Independence Lake, usable capacity, 17,500 acre-ft.

AVERAGE DISCHARGE (unadjusted).--25 years (water years 1903-7, 1969-88), 27.1 ft<sup>3</sup>/s, 19,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 291 ft<sup>3</sup>/s, Dec. 20, 1981, gage height, 6.12 ft; no flow Sept. 28 to Nov. 10, 1905, June 1, 1906.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 153 ft<sup>3</sup>/s, Aug. 24, gage height, 4.48 ft; minimum daily, 0.93 ft<sup>3</sup>/s, Sept. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	5.8	5.4	5.5	5.1	4.8	5.5	4.8	4.4	4.8	72	30
2	6.6	5.8	5.3	5.4	5.1	4.8	5.5	5.0	4.2	4.8	75	27
3	6.4	5.8	5.1	5.0	5.1	4.8	5.5	5.1	4.3	4.8	87	23
4	6.2	5.8	5.1	4.8	5.1	4.8	5.5	5.1	4.4	5.1	113	21
5	6.2	5.8	5.1	4.8	5.1	4.8	5.5	5.1	4.4	5.0	124	18
6	6.2	5.8	5.1	5.0	5.1	4.8	5.5	5.1	4.3	5.1	124	15
7	6.1	5.7	5.1	5.3	5.1	4.8	5.5	5.1	4.4	4.9	124	13
8	6.1	5.5	5.1	5.1	5.1	4.8	5.5	5.0	4.4	4.8	125	11
9	5.9	5.5	5.4	5.4	5.1	4.8	5.5	4.8	4.4	4.8	125	9.4
10	6.0	5.5	5.5	5.5	5.2	4.8	5.5	4.8	4.4	5.0	126	7.9
11	6.2	5.5	5.4	5.5	5.2	4.8	5.5	4.8	4.4	5.1	129	6.7
12	6.2	5.5	5.2	5.5	4.8	4.8	5.5	4.8	4.4	5.1	126	5.3
13	6.0	5.5	5.3	5.3	4.9	4.8	5.5	4.8	4.6	5.1	126	4.8
14	5.8	5.5	5.2	5.2	5.0	4.8	5.7	4.7	4.5	5.1	127	4.4
15	5.8	5.5	5.2	5.5	5.0	4.8	5.8	4.8	4.7	4.9	127	4.0
16	5.8	5.3	5.5	5.5	4.9	4.8	5.6	4.6	4.7	4.8	126	3.3
17	5.8	5.3	5.4	5.5	5.0	4.8	5.5	4.7	4.8	5.0	126	2.7
18	5.8	5.1	5.5	5.5	5.1	4.9	5.5	4.5	4.8	5.0	126	2.2
19	5.8	5.4	5.5	5.5	5.0	4.9	5.6	4.4	5.1	4.9	127	2.1
20	5.8	5.1	5.5	5.5	5.1	5.4	5.8	4.4	5.1	4.8	130	1.7
21	5.8	5.1	5.5	5.5	4.8	5.5	5.8	4.6	5.1	5.1	131	1.5
22	5.8	5.1	5.5	5.4	4.8	5.5	5.5	4.7	4.9	5.1	134	1.4
23	5.8	5.2	5.5	5.4	4.8	5.5	5.5	4.4	4.8	5.0	149	1.3
24	5.8	5.4	5.5	5.5	4.8	5.6	5.5	4.4	4.8	5.1	148	1.1
25	5.6	5.5	5.5	5.4	4.8	5.6	5.5	4.2	4.8	4.9	149	.93
26	5.5	5.5	5.5	5.4	4.8	5.7	5.5	4.1	4.8	79	134	3.7
27	5.5	5.5	5.5	5.5	4.8	5.8	5.5	4.1	4.8	75	99	5.3
28	5.5	5.5	5.5	5.1	4.8	5.5	5.3	4.1	5.0	75	74	4.8
29	5.8	5.4	5.5	5.1	4.8	5.5	5.2	4.1	4.9	74	57	4.4
30	5.8	5.5	5.5	5.1	---	5.5	4.9	4.0	5.0	74	45	4.1
31	5.8	---	5.5	5.1	---	5.5	---	4.1	---	73	36	---
TOTAL	183.8	164.4	166.4	164.8	144.3	158.0	165.2	143.2	139.6	618.2	3521	241.03
MEAN	5.93	5.48	5.37	5.32	4.98	5.10	5.51	4.62	4.65	19.9	114	8.03
MAX	6.6	5.8	5.5	5.5	5.2	5.8	5.8	5.1	5.1	79	149	30
MIN	5.5	5.1	5.1	4.8	4.8	4.8	4.9	4.0	4.2	4.8	36	.93
AC-FT	365	326	330	327	286	313	328	284	277	1230	6980	478

CAL YR 1987 TOTAL 3386.0 MEAN 9.28 MAX 15 MIN 5.1 AC-FT 6720  
WTR YR 1988 TOTAL 5809.93 MEAN 15.9 MAX 149 MIN .93 AC-FT 11520



## PYRAMID AND WINNEMUCCA LAKES BASIN

10343500 SAGEHEN CREEK NEAR TRUCKEE, CA  
(Hydrologic bench-mark station)

LOCATION.--Lat 39°25'54", long 120°14'13", in NE 1/4 NE 1/4 sec.7, T.18 N., R.16 E., Nevada County, Hydrologic Unit 16050102, on left bank 2.2 mi upstream from bridge on State Highway 89 and 7.5 mi north of Truckee.

DRAINAGE AREA.--10.5 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1953 to current year.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 6,320 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 2, 1953, nonrecording gage at site 100 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Oct. 1-5, Dec. 8, 25, 28-30. Records good. No storage or diversion upstream from station.

AVERAGE DISCHARGE.--35 years, 12.8 ft<sup>3</sup>/s, 9,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 765 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 4.64 ft from floodmarks, from rating curve extended above 160 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 4.28 ft; minimum, 0.6 ft<sup>3</sup>/s, Aug. 8, 1960, Aug. 7, 1961, result of temporary regulation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 8	1100	ice jam	*2.01	Dec. 10	1415	*12	1.99

Minimum daily, 1.5 ft<sup>3</sup>/s, Aug. 1-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.5	3.1	2.6	3.2	4.6	5.9	5.0	4.5	1.8	1.5	1.8
2	2.1	2.6	5.4	2.6	3.1	4.4	6.3	4.7	3.5	1.7	1.5	2.0
3	2.1	2.6	3.8	2.9	3.2	4.6	7.1	4.4	2.9	1.7	1.5	1.7
4	2.1	2.6	3.3	3.3	3.2	5.1	6.8	4.3	2.8	1.7	1.5	1.7
5	2.1	2.6	3.2	3.8	3.0	5.5	6.9	4.1	2.8	1.7	1.5	1.7
6	2.1	2.6	5.7	3.4	3.0	5.6	7.8	4.1	3.0	1.7	1.5	1.6
7	2.1	2.6	4.4	3.2	2.9	5.4	8.2	4.0	4.0	1.7	1.5	1.6
8	2.1	2.6	3.8	3.2	3.0	5.8	7.4	3.9	3.6	1.7	1.5	1.6
9	2.2	2.7	4.7	3.3	3.0	5.8	6.7	3.6	3.1	1.8	1.5	1.6
10	2.2	2.5	9.3	3.3	3.1	4.8	6.7	3.5	2.9	1.7	1.5	1.6
11	2.2	2.5	5.7	3.2	3.2	4.4	7.2	3.5	2.8	1.7	1.5	1.7
12	2.8	2.5	3.9	3.1	3.2	4.2	7.2	3.4	2.6	1.7	1.5	1.7
13	2.4	4.2	3.3	3.2	3.2	4.1	7.9	3.3	2.5	1.7	1.5	1.7
14	2.3	3.2	3.3	3.0	3.2	4.2	10	3.1	2.5	1.7	1.5	1.6
15	2.3	2.7	3.0	3.2	3.2	4.4	8.7	3.0	2.3	1.7	1.5	1.6
16	2.3	2.8	3.0	3.2	3.5	4.2	7.3	3.0	2.3	1.6	1.5	1.6
17	2.3	3.6	3.0	3.3	3.4	4.4	6.9	3.5	2.3	1.6	1.5	1.6
18	2.3	3.3	2.9	3.2	3.4	4.9	6.5	3.2	2.1	1.6	1.5	1.6
19	2.3	3.0	2.9	3.1	3.2	5.7	7.8	2.9	2.1	1.6	1.5	1.7
20	2.3	2.8	2.9	3.1	3.2	6.4	8.0	2.8	2.2	1.6	1.5	1.8
21	2.3	2.8	2.9	3.1	3.2	6.7	6.8	2.8	2.0	1.6	1.5	1.8
22	2.4	2.7	3.0	3.0	3.4	6.9	6.5	2.7	2.0	1.7	1.5	1.7
23	3.0	2.5	3.0	3.0	3.5	8.6	5.9	2.6	1.9	1.7	1.5	1.7
24	2.7	2.5	3.0	3.0	3.7	8.1	5.7	2.6	2.0	1.8	1.5	1.7
25	2.5	2.6	2.9	3.1	3.9	8.4	5.7	2.5	2.4	1.8	1.5	1.6
26	2.5	2.5	2.8	3.0	4.1	9.0	5.4	2.5	2.2	2.0	1.6	1.6
27	2.5	2.4	2.7	3.1	4.2	8.3	5.4	2.5	2.0	2.0	1.6	1.6
28	2.7	2.5	2.7	3.2	4.6	6.8	5.2	3.2	1.9	1.7	1.6	1.6
29	2.7	2.4	2.6	3.2	4.7	6.5	5.1	4.6	1.9	1.6	1.6	1.6
30	2.6	2.5	2.6	3.2	---	6.1	5.1	3.9	1.8	1.6	1.6	1.6
31	2.5	---	2.5	3.2	---	5.7	---	3.6	---	1.6	1.6	---
TOTAL	73.1	81.9	111.3	97.3	98.7	179.6	204.1	106.8	76.9	52.8	47.1	50.0
MEAN	2.36	2.73	3.59	3.14	3.40	5.79	6.80	3.45	2.56	1.70	1.52	1.67
MAX	3.0	4.2	9.3	3.8	4.7	9.0	10	5.0	4.5	2.0	1.6	2.0
MIN	2.1	2.4	2.5	2.6	2.9	4.1	5.1	2.5	1.8	1.6	1.5	1.6
AC-FT	145	162	221	193	196	356	405	212	153	105	93	99

CAL YR 1987 TOTAL 1709.1 MEAN 4.68 MAX 20 MIN 1.7 AC-FT 3390  
WTR YR 1988 TOTAL 1179.6 MEAN 3.22 MAX 10 MIN 1.5 AC-FT 2340

## PYRAMID AND WINNEMUCCA LAKES BASIN

10343500 SAGEHEN CREEK NEAR TRUCKEE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to 1975 and 1981 to current year.

CHEMICAL DATA: Water years 1968 to 1972 and October 1985 to current year.

WATER TEMPERATURE: Water years 1970 to 1974.

SEDIMENT DATA: Water years 1968 to 1975 and 1981 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1969 to September 1974.

COOPERATION.--Six suspended-sediment samples and 28 water-quality samples were collected by the University of California at Berkeley.

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)
APR									
20...A	1530	13	0.002	<0.010	<0.010	--	0.60	0.016	0.001
23...A	1520	14	<0.001	<0.010	<0.010	0.007	0.40	0.011	0.001
27...A	1520	14	<0.001	<0.010	<0.010	0.009	0.70	0.011	0.001
29...A	1205	13	<0.001	<0.010	<0.010	0.007	0.70	0.009	0.001
MAY									
26...A	1530	5.7	0.003	<0.010	<0.010	0.003	0.20	0.011	0.007
29...A	1515	5.1	0.002	<0.010	<0.010	0.008	0.40	0.014	0.005
JUN									
01...A	1505	4.5	0.002	<0.010	<0.010	--	0.50	0.015	0.006
04...A	1455	4.1	0.002	<0.010	<0.010	0.002	0.30	0.014	0.008
10...A	1525	3.0	0.002	<0.010	--	0.005	0.50	0.080	0.008
12...A	1520	3.0	<0.001	<0.010	<0.010	0.005	0.50	0.017	0.006
15...A	--	4.1	<0.001	<0.010	<0.010	0.002	0.40	0.017	0.006
19...A	1510	3.2	<0.001	<0.010	<0.010	0.002	0.30	0.028	0.001
25...A	1515	3.0	<0.001	<0.010	<0.010	0.002	0.60	0.019	0.002
28...A	1515	3.0	<0.001	<0.010	<0.010	0.004	0.50	0.130	0.001
30...A	1515	3.2	0.002	<0.010	<0.010	0.008	0.40	0.016	0.001
JUL									
02...A	1600	2.9	<0.001	<0.010	<0.010	0.005	0.20	0.018	0.002
08...A	1505	3.2	<0.001	<0.010	<0.010	0.002	0.20	0.038	0.002
16...A	1645	1.9	<0.001	<0.010	<0.010	0.002	0.30	0.019	0.002
22...A	1435	2.1	<0.001	<0.010	<0.010	0.002	0.40	0.016	0.002
SEP									
17...A	1450	2.1	<0.001	<0.010	<0.010	0.002	--	0.011	0.013

A Sample collected by University of California at Berkeley.

&lt; Actual value is known to be less than the value shown.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
10...	1005	2.6	133	8.0	3.0	0.80	610	10.8	100	<1	K7
FEB											
03...	1030	3.3	132	7.7	0.0	1.7	610	11.6	99	K1	K1
MAY											
10...	1015	3.6	110	7.9	6.0	0.80	610	10.0	101	K1	<1
AUG											
26...	1040	1.6	147	8.2	11.0	1.6	610	8.8	100	K16	97

See footnotes at end of table.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10343500 SAGEHEN CREEK NEAR TRUCKEE, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	ALKA- LITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	
	NOV 10...	56	0	14	5.1	6.5	19	0.4	2.5	85	70	70
FEB 03...	52	0	13	4.8	6.1	19	0.4	2.3	68	56	58	
MAY 10...	47	0	12	4.1	5.2	19	0.3	1.7	68	56	57	
AUG 26...	61	0	15	5.6	7.0	19	0.4	3.3	84	69	68	
DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	
NOV 10...	1.0	2.0	0.10	33	108	107	0.15	40	<1	24	<0.5	
FEB 03...	1.4	0.40	0.20	32	99	95	0.13	90	<1	24	<0.5	
MAY 10...	1.2	0.30	0.20	29	77	88	0.10	<10	1	20	<0.5	
AUG 26...	0.40	0.30	0.10	34	111	107	0.15	<10	<1	28	<0.5	
DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	
NOV 10...	<1	<1	<3	1	70	<5	7	4	<0.1	<10	1	
FEB 03...	<1	1	<3	<1	72	<5	<4	4	1.0	<10	1	
MAY 10...	<1	<1	<3	<1	54	<5	<4	3	<0.1	<10	1	
AUG 26...	<1	1	<3	1	50	<5	<4	4	<0.1	<10	<1	
DATE	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)
NOV 1987 10...	<1	<1.0	160	<6	<3	<0.4	<0.4	2.0	<0.4	1.7	<0.4	<0.02
FEB 1988 03...	<1	<1.0	140	<6	<3	0.8	<0.4	1.9	<0.4	1.6	<0.4	0.03
MAY 10...	<1	<1.0	130	<6	<6	0.5	<0.4	2.1	<0.4	1.7	<0.4	0.02
AUG 26...	<1	<1.0	170	<6	<3	--	--	--	--	--	--	--

See footnote at end of table.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10343500 SAGEHEN CREEK NEAR TRUCKEE, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)
OCT										
05...A	1530	2.3	0.001	0.010	0.010	0.002	--	0.011	--	0.013
NOV										
10...	1005	2.6	<0.001	0.034	0.012	0.008	0.40	0.017	0.018	0.012
JAN										
25...A	1545	3.2	0.002	0.018	0.007	0.002	--	0.012	--	0.009
FEB										
03...	1030	3.3	0.002	0.062	0.025	0.015	0.60	0.030	0.031	0.013
22...A	1500	3.5	0.001	0.010	0.010	0.002	--	0.008	--	0.004
22...A	1700	3.5	0.001	0.010	0.010	0.007	--	0.012	--	0.007
23...A	0800	3.5	0.001	0.010	0.010	0.002	--	0.011	--	0.005
23...A	1100	3.5	--	0.029	--	0.029	--	--	--	0.010
APR										
05...A	1510	7.3	0.002	0.010	0.014	0.013	0.20	0.015	--	0.004
MAY										
09...A	1500	3.6	0.002	0.010	0.007	0.005	0.20	0.013	--	0.005
10...	1015	3.6	0.002	0.021	0.020	0.009	<0.20	0.015	0.014	0.007
AUG										
26...	1040	1.6	0.002	0.043	0.020	0.011	<0.20	0.012	0.010	0.010

&lt; Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptable range (non-ideal colony count).

A Sample collected by University of California at Berkeley.

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	SEDI- MENT, SUS- PEN- DED (MG/L)
MAY									
10...*	1220	1.00	101	7.9	12.0	610	8.8	102	4
10...*	1225	1.90	101	8.0	12.0	610	8.8	102	2
10...*	1230	2.90	101	8.0	12.0	610	8.8	102	3
10...*	1235	4.30	101	8.0	12.0	610	8.8	102	3
10...*	1240	6.10	101	8.1	12.0	610	8.8	102	4

\*Instantaneous streamflow at the time of cross-sectional measurement: May 10, 3.4 ft<sup>3</sup>/s.

## SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PEN- DED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PEN- DED (T/DAY)
OCT					
05...A	1535	2.3	10.5	5	0.03
NOV					
10...	0955	2.6	3.0	2	0.01
10...	1000	2.6	3.0	2	0.01
DEC					
15...A	1550	3.0	1.0	8	0.06
JAN					
25...A	1540	3.2	2.0	8	0.07
FEB					
03...	1020	3.3	0.0	5	0.04
APR					
05...A	1515	7.3	10.0	14	0.28
MAY					
09...A	1505	3.6	10.0	6	0.06
10...	1020	3.6	6.0	2	0.02
10...	1025	3.6	6.0	2	0.02
AUG					
26...	1035	1.6	11.0	2	0.01
SEP					
01...A	1300	1.8	15.0	3	0.01

A Sample collected by University of California at Berkeley.

## PYRAMID AND WINNEMUCCA LAKES BASIN

## 10344300 STAMPEDE RESERVOIR NEAR TRUCKEE, CA

LOCATION.--Lat 39°28'14", long 120°06'11", in SE 1/4 NE 1/4 sec.29, T.19 N., R.17 E., Sierra County, Hydrologic Unit 16050102, Tahoe National Forest, in control house near base of spillway of Stampede Dam on Little Truckee River, 0.2 mi upstream from Worn Mill Canyon, and 11.0 mi northeast of Truckee.

DRAINAGE AREA.--136 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1969 to current year. August 1969 to September 1977 (monthend elevations and contents only). October 1977 to September 1987 (daily contents). Prior to October 1976, published as "near Boca."

GAGE.--Nonrecording gage read three times weekly. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--Reservoir is formed by rolled-earth and rockfill dam. Storage began Aug. 1, 1969. Total capacity, 226,500 acre-ft at elevation 5,948.7 ft, spillway crest. Inactive contents, 5,010 acre-ft, includes 660 acre-ft dead contents below elevation 5,798.3 ft. Figures given here, including extremes, represent total contents at 0800 hours. Reservoir is used for flood control, municipal water supply, enhancement of fishery, and recreation.

COOPERATION.--Records and capacity table were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents, 254,493 acre-ft, June 1, 1983, elevation, 5,956.55 ft; minimum since reservoir first filled, 30,772 acre-ft, Jan. 31, Feb. 1, 1978, elevation, 5,853.60 ft.

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents observed, 87,987 acre-ft, Oct. 2, elevation, 5,896.63 ft; minimum observed, 60,955 acre-ft, Sept. 30, elevation, 5,880.53 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated July 1971, provided by U.S. Bureau of Reclamation)

5,850	27,915	5,880	60,185	5,910	115,865	5,940	197,630
5,860	36,470	5,890	76,008	5,920	140,141	5,950	231,005
5,870	47,204	5,900	94,535	5,930	167,355	5,960	267,386

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	78699	---	81260	---	85823	84652	82417	---
2	87987	86985	86496	---	---	78946	---	83731	---	---	---	66125
3	---	---	---	---	78471	---	---	---	85935	---	82381	---
4	---	86928	86534	85115	---	79122	81368	83768	---	84375	---	---
5	87892	---	---	---	78453	---	---	---	---	---	82599	64143
6	---	86928	---	84560	---	---	81458	83731	85823	84320	---	---
7	87797	---	86778	---	---	79511	---	---	---	---	---	63042
8	---	---	---	83933	78488	---	81639	---	85673	84099	82890	---
9	87721	86797	86853	---	---	79830	---	83750	---	---	---	62129
10	---	---	---	---	78488	---	---	---	85916	---	83438	---
11	---	---	87022	83127	---	79919	81873	83933	---	83933	---	---
12	---	---	---	---	78514	---	---	---	---	---	83511	61851
13	87683	86721	---	82490	---	---	82054	84191	85897	83786	---	---
14	87608	---	86985	---	---	80133	---	---	---	---	---	61748
15	---	---	---	81458	---	---	82417	---	85897	83603	82908	---
16	87551	86703	87022	---	78594	80240	---	84634	---	---	---	61674
17	---	---	---	---	78611	---	---	---	---	---	81891	---
18	---	86740	86985	---	---	80472	82817	84874	---	83438	---	---
19	87362	---	---	---	78628	---	---	---	---	---	79795	61468
20	---	86721	---	80472	---	---	83054	85060	85469	83273	---	---
21	87305	---	87060	---	---	---	---	---	---	---	---	61351
22	---	---	---	80008	78681	---	83145	---	85413	83164	76590	---
23	87286	86609	87098	---	---	80740	---	85413	---	---	---	61277
24	---	---	---	---	78752	---	---	---	85227	---	74540	---
25	87154	86609	---	79051	---	80865	83255	85580	---	82963	---	---
26	---	---	---	---	78822	---	---	---	---	---	72526	61145
27	---	---	---	78946	---	---	83658	85617	85227	83127	---	---
28	87267	---	87079	---	---	81153	---	---	---	---	---	61028
29	---	---	---	78769	78893	---	83548	---	85153	82817	69095	---
30	87098	86496	86552	---	---	81206	---	---	---	---	---	60955
31	---	---	---	---	---	---	---	85711	---	---	67408	---

## PYRAMID AND WINNEMUCCA LAKES BASIN

10344400 LITTLE TRUCKEE RIVER ABOVE BOCA RESERVOIR, NEAR TRUCKEE, CA

LOCATION.--Lat 39°26'09", long 120°05'00", in SW 1/4 SW 1/4 sec.3, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 1 mi upstream from Boca Reservoir, 1.5 mi upstream from Dry Creek, 3.0 mi downstream from Stampede Dam, and 5.5 mi northeast of Truckee.

DRAINAGE AREA.--146 mi<sup>2</sup>

PERIOD OF RECORD.--June 1903 to October 1910, September 1939 to current year. Monthly discharge only for some Periods, published in WSP 1314 and 1734. Published as "at Pine Station", June 1903 to December 1907, as "at Starr," January 1908 to October 1910, and as "near Boca," September 1939 to September 1976.

REVISED RECORDS.--WSP 1564: 1903-4, 1906-7, 1910, drainage area at site used in 1903-7.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 5,618.67 ft above National Geodetic Vertical Datum of 1929 (U.S. Bureau of Reclamation bench mark). June 1903 to October 1910, nonrecording gages at different sites and datums.

REMARKS.--Estimated daily discharges: Dec. 14, 23-27, Sept. 25-30. Records excellent except estimated discharges, which are good. Flow regulated by Independence Lake, capacity, 17,500 acre-ft; one transbasin diversion to Sierra Valley, and Stampede Reservoir (station 10344300) since 1969.

AVERAGE DISCHARGE (adjusted for change in contents in Stampede Reservoir since 1969).--56 years (water years 1904-10, 1940-88), 191 ft<sup>3</sup>/s, 138,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 9.00 ft, from rating curve extended above 1,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 0.30 ft<sup>3</sup>/s, Sept. 16-21, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 676 ft<sup>3</sup>/s, Aug. 18, 19, gage height, 2.27 ft; minimum daily, 26 ft<sup>3</sup>/s, June 18, 19, 22, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	28	29	189	92	31	31	31	30	28	106	364
2	29	29	29	189	92	29	30	31	29	28	61	360
3	29	28	29	191	64	29	30	31	29	28	46	354
4	29	28	29	189	43	29	30	31	29	28	29	354
5	29	28	29	190	35	29	30	31	29	28	28	354
6	29	28	31	189	32	28	30	31	29	28	28	274
7	29	28	31	191	32	28	30	31	30	28	28	213
8	29	28	30	189	32	28	31	31	30	28	28	211
9	29	28	30	189	30	29	30	31	29	28	28	185
10	29	28	31	190	32	28	30	31	29	28	28	31
11	29	28	30	190	29	29	31	31	29	28	73	29
12	30	28	29	189	33	28	31	30	29	28	332	28
13	29	29	29	190	29	28	32	31	29	28	153	28
14	29	28	29	189	29	27	33	31	29	28	154	28
15	29	28	28	190	29	27	32	31	29	28	152	28
16	29	28	28	190	29	27	32	31	27	28	353	28
17	29	30	28	189	30	27	31	31	27	28	657	27
18	28	29	30	189	29	27	31	30	26	28	660	27
19	28	29	28	190	30	27	31	30	26	28	660	29
20	28	29	28	191	29	27	31	30	27	28	660	28
21	28	29	28	193	29	27	31	30	27	27	660	28
22	29	29	29	189	28	27	31	30	26	28	660	27
23	29	30	29	189	28	28	31	30	27	30	640	27
24	28	29	29	189	32	28	31	30	26	30	660	27
25	28	29	29	138	29	27	31	30	27	30	659	27
26	28	29	29	88	29	27	30	30	27	29	660	27
27	28	29	29	92	29	27	30	30	27	90	660	27
28	28	29	102	92	32	27	31	31	27	148	660	27
29	29	29	189	92	30	27	31	31	28	148	583	27
30	28	29	189	92	---	28	31	30	29	138	441	27
31	28	---	189	92	---	31	---	30	---	143	360	---
TOTAL	889	858	1456	5239	1046	866	925	948	842	1401	10907	3251
MEAN	28.7	28.6	47.0	169	36.1	27.9	30.8	30.6	28.1	45.2	352	108
MAX	30	30	189	193	92	31	33	31	30	148	660	364
MIN	28	28	28	88	28	27	30	30	26	27	28	27
AC-FT	1760	1700	2890	10390	2070	1720	1830	1880	1670	2780	21630	6450

CAL YR 1987 TOTAL 69198 MEAN 190 MAX 1300 MIN 27 AC-FT 137300 MEAN a 58.1 AC-FT a 42030  
WTR YR 1988 TOTAL 28628 MEAN 78.2 MAX 660 MIN 26 AC-FT 56780 MEAN a 40.9 AC-FT a 29670

a Adjusted for change in contents in Stampede Reservoir.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10344490 BOCA RESERVOIR NEAR TRUCKEE, CA

LOCATION.--Lat 39°23'20", long 120°05'43", in NE 1/4 NW 1/4 sec.28, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, in control house at Boca Dam on Little Truckee River, 1,800 ft upstream from mouth, and 6.3 mi northeast of Truckee.

DRAINAGE AREA.--172 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1938 to current year. Prior to October 1976 published as "at Boca." Monthend contents only for December 1938 to September 1957, published in WSP 1734.

REVISED RECORDS.--WSP 1634: Drainage area.

GAGE.--Pressure gage with mercury column read once daily. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began Dec. 8, 1938. Usable capacity, 40,868 acre-ft between elevations 5,521 ft, outlet sill, and 5,605 ft, top of spillway gates. Elevation of spillway (gate open) is 5,589.01 ft. Dead contents, 241 acre-ft. Records, including extremes, represent usable contents at 0800 hours. Water is used for irrigation in the State of Nevada and for power development.

COOPERATION.--Records and capacity table were provided by U.S. Bureau of Reclamation; not rounded to U.S. Geological Survey standards.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents, 41,440 acre-ft, Dec. 23, 1955, elevation, 5,605.55 ft; minimum, 37 acre-ft, Mar. 4-9, 1955, elevation, 5,521.65 ft.

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 33,070 acre-ft, Oct. 1, 2, elevation, 5,596.60 ft; minimum, 4,396 acre-ft, Aug. 8, 9, elevation, 5,548.15 ft.

Capacity table (elevation, in feet, and contents in acre-feet)  
(Based on table dated November 1970, provided by U.S. Bureau of Reclamation)

5,548	4,352	5,570	13,768
5,552	5,636	5,580	20,002
5,556	7,112	5,590	27,488
5,560	8,778	5,600	36,128
5,565	11,119	5,605	40,868

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33070	25460	17168	9773	10338	10314	10434	12246	14050	15328	7571	13790
2	33070	25343	16854	9796	10195	10338	10482	12299	14135	15196	7250	13785
3	33026	25150	16542	9819	10053	10338	10530	12351	14220	15063	6898	13785
4	32982	24956	16203	9819	9819	10338	10579	12404	14278	14931	6443	13779
5	32938	24726	15898	9796	9588	10338	10627	12457	14306	14798	5987	13779
6	32851	24458	15597	9819	9542	10338	10724	12537	14335	14623	5465	13628
7	32414	24116	15268	9819	9497	10338	10773	12617	14392	14450	4938	13489
8	32023	23814	14973	9842	9451	10338	10822	12671	14450	14278	4396	13158
9	31699	23477	14739	9866	9451	10338	10872	12724	14508	14050	4396	12805
10	31351	23142	14450	9936	9451	10338	10946	12805	14565	13824	4411	12220
11	30961	22773	14278	10006	9451	10338	11020	12886	14623	13600	4456	11649
12	30617	22444	14078	10053	9451	10290	11069	12940	14710	13323	4411	11069
13	30062	22117	13852	10100	9451	10242	11119	12995	14769	13049	4717	10847
14	29554	21828	13656	10147	9474	10195	11219	13049	14827	12778	5051	10627
15	29009	21542	13489	10242	9497	10195	11269	13104	14885	12457	5347	10676
16	28470	21258	13295	10338	9497	10147	11345	13158	14944	12167	5706	10724
17	28141	20940	13104	10434	9520	10147	11421	13213	14973	11855	6350	10773
18	27977	20625	12832	10482	9542	10100	11471	13268	15032	11573	6995	10822
19	27772	20347	12617	10579	9588	10100	11547	13323	15091	11219	7633	10872
20	27691	20106	12431	10676	9657	10100	11624	13378	15150	10872	7859	10946
21	27650	19831	12246	10749	9726	10053	11675	13433	15180	10530	8089	11020
22	27245	19525	11959	10822	9773	10006	11726	13489	15209	10195	8344	11069
23	27084	19255	11675	10921	9842	10006	11778	13544	15268	9819	10242	11119
24	26883	18988	11370	11020	9912	10053	11829	13600	15308	9429	10676	11169
25	26643	18722	11020	11119	10006	10100	11881	13656	15387	9045	11395	11194
26	26444	18458	10676	11069	10076	10147	11959	13712	15417	8690	11881	11244
27	26285	18163	10338	10970	10147	10195	12037	13768	15447	8344	12431	11294
28	26127	17904	9959	10822	10242	10242	12089	13824	15477	8173	12995	11345
29	25891	17775	9912	10676	10338	10290	12141	13880	15447	8068	13600	11395
30	25694	17422	9866	10579	---	10338	12194	13937	15387	7900	13689	11446
31	25577	---	9819	10482	---	10386	---	13993	---	7756	13790	---
MAX	33070	25460	17168	11119	10338	10386	12194	13993	15477	15328	13790	13790
MIN	25577	17422	9819	9773	9451	10003	10434	12246	14050	7756	4396	10627
a	5587.6	5576.1	5562.3	5536.7	5563.4	5563.5	5567.1	5570.4	5572.8	5557.6	5570.0	5565.6
b	-7581	-8155	-7603	+663	-144	+48	+1808	+1799	+1394	-7631	+6034	-2344

CAL YR 1987 b -12,771

WTR YR 1988 b -21,712

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## PYRAMID AND WINNEMUCCA LAKES BASIN

10344500 LITTLE TRUCKEE RIVER BELOW BOCA DAM, NEAR TRUCKEE, CA

LOCATION.--Lat 39°23'13", long 120°05'40", in NE 1/4 NW 1/4 sec.28, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on right bank 800 ft upstream from mouth, 1,000 ft downstream from Boca Dam, and 6.2 mi northeast of Truckee.

DRAINAGE AREA.--173 mi<sup>2</sup>.

PERIOD OF RECORD.--April to October 1890 (monthly discharge only), January 1911 to September 1915, January 1939 to current year. Prior to October 1976 published as "at Boca." Monthly discharge only for January 1939 to September 1957, published in WSP 1734.

REVISED RECORDS.--WDR CA-79-3: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Jan. 1, 1911, to Sept. 30, 1915, nonrecording gage at site 650 ft downstream at different datum. January 1939 to September 1957, records computed from daily log of rated settings of needle valve in dam, and from computed flow over spillway.

REMARKS.--Estimated daily discharges: Sept. 15-30. Records good. Flow regulated by Boca Reservoir (station 10344490); Independence Lake, capacity, 17,500 acre-ft; one transmountain diversion to Sierra Valley, and Stampede Reservoir (station 10344300), since 1969.

AVERAGE DISCHARGE (unadjusted).--53 years (water years 1912-15, 1940-88), 191 ft<sup>3</sup>/s, 138,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft<sup>3</sup>/s, Dec. 24, 1955, from records of Washoe County Water Conservation District; no flow many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 382 ft<sup>3</sup>/s, Aug. 29, 31, Sept. 1-6, gage height, 3.07 ft; minimum daily, 0.27 ft<sup>3</sup>/s, on several days in May.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	81	184	202	156	55	.45	.30	.40	76	241	379
2	50	106	186	201	156	42	.45	.29	.38	91	245	379
3	50	123	187	201	155	42	.46	.28	.38	91	252	380
4	50	138	187	201	154	42	.46	.29	.38	92	266	380
5	51	171	186	188	140	42	.48	.27	.37	92	279	381
6	126	178	185	181	49	42	.45	.27	.38	102	283	382
7	224	189	169	181	48	42	.45	.28	.40	113	277	378
8	209	189	166	175	48	42	.45	.27	.40	131	145	377
9	209	189	175	172	37	42	.45	.27	.40	131	.61	376
10	209	188	148	174	31	42	.45	.27	.43	131	.54	374
11	208	187	115	175	31	42	.44	.29	.49	144	64	370
12	238	187	106	175	30	41	.45	.30	.49	152	242	203
13	285	187	131	170	30	41	.41	.29	.50	152	.58	98
14	284	186	131	159	30	41	.46	.30	.49	163	.51	34
15	283	185	130	155	30	41	.40	.31	.46	172	.58	.45
16	249	185	129	152	30	41	.40	.31	.50	171	67	.45
17	125	185	142	152	28	41	.40	.31	.52	171	323	.45
18	125	171	148	153	.48	41	.38	.31	.57	176	329	.45
19	125	163	134	155	.40	41	.40	.33	.56	195	335	.45
20	125	162	124	156	.40	41	.38	.31	.59	194	339	.45
21	125	162	145	156	.40	41	.31	.31	.64	193	345	.45
22	125	161	166	156	.39	33	.31	.31	.64	207	349	.45
23	125	161	165	156	.37	16	.31	.31	.66	215	353	.45
24	125	161	191	157	.40	.47	.31	.31	.72	214	357	.45
25	125	160	205	157	.42	.48	.31	.31	.73	212	361	.45
26	125	159	204	157	.41	.48	.31	.32	.67	212	365	.45
27	124	159	203	157	.40	.48	.32	.34	6.1	211	369	.45
28	124	159	201	157	.41	.45	.32	.36	38	211	373	.45
29	124	158	201	157	13	.45	.28	.40	51	221	376	.45
30	117	170	201	156	---	.46	.29	.38	51	231	378	.45
31	81	---	201	156	---	.45	---	.40	---	231	379	---
TOTAL	4595	4960	5146	5200	1200.48	937.72	11.74	9.60	159.25	5098	7694.82	4498.20
MEAN	148	165	166	168	41.4	30.2	.39	.31	5.31	164	248	150
MAX	285	189	205	202	156	55	.48	.40	51	231	379	382
MIN	50	81	106	152	.37	.45	.28	.27	.37	76	.51	.45
AC-FT	9110	9840	10210	10310	2380	1860	23	19	316	10110	15260	8920

CAL YR 1987 TOTAL 73367.10 MEAN 201 MAX 994 MIN .27 AC-FT 145500  
WTR YR 1988 TOTAL 39510.81 MEAN 108 MAX 382 MIN .27 AC-FT 78370



## PYRAMID AND WINNEMUCCA LAKES BASIN

10346000 TRUCKEE RIVER AT FARAD, CA

LOCATION.--Lat 39°25'41", long 120°01'59", in SE 1/4 NE 1/4 sec.12, T.18 N., R.17 E., Nevada County, Hydrologic Unit 16050102, on left bank 0.5 mi upstream from Mystic Canyon, 0.7 mi downstream from Farad powerplant, 2.5 mi north of Floriston, and 3.5 mi upstream from California-Nevada State line.

DRAINAGE AREA.--932 mi<sup>2</sup>.

PERIOD OF RECORD.--March to October 1890 (monthly discharge only), September 1899 to current year. Monthly discharge only for January 1944 to July 1957, published in WSP 1734. Published as "near Boca", March to October 1890, "at or near Nevada-California State line," September 1899 to August 1912, and as "at Iceland" August 1912 to December 1937.

CHEMICAL DATA: Water years 1951-61, 1964-81. Published as Truckee River at Floriston (station 10345900) January 1964 to September 1971.

BIOLOGICAL DATA: Water years 1975-77.

SPECIFIC CONDUCTANCE: Water years 1964-80.

SUSPENDED SEDIMENT: Water years 1974, 1978.

WATER TEMPERATURE: Water years 1964-81.

REVISED RECORDS.--WSP 1714: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,153.21 ft above National Geodetic Vertical Datum of 1929 (U.S. Bureau of Reclamation bench mark). See WSP 2127 for history of changes prior to Aug. 26, 1957.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Lake Tahoe, Martis Creek Lake, Prosser Creek, Stampede, and Boca Reservoirs (stations 10337000, 10339380, 10340300, 10344300, and 10344490), Donner and Independence Lakes, and by several powerplants.

AVERAGE DISCHARGE.--89 years (water years 1900-88), 816 ft<sup>3</sup>/s, 591,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 14.5 ft, present datum, from floodmarks, from slope-area measurement of peak flow; minimum, 28 ft<sup>3</sup>/s, Dec. 18, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 775 ft<sup>3</sup>/s, Aug. 12, gage height, 3.65 ft; minimum daily, 76 ft<sup>3</sup>/s, Sept. 28.

REVISIONS.--The following monthly totals supersede those published in WSP 1314: August 1906, 53,000 acre-ft; September 1906, 49,800 acre-ft; October 1906, 48,500 acre-ft; November 1906, 49,500 acre-ft; December 1906, 50,700 acre-ft; January 1907, 53,200 acre-ft; February 1907, 79,600 acre-ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	453	305	296	309	295	321	304	488	511	482	486	499
2	388	313	312	321	289	291	453	478	460	498	485	495
3	369	319	317	333	285	289	472	475	462	490	480	497
4	361	324	310	340	287	308	468	502	477	472	489	494
5	358	311	306	345	286	305	470	493	453	463	500	493
6	388	305	324	330	290	308	485	496	449	470	499	494
7	415	306	353	319	294	305	486	511	492	473	490	488
8	389	306	309	318	296	302	450	506	487	489	447	484
9	401	304	325	323	301	311	423	501	479	482	377	484
10	393	308	377	331	305	295	423	511	469	475	381	477
11	390	302	403	338	305	283	448	549	468	475	415	471
12	397	293	325	320	309	275	475	554	466	475	661	353
13	399	318	330	324	312	271	506	527	464	477	394	232
14	389	327	312	308	312	285	526	451	463	478	383	181
15	390	305	364	312	314	294	450	503	465	486	377	124
16	388	304	331	304	320	284	484	537	463	479	410	119
17	377	309	303	299	326	277	498	470	458	477	738	105
18	382	302	319	294	331	283	497	450	471	473	755	101
19	374	283	344	293	320	288	480	474	469	490	752	97
20	370	282	312	292	297	300	506	478	464	487	674	95
21	366	296	319	301	295	310	491	494	461	484	494	91
22	362	293	310	292	300	294	481	516	457	490	489	90
23	389	289	294	297	305	313	467	498	462	497	494	88
24	376	290	306	293	309	345	466	466	468	492	495	87
25	365	290	325	293	316	306	468	473	511	491	497	86
26	360	284	337	294	314	310	498	466	503	489	498	81
27	356	284	336	297	295	326	510	450	489	490	499	80
28	361	287	326	295	304	294	498	463	474	481	501	76
29	364	283	326	298	319	277	486	511	477	481	505	77
30	361	291	326	299	---	275	503	559	473	494	504	77
31	308	---	320	294	---	265	---	580	---	489	500	---
TOTAL	11739	9013	10097	9606	8831	9190	14172	15430	14165	14969	15669	7616
MEAN	379	300	326	310	305	296	472	498	472	483	505	254
MAX	453	327	403	345	331	345	526	580	511	498	755	499
MIN	308	282	294	292	285	265	304	450	449	463	377	76
AC-FT	23280	17880	20030	19050	17520	18230	28110	30610	28100	29690	31080	15110

CAL YR 1987 TOTAL 205305 MEAN 562 MAX 1630 MIN 276 AC-FT 407200  
WTR YR 1988 TOTAL 140497 MEAN 384 MAX 755 MIN 76 AC-FT 278700

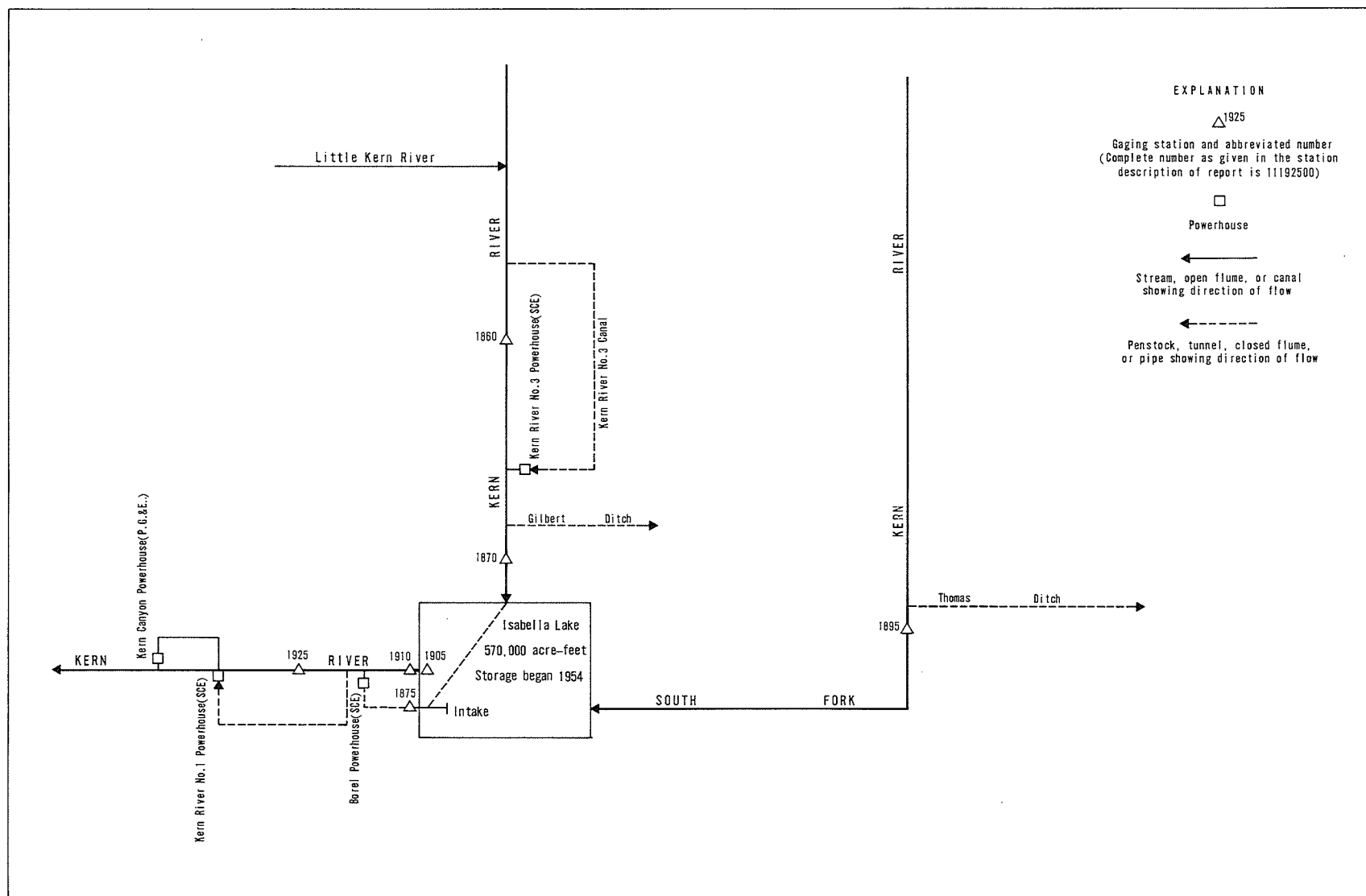


Figure 27.--Schematic diagram showing diversions and storage in Kern River basin.

## PACIFIC SLOPE BASINS

## BUENA VISTA LAKE BASIN

11186000 KERN RIVER NEAR KERNVILLE, CA

LOCATION.--Lat 35°56'43", long 118°28'36", unsurveyed, Tulare County, Hydrologic Unit 18030001, on left bank at Packsaddle Canyon Creek, 100 ft downstream from diversion dam, and 13.4 mi north of Kernville.

DRAINAGE AREA.--846 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1912 to current year. Records for water year 1912 incomplete; yearly estimates published in WSP 1315-A. March 1921 to October 1953, records for river and canal published separately; combined flow only, October 1953 to September 1960.

REVISED RECORDS.--WSP 1445: 1912, 1916(M). WSP 1930: 1914(M), 1918(M).

GAGE.--Water-stage recorder on river; water-stage recorder and rectangular concrete-lined flume for canal diversion. Elevation of gage is 3,620 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 1, 1913, at site 1.4 mi downstream at different datum. Apr. 1 to Sept. 14, 1913, nonrecording gage, and Sept. 15, 1913, to Sept. 30, 1967, water-stage recorder, at site 1.2 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Since 1921 Kern River No. 3 Canal diverts up to 630 ft<sup>3</sup>/s 100 ft upstream from station, from left bank of Kern River for power development; water is returned to river 15 mi downstream from station. See schematic diagram of Kern River basin. For records of combined discharge of river and canal, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 9 years (water years 1912-20), 790 ft<sup>3</sup>/s, 571,900 acre-ft/yr; 61 years (water years 1921-53, 1961-88), 404 ft<sup>3</sup>/s, 292,700 acre-ft/yr.

Combined river and diversion: 68 years (water years 1921-88), 758 ft<sup>3</sup>/s, 549,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge, 60,000 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 22.77 ft, site and datum then in use, from floodmarks, from rating curve extended above 6,000 ft<sup>3</sup>/s on basis of computed flow over dam at gage height 17.55 ft (basic data for computation provided by Southern California Edison Co.) and slope-area measurement of peak flow; no flow many days in 1924 and 1925.

Combined river and diversion: Maximum discharge, 60,000 ft<sup>3</sup>/s, Dec. 6, 1966; minimum daily, 78 ft<sup>3</sup>/s, Aug. 30, 31, Sept. 17, 19, 1924.

EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 1,090 ft<sup>3</sup>/s, May 16, gage height, 5.45 ft; minimum daily, 41 ft<sup>3</sup>/s, Dec. 15, 19-23.

Combined river and diversion: Maximum daily discharge, 1,510 ft<sup>3</sup>/s, May 16; minimum daily, 130 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	49	44	68	46	76	108	109	200	98	84	77
2	55	48	44	52	46	76	108	105	168	93	83	72
3	55	48	44	50	46	76	108	105	259	93	81	72
4	55	46	44	49	46	76	109	105	359	93	81	73
5	55	45	45	55	46	76	109	106	317	95	81	72
6	55	45	44	52	46	76	111	105	199	93	85	75
7	55	45	44	50	46	76	113	105	104	93	85	73
8	54	45	46	49	46	76	112	106	107	95	84	73
9	55	45	45	48	46	76	112	106	99	92	81	73
10	55	45	44	48	46	76	116	106	99	94	80	73
11	55	44	44	47	46	76	139	106	99	94	81	73
12	55	44	43	47	46	76	153	236	100	95	82	72
13	55	44	45	48	45	76	115	503	100	96	85	73
14	55	44	45	48	45	76	112	577	103	96	83	74
15	55	44	41	48	45	76	111	753	102	94	83	74
16	54	44	45	48	46	76	111	910	101	85	80	73
17	54	44	43	48	46	76	111	724	96	86	81	73
18	54	44	42	50	46	76	111	619	98	82	80	73
19	55	44	41	65	46	77	111	625	98	82	80	73
20	55	45	41	58	46	77	111	624	110	82	80	72
21	55	44	41	59	46	77	112	664	304	82	80	71
22	55	44	41	55	47	77	115	710	219	81	80	72
23	55	44	41	54	47	76	115	667	112	87	80	72
24	55	44	42	54	46	76	113	590	169	95	82	72
25	54	44	49	53	46	76	113	579	167	93	82	72
26	54	44	47	53	46	77	113	584	150	91	82	70
27	54	44	49	53	46	78	112	494	103	91	82	70
28	55	44	55	50	46	76	112	442	102	92	81	72
29	55	44	64	47	61	77	116	439	105	87	82	71
30	55	45	45	47	---	77	116	390	104	84	82	73
31	57	---	67	47	---	89	---	272	---	84	81	---
TOTAL	1705	1343	1415	1600	1348	2378	3428	12566	4453	2798	2534	2178
MEAN	55.0	44.8	45.6	51.6	46.5	76.7	114	405	148	90.3	81.7	72.6
MAX	60	49	67	68	61	89	153	910	359	98	85	77
MIN	54	44	41	47	45	76	108	105	96	81	80	70
AC-FT	3380	2660	2810	3170	2670	4720	6800	24920	8830	5550	5030	4320

CAL YR 1987 TOTAL 54931 MEAN 150 MAX 1280 MIN 41 AC-FT 109000

WTR YR 1988 TOTAL 37746 MEAN 103 MAX 910 MIN 41 AC-FT 74870

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF KERN RIVER AND KERN RIVER  
NO. 3 CANAL NEAR KERNVILLE, CA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

CAL YR 1987	TOTAL	155444	MEAN	426	MAX	1850	MIN	142	AC-FT	308300
WTR YR 1988	TOTAL	132822	MEAN	363	MAX	1510	MIN	130	AC-FT	263500

## BUENA VISTA LAKE BASIN

11187000 KERN RIVER AT KERNVILLE, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 35°45'16", long 118°25'21", in NE 1/4 SW 1/4 sec.15, T.25 S., R.33 E., Kern County, Hydrologic Unit 18030001, on right bank 300 ft downstream from highway bridge at Kernville, 1.1 mi upstream from Caldwell Creek, 8.9 mi upstream from Isabella Dam, and 42 mi northeast of Bakersfield.  
DRAINAGE AREA.--1,009 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1905 to December 1912, October 1953 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,621.57 ft above National Geodetic Vertical Datum of 1929.

January 1905 to September 1912, nonrecording gage at two sites 3.5 mi downstream at different datums. October 1953 to Feb. 20, 1967, at present site and datum. Feb. 20, 1967, to Oct. 11, 1976, water-stage recorder 0.6 mi upstream at datum 2,634.57 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 19-23, 26-28. Records good. Slight regulation at times by operation of Kern River No. 3 Canal and powerplant. A few small diversions for irrigation above station. Gilbert irrigation ditch diverts up to 7 ft<sup>3</sup>/s around station during irrigation season.

AVERAGE DISCHARGE.--42 years, 909 ft<sup>3</sup>/s, 658,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 74,000 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 22.2 ft, from floodmarks, present site, from rating curve extended above 11,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 70 ft<sup>3</sup>/s, Sept. 29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known from at least 1912 to December 1966, 18.4 ft, from floodmarks, Nov. 19, 1950, site and datum then in use, discharge, 38,700 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 16	1515	*1,790	*6.67				

Minimum daily, 120 ft<sup>3</sup>/s, Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	219	188	208	262	419	435	514	823	460	233	253
2	154	230	191	239	262	398	435	508	754	428	235	231
3	153	234	192	240	258	382	461	489	814	401	212	211
4	151	223	198	257	241	369	477	492	940	386	198	195
5	152	241	249	624	244	367	496	491	932	374	195	181
6	149	235	222	476	251	371	546	493	843	356	199	172
7	145	229	362	333	252	374	609	486	698	337	195	181
8	145	220	262	303	256	374	638	467	573	318	188	177
9	147	216	239	292	261	391	632	463	525	310	180	166
10	147	214	232	286	268	382	662	470	498	297	167	159
11	145	208	232	274	276	358	697	542	518	288	161	157
12	146	205	228	268	278	340	728	701	550	284	153	153
13	148	203	206	254	285	334	726	1000	570	273	151	150
14	152	209	165	249	287	331	698	1140	624	263	144	148
15	152	206	169	251	289	327	713	1300	660	260	143	146
16	148	201	209	251	296	322	641	1500	662	263	141	141
17	148	213	211	268	296	319	605	1370	616	251	133	138
18	148	212	208	260	288	314	606	1220	541	247	128	137
19	149	204	221	264	279	328	560	1220	500	236	123	135
20	148	196	210	254	277	344	621	1230	610	220	120	134
21	148	200	218	268	282	365	574	1270	784	215	122	139
22	157	202	237	277	281	383	552	1340	845	216	131	149
23	188	202	232	274	284	390	507	1320	718	222	134	154
24	188	192	178	280	289	412	475	1250	695	230	142	147
25	177	194	156	288	290	440	508	1190	737	293	154	144
26	173	192	161	290	301	482	518	1230	755	262	219	138
27	171	184	182	295	315	538	510	1140	634	232	335	135
28	187	187	197	297	368	545	493	1060	580	215	318	135
29	235	184	239	298	382	514	476	1050	543	230	334	132
30	221	181	229	290	---	495	496	1050	497	218	302	127
31	203	---	189	280	---	460	---	888	---	215	265	---
TOTAL	5034	6236	6612	8988	8198	12168	17095	28884	20039	8800	5855	4765
MEAN	162	208	213	290	283	393	570	932	668	284	189	159
MAX	235	241	362	624	382	545	728	1500	940	460	335	253
MIN	145	181	156	208	241	314	435	463	497	215	120	127
AC-FT	9980	12370	13110	17830	16260	24140	33910	57290	39750	17450	11610	9450
CAL YR 1987	TOTAL	155811	MEAN	427	MAX	1870	MIN	145	AC-FT	309100		
WTR YR 1988	TOTAL	132674	MEAN	362	MAX	1500	MIN	120	AC-FT	263200		

## BUENA VISTA LAKE BASIN

11187000 KERN RIVER AT KERNVILLE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962 to current year.

CHEMICAL DATA: Water years 1975 to current year.

BIOLOGICAL DATA: Water years 1978-81.

WATER TEMPERATURE: Water years 1962 to current year.

SEDIMENT DATA: Water years 1967-74, 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1962 to September 1988 (discontinued).

INSTRUMENTATION.--Temperature recorder since June 1962.

REMARKS.--Interruptions in record were due to malfunction of the recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5 °C, Aug. 20, 1972; minimum recorded, 0.0 °C on several days in 1976, 1978-79, 1982, Dec. 17, 1984, Jan. 16, 17, 1987, Dec. 26, 1987 and Jan. 1, 1988.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.5 °C, Aug. 25; minimum recorded, 0.0 °C, Dec. 26, Jan. 1.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV , 1987												
25...	0900	190	143	8.00	6.0	0.40	700	11.4	100	K5	21	47
JAN , 1988												
14...	1215	250	154	7.80	4.0	0.50	705	12.2	101	K7	K3	47
MAR												
14...	1350	333	122	7.40	8.5	7.5	700	10.9	101	<1	K4	38
MAY												
16...	1015	1450	47	7.40	14.5	3.1	700	9.5	102	K24	110	14
JUL												
22...	1045	217	109	8.10	22.5	0.50	700	9.0	113	K9	26	31
SEP												
20...	1435	135	149	8.50	19.5	0.50	690	9.1	110	K6	53	45
DATE		HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV												
25...	0	15	2.3	15	40	1	1.6	72	0	59	60	11
JAN												
14...	0	14	2.2	14	40	1	1.6	73	0	60	59	11
MAR												
14...	0	12	1.9	11	38	0.8	1.3	63	0	52	52	9.3
MAY												
16...	0	4.4	0.61	4.0	38	0.5	0.70	22	0	18	19	4.7
JUL												
22...	0	10	1.5	10	40	0.8	1.2	51	0	42	43	7.5
SEP												
20...	0	14	2.3	15	42	1	1.6	74	0	61	62	10

See footnotes at end of table.

## BUENA VISTA LAKE BASIN

11187000 KERN RIVER AT KERNVILLE, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
NOV												
25...	6.3	0.20	18	108	106	0.15	<0.010	<0.100	0.010	<0.010	<0.20	0.010
JAN												
14...	6.2	0.20	17	99	102	0.13	<0.010	<0.100	<0.010	0.010	<0.20	<0.010
MAR												
14...	4.4	0.20	17	89	89	0.12	<0.010	<0.100	<0.010	0.020	0.20	0.010
MAY												
16...	1.4	0.20	7.8	33	35	0.04	<0.010	<0.100	<0.010	0.010	<0.20	<0.010
JUL												
22...	4.2	0.20	11	64	71	0.09	<0.010	<0.100	<0.010	<0.010	0.30	<0.010
SEP												
20...	6.7	0.20	14	101	101	0.14	<0.010	<0.100	<0.010	<0.010	<0.20	0.010

DATE	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV											
25...	<0.010	0.010	10	4	19	<0.5	<1	2	<3	<1	50
JAN											
14...	<0.010	<0.010	--	--	--	--	--	--	--	--	--
MAR											
14...	<0.010	0.020	10	4	17	<0.5	<1	1	<3	1	52
MAY											
16...	<0.010	<0.010	20	4	11	<0.5	3	1	<3	2	24
JUL											
22...	<0.010	<0.010	--	--	--	--	--	--	--	--	--
SEP											
20...	0.010	0.010	20	5	20	<0.5	<1	<1	<3	1	44

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV											
25...	<5	29	3	<0.1	<10	1	<1	<1.0	96	<6	16
JAN											
14...	--	--	--	--	--	--	--	--	--	--	--
MAR											
14...	<5	23	4	<0.1	<10	1	<1	<1.0	81	<6	5
MAY											
16...	<5	8	2	<0.1	<10	1	<1	<1.0	29	<6	7
JUL											
22...	--	--	--	--	--	--	--	--	--	--	--
SEP											
20...	<5	31	3	<0.1	<10	1	<1	<1.0	92	<6	27

K Results based on colony count outside acceptable range (non-ideal colony count).

&lt; Actual value is known to be less than value shown.

## BUENA VISTA LAKE BASIN

11187000 KERN RIVER AT KERNVILLE, CA--Continued

## CROSS-SECTIONAL DATA. WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	SEDI- MENT, SUS- PENDED (MG/L)
MAR									
14...*	1320	105	123	7.60	9.0	700	10.9	103	5
14...*	1340	129	124	7.60	8.5	700	10.9	101	5
14...*	1400	144	123	7.70	8.5	700	10.9	101	3
14...*	1420	156	123	7.70	8.5	700	10.9	101	4
14...*	1440	169	122	7.80	8.5	700	10.9	101	4
SEP									
20...*	1425	51.0	145	8.40	19.5	690	9.3	112	6
20...*	1430	66.0	147	8.50	19.5	690	9.2	111	8
20...*	1434	76.0	146	8.50	19.5	690	9.1	110	4
20...*	1440	86.0	150	8.50	19.5	690	9.1	110	5
20...*	1445	99.0	147	8.40	19.5	690	9.1	110	4

\* Instantaneous streamflow at the time of cross-sectional measurement: Mar. 14, 333 ft<sup>3</sup>/s;  
Sept. 20, 135 ft<sup>3</sup>/s

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	19.5	16.0	12.5	11.5	6.0	4.0	2.5	0.0	5.0	3.0	8.5	7.0
2	19.5	16.0	13.0	11.0	7.0	5.0	2.0	1.0	4.5	3.5	8.5	6.5
3	19.0	15.5	11.5	9.5	7.5	5.0	3.0	1.5	5.0	2.5	9.0	6.0
4	19.0	15.0	11.0	10.0	7.0	6.0	3.5	2.5	4.5	2.0	9.5	7.0
5	19.0	15.0	11.5	10.5	6.5	5.5	4.5	3.5	4.5	2.0	10.0	7.5
6	18.5	15.0	11.5	10.5	7.0	5.0	4.5	3.0	4.5	2.5	9.5	7.5
7	18.5	15.0	11.5	9.5	7.0	6.0	5.0	3.0	5.5	3.0	10.0	7.0
8	18.5	15.0	11.5	9.5	6.5	5.0	4.5	3.0	6.0	3.5	10.5	8.0
9	18.0	14.5	11.5	9.5	6.0	5.0	5.0	3.0	7.0	4.5	10.5	9.0
10	18.0	14.5	11.5	9.5	7.0	5.0	5.0	3.5	7.0	5.0	8.5	7.0
11	17.5	14.0	11.5	9.5	8.0	6.0	6.0	4.0	7.5	5.0	7.5	5.5
12	18.0	15.0	11.0	9.0	7.0	6.0	5.5	4.0	7.0	5.0	7.5	5.0
13	17.5	14.5	10.5	9.0	5.5	3.0	5.0	3.0	7.0	5.0	8.0	5.0
14	17.5	14.0	11.0	9.0	4.0	2.0	4.5	3.0	7.0	5.0	8.5	5.5
15	17.0	13.5	10.0	8.0	2.0	1.0	4.0	3.5	7.0	5.0	9.0	6.5
16	16.0	13.0	9.5	7.0	2.0	1.5	4.0	3.0	7.5	5.5	9.5	6.5
17	15.5	12.0	8.0	7.5	3.0	2.0	3.0	1.5	7.0	5.5	10.0	7.0
18	16.0	12.5	10.0	7.5	4.0	1.5	3.5	1.5	6.5	4.5	10.5	7.5
19	16.0	12.5	9.5	7.0	4.0	3.0	3.0	1.0	6.0	4.0	11.0	8.0
20	15.0	12.0	8.5	6.5	4.5	2.5	3.0	0.5	7.0	4.5	11.0	8.5
21	14.5	12.0	8.5	6.5	4.0	2.5	3.0	1.0	7.0	5.5	11.5	9.0
22	14.5	13.0	8.5	7.0	5.0	3.0	3.5	1.5	7.5	5.0	12.0	9.0
23	15.5	12.5	8.0	6.0	5.0	3.5	4.0	2.0	8.0	5.5	12.0	9.5
24	14.5	13.0	8.0	5.5	3.5	1.5	5.0	2.5	8.0	6.0	12.0	9.5
25	14.5	12.0	8.0	6.0	3.0	0.5	5.0	3.0	8.5	6.0	12.5	9.5
26	15.0	12.0	7.5	5.5	3.0	0.0	5.5	3.5	8.5	7.0	12.5	10.5
27	14.5	13.5	6.5	4.5	2.0	0.5	6.0	4.5	9.0	7.5	12.0	10.5
28	16.0	14.0	6.0	4.0	2.0	0.5	6.5	4.5	9.0	8.0	11.0	9.0
29	14.5	13.0	6.0	4.0	2.0	1.0	6.0	5.0	9.0	7.5	10.5	8.5
30	13.5	11.5	5.0	3.5	3.0	0.5	6.0	4.0	---	---	10.5	9.0
31	12.5	11.5	---	---	3.0	0.5	5.5	4.0	---	---	10.5	8.0
MONTH	19.5	11.5	13.0	3.5	8.0	0.0	6.5	0.0	9.0	2.0	12.5	5.0



## BUENA VISTA LAKE BASIN

11187000 KERN RIVER AT KERNVILLE, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.5	8.0	---	---	15.5	12.0	---	---	24.0	21.0	21.5	18.5
2	11.5	8.0	---	---	17.5	13.5	---	---	23.5	21.0	21.5	18.5
3	12.0	9.0	---	---	18.5	15.0	---	---	24.0	20.5	21.0	18.0
4	12.0	9.5	---	---	18.0	15.0	---	---	24.0	21.0	22.0	19.0
5	13.0	10.0	---	---	15.5	14.0	---	---	25.0	21.0	22.5	19.5
6	13.5	11.0	---	---	14.5	12.0	---	---	23.5	21.0	22.5	19.5
7	13.5	11.5	---	---	13.0	10.5	---	---	23.0	19.5	22.0	19.5
8	13.0	11.0	---	---	14.0	10.5	---	---	23.0	19.5	22.0	19.0
9	12.5	10.5	---	---	15.5	12.0	---	---	23.5	19.5	22.0	18.5
10	12.0	10.0	---	---	17.5	13.5	---	---	23.5	19.5	21.0	18.0
11	12.5	10.5	---	---	17.0	14.5	---	---	23.0	19.0	21.0	17.5
12	12.0	10.5	---	---	17.5	14.5	---	---	22.5	18.5	20.0	17.0
13	11.0	10.0	---	---	18.5	15.5	---	---	22.5	19.0	19.5	16.0
14	10.0	9.0	---	---	18.5	16.0	---	---	22.5	18.5	19.5	16.0
15	9.0	7.5	---	---	19.0	16.5	---	---	22.5	18.5	20.0	16.0
16	9.5	7.5	---	---	18.5	16.0	---	---	23.0	18.5	20.5	16.5
17	12.0	9.0	14.5	12.0	18.0	16.0	---	---	23.5	19.0	20.0	16.0
18	13.0	10.0	15.0	11.5	17.5	15.5	---	---	24.5	19.5	20.0	15.5
19	---	---	15.5	12.0	---	---	---	---	24.5	20.0	19.5	15.5
20	---	---	16.0	12.5	---	---	---	---	24.5	20.0	19.5	16.0
21	---	---	16.5	13.0	---	---	---	---	25.0	20.5	19.0	15.5
22	---	---	16.5	13.0	---	---	---	---	25.0	20.5	18.5	14.5
23	---	---	16.5	13.0	---	---	23.5	21.5	25.0	21.5	18.5	15.0
24	---	---	16.5	13.5	---	---	24.5	20.5	24.5	22.5	19.0	15.0
25	---	---	16.5	13.5	---	---	23.5	21.0	25.5	22.0	19.0	15.0
26	---	---	16.5	13.0	---	---	24.0	21.0	25.0	21.5	19.0	15.0
27	---	---	16.5	13.0	---	---	24.5	21.0	23.0	20.0	18.5	14.5
28	---	---	16.5	13.5	---	---	25.0	21.5	22.0	19.5	19.0	14.5
29	---	---	15.0	12.0	---	---	24.0	21.5	20.0	18.0	19.5	14.5
30	---	---	13.0	9.5	---	---	24.0	20.5	21.0	18.0	19.5	15.5
31	---	---	14.0	10.0	---	---	24.0	21.0	21.5	18.0	---	---
MONTH	---	---	---	---	---	---	---	---	25.5	18.0	22.5	14.5

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV						
25...	0900	190	6.0	2	1.0	--
JAN						
14...	1215	250	4.0	2	1.4	93
MAR						
14...	1350	333	8.5	4	3.6	--
MAY						
16...	1015	1450	14.5	23	90	64
JUL						
22...	1045	217	22.5	4	2.3	54
SEP						
20...	1435	135	19.5	6	2.2	--

## BUENA VISTA LAKE BASIN

## 11187500 BOREL CANAL BELOW ISABELLA DAM, CA

LOCATION.--Lat 35°38'32", long 118°28'09", in SW 1/4 NE 1/4 sec.30, T.26 S., R.33 E., Kern County, Hydrologic Unit 18030001, on right bank 500 ft downstream from Isabella Dam and 3 mi upstream from point where canal crosses Erskine Creek.

PERIOD OF RECORD.--January 1910 to September 1914, October 1925 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as Kern River Power Co.'s Canal at or near Kernville 1910-14. Published as "at Tillie Creek" 1925-51.

GAGE.--Water-stage recorder. Elevation of gage is 2,540 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 29, 1952, at site 4 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 1, 25, June 2, 3. Canal diverts from right bank of Kern River 5.5 mi upstream from Isabella Dam and above South Fork Kern River. When contents of Isabella Reservoir are above 110,000 acre-ft, diversion is at the dam. Canal is used to supply Borel powerplant of Southern California Edison Co., 6 mi downstream from station, at which point water is returned to the Kern River.

COOPERATION.--Nineteen current meter measurements were provided by Southern California Edison Co.

AVERAGE DISCHARGE.--67 years, 389 ft<sup>3</sup>/s, 281,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 634 ft<sup>3</sup>/s, Mar. 13, 14, 1952; no flow at times in most years.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	364	4.9	170	249	322	586	465	518	505	599	290	
2	366	0	162	225	313	591	460	499	10	598	263	
3	376	0	152	213	299	589	488	494	113	600	235	
4	397	0	162	269	288	583	516	496	526	601	209	
5	396	0	178	327	292	559	529	487	542	600	185	
6	380	0	233	339	316	567	566	484	541	602	163	
7	398	0	255	353	340	579	584	460	534	602	145	
8	328	0	277	332	387	534	581	441	553	604	127	
9	292	0	271	358	439	492	580	412	582	605	107	
10	229	0	262	380	448	533	578	446	561	608	88	
11	207	0	253	348	419	554	574	504	564	605	72	
12	219	0	249	322	421	543	572	548	569	606	10	
13	219	0	267	282	424	529	570	532	573	608	0	
14	218	0	223	269	422	539	585	529	578	608	0	
15	218	0	185	296	411	556	593	524	578	608	0	
16	218	0	234	315	418	567	595	521	583	610	0	
17	218	0	233	322	442	534	595	521	594	608	0	
18	228	0	204	307	440	445	595	515	602	611	0	
19	235	0	199	273	457	431	595	512	606	609	0	
20	226	0	208	274	485	448	595	520	609	610	0	
21	205	0	219	298	536	472	593	521	612	609	0	
22	192	0	228	321	555	485	598	524	613	604	0	
23	188	0	218	326	534	478	606	528	613	599	0	
24	183	0	226	326	553	459	539	525	611	553	0	
25	198	142	204	326	562	481	539	518	611	510	0	
26	211	233	175	334	559	542	584	509	611	469	0	
27	210	232	179	338	561	543	586	500	608	436	0	
28	227	233	211	362	554	587	558	501	603	404	0	
29	263	234	224	389	568	590	500	501	602	372	0	
30	254	198	240	365	---	591	464	498	601	344	0	
31	235	---	249	337	---	545	---	502	---	318	0	---
TOTAL	8098	1276.9	6750	9775	12765	16532	16783	15590	16388	17320	1894	0
MEAN	261	42.6	218	315	440	533	559	503	546	559	61.1	0
MAX	398	234	277	389	568	591	606	548	613	611	290	0
MIN	183	0	152	213	288	431	460	412	10	318	0	0
AC-FT	16060	2530	13390	19390	25320	32790	33290	30920	32510	34350	3760	0

CAL YR 1987 TOTAL 145077.00 MEAN 397 MAX 599 MIN 0 AC-FT 287800  
WTR YR 1988 TOTAL 123171.90 MEAN 337 MAX 613 MIN 0 AC-FT 244300

## BUENA VISTA LAKE BASIN

11189500 SOUTH FORK KERN RIVER NEAR ONYX, CA

LOCATION.--Lat 35°44'22", long 118°10'33", unsurveyed, T.25 S., R.35 E., Kern County, Hydrologic Unit 18030002, on left bank 0.8 mi north of State Highway 178, 1.6 mi upstream from Canebrake Creek, and 5 mi northeast of Onyx.

DRAINAGE AREA.--530 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1911 to August 1914, January 1919 to September 1942, October 1947 to current year. Yearly estimate for water year 1927 (incomplete) and monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1151: 1948(M). WSP 1445: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,900 ft above National Geodetic Vertical Datum of 1929, from topographic map. Sept. 12, 1911, to Aug. 31, 1914, nonrecording gage and Jan. 23, 1919, to Apr. 17, 1936, water-stage recorder, 140 ft upstream at datum 2.88 ft lower. Apr. 18, 1936, to September 1942, and October 1947 to Feb. 8, 1967, at datum 6.88 ft higher. Feb. 9, 1967, to May 31, 1972, at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: July 4-25 and Sept. 25-30. Records good except those for periods of estimated discharges, which are fair. Lowell and Thomas ditches divert above station for irrigation of 160 acres below station, combined capacity, 7 ft<sup>3</sup>/s.

AVERAGE DISCHARGE.--64 years (water years 1912-13, 1920-25, 1927, 1930-42, 1947-88), 127 ft<sup>3</sup>/s, 92,010 acre-ft per year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,700 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 18.9 ft, from floodmarks, present datum, from rating curve extended above 3,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow for several days in 1929, 1934, 1960-61.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	0900	*110	*4.08				

Minimum daily, 2.0 ft<sup>3</sup>/s, Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	36	29	22	36	70	64	57	28	11	8.4	15
2	14	34	31	29	38	65	61	56	26	11	8.8	13
3	14	33	31	33	34	65	61	55	24	9.8	8.9	10
4	14	36	34	35	30	60	61	53	23	9.7	8.5	9.0
5	15	44	46	73	33	59	61	53	22	8.2	8.6	8.2
6	15	44	40	56	35	62	61	52	21	7.4	8.1	7.4
7	15	39	51	44	36	66	58	53	21	6.8	7.6	8.3
8	16	36	49	38	37	69	56	51	21	6.3	6.9	8.3
9	16	34	38	38	37	77	54	50	21	5.8	6.3	7.0
10	14	32	35	38	37	80	52	48	20	5.4	5.9	6.3
11	15	31	39	39	37	67	50	43	20	5.0	5.5	6.1
12	15	31	39	37	37	59	48	40	19	4.7	5.3	6.1
13	16	31	31	33	37	55	47	40	18	4.4	5.3	6.0
14	17	30	18	35	38	53	51	39	17	4.1	5.2	6.2
15	17	31	20	38	39	54	73	38	16	3.9	5.0	6.2
16	17	31	31	33	40	55	95	37	14	4.0	5.1	6.1
17	17	30	32	38	39	53	93	36	14	3.7	4.8	6.4
18	17	30	25	34	38	52	99	35	14	3.5	3.3	6.6
19	17	32	34	30	37	55	88	35	13	3.3	2.3	6.4
20	20	31	27	26	36	59	99	34	14	3.1	2.0	6.4
21	21	29	28	34	36	63	91	33	15	3.0	2.1	6.6
22	23	29	37	41	38	69	83	31	14	2.9	2.2	7.4
23	25	29	33	40	38	75	81	30	16	3.0	2.1	9.5
24	26	30	23	40	39	81	77	29	18	3.0	2.3	11
25	29	29	17	40	39	87	70	28	17	3.6	3.7	15
26	28	29	21	39	41	90	68	27	16	8.0	9.7	13
27	27	26	22	41	48	91	66	27	16	8.0	24	12
28	29	25	24	40	57	90	64	26	14	12	17	12
29	30	27	26	40	63	80	61	26	13	10	12	11
30	30	27	25	39	---	73	58	27	12	9.5	11	11
31	31	---	20	39	---	69	---	28	---	8.5	11	---
TOTAL	614	956	956	1182	1130	2103	2051	1217	537	192.6	218.9	263.5
MEAN	19.8	31.9	30.8	38.1	39.0	67.8	68.4	39.3	17.9	6.21	7.06	8.78
MAX	31	44	51	73	63	91	99	57	28	12	24	15
MIN	14	25	17	22	30	52	47	26	12	2.9	2.0	6.0
AC-FT	1220	1900	1900	2340	2240	4170	4070	2410	1070	382	434	523

CAL YR 1987 TOTAL 16074.1 MEAN 44.0 MAX 196 MIN 6.6 AC-FT 31880  
WTR YR 1988 TOTAL 11421.0 MEAN 31.2 MAX 99 MIN 2.0 AC-FT 22650

## BUENA VISTA LAKE BASIN

## 11190500 ISABELLA LAKE NEAR LAKE ISABELLA, CA

LOCATION.--Lat 35°38'46", long 118°28'41", in SE 1/4 SW 1/4 sec.19, T.26 S., R.33 E., Kern County, Hydrologic Unit 18030001, in main control tower near left abutment of main dam on Kern River, 1.5 mi north of town of Lake Isabella, and 2.8 mi upstream from Erskine Creek.

DRAINAGE AREA.--2,074 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1968, published as Isabella Reservoir near Isabella. October 1968 to September 1970, published as "Isabella Reservoir."

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with sidehill spillway and auxiliary earthfill dam completed in 1954. Regulation began Apr. 15, 1954. Usable capacity, 567,891 acre-ft between elevations 2,470.0 ft, invert of main outlet, and 2,605.5 ft, spillway crest. Dead storage 184 acre-ft. Surcharge flood-control storage, 272,528 acre-ft between ungated spillway crest and elevation 2,627.0 ft, maximum design spillway flood pool. Records, including extremes, represent total contents at 2400 hours. Water is released to Kern River through tunnel in left abutment of main dam and to Borel Canal (station 11187500) through concrete conduit in auxiliary dam.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 630,825 acre-ft, July 6, 1983, elevation, 2,610.84 ft; minimum since reservoir first filled, 34,504 acre-ft, Dec. 14, 16, 1977, elevation, 2,524.35 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 158,189 acre-ft, June 6, elevation, 2,558.40 ft; minimum, 75,109 acre-ft, Sept. 29, 30, elevation, 2,540.09 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from table dated September 1978)

2,500	6,154	2,515	19,161	2,540	74,802	2,590	403,846
2,505	9,345	2,520	26,226	2,550	114,845	2,620	746,024
2,510	13,612	2,530	45,919	2,570	233,425		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150764	143677	142661	143303	144377	135726	128970	132497	155970	142287	97999	80268
2	150212	143731	142768	143303	144377	135469	128920	132446	156537	141064	97050	80089
3	149715	143785	142875	143464	144377	135159	128920	132599	157163	139796	96027	79982
4	149219	143946	143303	143731	144269	134901	128870	132548	157732	138326	95011	79803
5	148670	143839	143518	144538	144215	134592	128870	132650	158017	136711	94204	79481
6	148067	143892	143464	145023	144108	134337	128920	132752	158189	135211	93360	79089
7	147466	144000	143785	144969	144000	134029	128920	132752	158017	133619	92683	78734
8	147030	144054	143731	145077	143785	133670	129070	132854	157618	132090	91850	78415
9	146703	144054	143731	144969	143464	133516	129270	133108	157049	130775	90944	78169
10	146485	144054	143624	144862	143250	133312	129369	133159	156424	129369	90161	77922
11	146268	143946	143624	144808	142982	133058	129670	133210	155858	127825	89421	77746
12	146052	143839	143731	144754	142661	132701	129971	133465	155236	126390	88725	77535
13	145835	143677	143518	144754	142340	132548	130273	134183	154616	124820	88148	77396
14	145672	143731	143410	144700	142128	131989	130775	135314	153942	123215	87534	77256
15	145456	143570	143410	144592	141808	131534	131129	136659	153269	121672	86925	77151
16	145293	143518	143357	144700	141596	131129	131230	138273	152375	120285	86356	77046
17	145077	143624	143303	144862	141330	130775	131432	139849	151374	118767	85638	76906
18	144808	143785	143303	144969	140958	130524	131584	141171	150376	117308	84925	76697
19	144592	143624	143410	144969	140536	130373	131483	142182	149439	115677	84217	76489
20	144323	143464	143410	145023	140113	130172	132192	143464	148560	113923	83587	76212
21	144377	143410	143464	145023	139638	129870	132344	144754	148012	112142	82886	75935
22	144269	143357	143357	144915	139113	129720	132497	146268	147957	110380	82116	75762
23	144161	143303	143464	144915	138588	129369	132497	147629	147521	108727	81570	75625
24	144215	143089	143357	144915	138013	129469	132446	148945	147357	107178	81243	75522
25	144161	143196	143250	144915	137491	129419	132599	150156	147248	105645	80989	75384
26	144054	143142	143303	144862	136970	129369	132650	151319	146975	104299	80882	75281
27	144000	142982	143357	144862	136503	129270	132548	152320	146431	103223	81025	75178
28	143946	142875	143357	144808	136296	129270	132446	153157	145672	102069	80989	75178
29	143839	142768	143464	144592	136036	129120	132548	154111	144646	100967	80882	75109
30	143785	142661	143518	144592	---	129070	132548	155010	143518	100041	80845	75109
31	143677	---	143410	144431	---	129020	---	155688	---	99120	80629	---
MAX	150764	144054	143785	145077	144377	135726	132650	155688	158189	142287	97999	80268
MIN	143677	142661	142661	143303	136036	129020	128870	132446	143518	99120	80629	75109
a	2555.78	2555.59	2555.73	2555.92	2554.33	2552.95	2553.65	2557.96	2555.75	2546.42	2541.66	2540.09
b	-7531	-1016	+749	+1021	-8395	-7016	+3528	+23140	-12170	-44398	-18491	-5520
c	2910	1362	735	831	1173	1964	2131	3149	4142	4667	3318	2515

CAL YR 1987 b -100675

WTR YR 1988 b - 76099

a Elevation, in acre-feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided, not reviewed by U.S. Geological Survey.

## BUENA VISTA LAKE BASIN

11191000 KERN RIVER BELOW ISABELLA DAM, CA

LOCATION.--Lat 35°38'21", long 118°29'02", in SW 1/4 NW 1/4 sec.30, T.26 S., R.33 E., Kern County, Hydrologic Unit 18030003, on right bank 200 ft downstream from highway bridge, 0.6 mi downstream from Isabella Dam, and 1.6 mi southwest of town of Lake Isabella.

DRAINAGE AREA.--2,074 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1945 to current year. Prior to October 1951, published as "below Isabella dam site."  
REVISED RECORDS.--WSP 1515: 1956. WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,435.07 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Mar. 12, 1952, water-stage recorder at site 0.6 mi upstream at different datum. Mar. 12, 1952, to July 26, 1953, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Isabella Lake (station 11190500) beginning Apr. 15, 1954. Borel Canal (station 11187500) diverts above station. Diversion for irrigation of 3,500 acres between head of Isabella Lake and upstream stations. An additional 6,500 acres in the lakebed can be irrigated when the lake is low.

AVERAGE DISCHARGE (adjusted for diversion to Borel Canal since 1945 and for change in contents in and evaporation from Isabella Lake since 1954).--43 years, 992 ft<sup>3</sup>/s, 718,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft<sup>3</sup>/s, Nov. 19, 1950, gage height, 28.6 ft, from floodmarks, present site and datum, from rating curve extended above 6,500 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in some years. Maximum discharge since construction of Isabella Dam in 1954, 7,300 ft<sup>3</sup>/s, May 3, 1969, gage height, 17.67 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 564 ft<sup>3</sup>/s, Aug. 22, gage height, 6.81 ft; minimum daily, 0.13 ft<sup>3</sup>/s, Oct. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	194	6.7	4.2	4.5	68	5.6	1.6	115	456	394	409
2	5.7	200	5.9	4.3	4.5	37	5.6	3.2	471	436	429	327
3	5.7	218	4.5	4.3	4.6	16	5.6	4.1	300	425	444	264
4	5.4	240	4.8	4.2	4.6	7.3	3.8	3.5	8.9	455	445	288
5	5.1	239	4.9	4.4	4.7	7.3	2.5	3.1	82	475	412	348
6	4.9	224	4.3	4.2	4.7	7.4	2.5	2.6	120	490	351	361
7	4.9	199	3.9	4.3	4.7	37	2.5	1.8	178	489	365	340
8	5.0	199	4.2	4.2	4.7	25	2.5	2.9	211	438	449	300
9	4.9	219	4.0	4.3	4.8	4.2	2.4	3.9	210	346	503	271
10	4.8	236	4.0	4.3	4.8	4.0	2.5	3.7	196	325	464	245
11	4.7	236	4.0	4.5	4.8	3.7	2.5	3.8	195	362	418	239
12	4.7	236	4.0	4.4	4.9	3.7	2.3	2.9	227	349	462	232
13	4.8	226	4.0	4.4	4.8	3.8	2.2	2.7	303	395	419	205
14	4.5	221	3.7	4.4	4.6	3.7	1.4	2.8	396	417	393	194
15	4.4	221	3.3	4.1	4.6	3.8	2.5	3.1	456	371	414	173
16	3.5	208	4.7	3.6	4.3	3.8	3.7	3.4	486	318	422	170
17	3.9	200	5.7	3.3	5.7	3.8	2.9	3.1	493	342	469	183
18	3.9	200	5.0	3.7	7.3	5.9	1.7	3.7	451	368	509	201
19	2.8	215	3.4	4.2	6.8	8.0	1.7	3.6	450	419	497	201
20	5.2	224	5.0	4.3	6.7	6.0	1.8	4.2	427	507	438	224
21	6.2	224	7.3	4.4	5.8	2.8	1.7	4.4	378	532	444	253
22	6.1	224	7.2	4.4	5.1	4.0	1.6	3.9	298	525	509	243
23	5.5	224	7.0	4.5	5.2	4.2	1.6	4.8	234	464	438	221
24	5.4	224	7.1	4.5	27	4.2	1.6	12	171	452	298	192
25	5.2	43	7.3	4.4	19	3.9	1.6	4.2	140	515	282	175
26	5.1	6.7	7.3	4.4	5.8	3.8	1.5	4.1	195	421	272	175
27	5.1	6.8	7.3	4.5	5.0	17	1.5	3.1	265	298	268	162
28	2.3	6.8	5.6	4.5	4.6	19	1.5	2.7	294	325	336	148
29	.13	6.7	5.2	4.6	70	5.8	1.5	3.0	388	346	347	148
30	4.1	6.7	5.0	4.8	---	4.6	1.5	3.0	454	309	351	147
31	36	---	4.8	4.8	---	5.9	---	3.0	---	311	408	---
TOTAL	176.03	5327.7	161.1	133.4	248.6	334.6	73.8	111.9	8592.9	12681	12650	7039
MEAN	5.68	178	5.20	4.30	8.57	10.8	2.46	3.61	286	409	408	235
MAX	36	240	7.3	4.8	70	68	5.6	12	493	532	509	409
MIN	.13	6.7	3.3	3.3	4.3	2.8	1.4	1.6	8.9	298	268	147
AC-FT	349	10570	320	265	493	664	146	222	17040	25150	25090	13960
MEAN a	192	226	247	350	323	462	657	934	698	322	222	184
AC-FT a	11810	13450	15190	21520	18580	28410	39090	57430	41530	19800	13650	10950

CAL YR 1987 TOTAL 69141.23 MEAN 189 MAX 915 MIN .13 AC-FT 137100 MEAN a 506 AC-FT a 366300  
WTR YR 1988 TOTAL 47530.03 MEAN 130 MAX 532 MIN .13 AC-FT 94280 MEAN a 401 AC-FT a 291100

a Adjusted for change in contents and evaporation from Isabella Lake and diversion to Borel Canal.  
Evaporation, in acre-feet, provided by U.S. Army Corps of Engineers, not reviewed by U.S. Geological Survey.

## BUENA VISTA LAKE BASIN

11191000 KERN RIVER BELOW ISABELLA DAM, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956-66, 1971 to current year.

CHEMICAL DATA: Water years 1956-66.

WATER TEMPERATURE: Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5 °C, Aug. 24, 1981; minimum recorded, 3.0 °C, Jan. 25, 26, 30, 1988.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 24.0 °C, Aug. 28, Sept. 5; minimum recorded, 3.0 °C, Jan. 25, 26, 30.

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	22.5	18.0	---	---	14.5	14.0	7.0	4.5	9.5	5.0	9.0	8.0
2	22.5	18.5	---	---	14.0	13.5	7.0	4.5	8.5	5.0	9.5	6.5
3	22.5	18.5	---	---	14.0	13.5	7.0	4.5	8.5	4.0	10.0	7.0
4	22.5	18.5	---	---	14.0	13.0	---	---	8.5	5.0	11.5	6.5
5	22.5	18.0	---	---	13.5	13.0	---	---	9.0	4.5	11.5	6.5
6	22.5	18.0	---	---	13.5	10.5	---	---	9.0	3.5	12.0	6.0
7	22.0	18.0	---	---	12.5	9.5	---	---	9.0	5.5	11.5	7.5
8	22.0	18.5	---	---	11.5	9.0	---	---	9.0	3.5	11.5	8.5
9	22.0	18.0	20.5	17.0	11.5	9.0	---	---	9.5	4.5	12.5	8.0
10	22.0	18.0	20.0	16.5	12.0	9.0	---	---	9.5	4.0	12.0	7.0
11	21.5	18.0	19.0	17.0	11.5	9.0	---	---	9.5	6.0	12.5	7.5
12	22.0	18.5	20.0	17.0	10.0	9.0	---	---	10.0	6.0	12.5	8.0
13	21.5	18.0	18.5	17.0	10.0	8.0	---	---	10.0	6.0	13.0	8.0
14	21.5	18.0	19.0	16.0	9.5	7.5	---	---	9.5	4.5	13.0	8.0
15	21.5	17.5	17.5	16.5	8.5	7.0	---	---	9.5	6.5	13.0	8.5
16	21.5	17.0	18.0	17.0	8.5	7.0	---	---	10.0	6.0	13.5	9.0
17	21.0	17.0	18.0	16.5	9.0	7.0	---	---	10.5	6.5	13.5	8.5
18	21.5	17.0	17.5	16.0	9.0	7.0	---	---	10.5	6.5	13.5	9.0
19	21.0	17.0	17.0	16.0	9.0	6.0	---	---	10.5	6.5	13.5	9.0
20	20.0	16.5	16.5	15.5	8.5	6.5	---	---	10.0	6.5	13.5	9.0
21	20.0	17.5	16.5	15.0	8.0	6.0	---	---	---	---	14.5	9.0
22	19.0	17.5	16.0	14.5	9.5	6.0	7.5	4.5	---	---	14.5	9.5
23	21.0	17.0	16.0	14.5	7.0	5.5	8.0	5.0	---	---	14.0	9.5
24	---	---	15.5	14.5	7.5	5.5	8.5	3.5	---	---	14.5	9.5
25	---	---	15.5	14.5	7.5	5.5	8.0	3.0	---	---	15.0	10.0
26	---	---	15.5	14.5	7.0	5.0	8.0	3.0	9.0	7.5	15.5	10.0
27	---	---	15.5	14.5	8.0	5.0	8.5	5.0	9.0	8.0	13.5	10.0
28	---	---	15.0	14.5	7.5	4.5	8.0	5.0	10.0	7.5	14.0	10.0
29	---	---	15.0	14.0	7.0	4.5	8.5	5.0	9.0	7.5	14.5	10.0
30	---	---	14.5	14.0	7.0	4.5	7.5	3.0	---	---	15.0	9.5
31	---	---	---	---	7.0	5.0	8.5	5.0	---	---	15.5	10.0
MONTH	---	---	---	---	14.5	4.5	---	---	---	---	15.5	6.0

## BUENA VISTA LAKE BASIN

11191000 KERN RIVER BELOW ISABELLA DAM, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	16.0	9.5	16.0	11.0			---	---	23.0	20.5	23.0	21.0
2	16.0	10.0	17.0	11.5			---	---	23.0	21.0	23.0	20.5
3	16.0	10.5	17.5	12.0			---	---	23.0	21.0	23.0	21.0
4	16.5	10.5	17.0	12.5			---	---	23.5	21.0	23.0	21.0
5	17.5	11.5	13.5	11.0			---	---	23.5	21.5	24.0	21.0
6	16.5	12.0	15.5	11.0			---	---	23.5	21.0	23.0	21.0
7	17.5	12.0	16.0	12.0			---	---	23.5	21.0	23.5	21.5
8	17.0	12.0	18.0	12.0			---	---	23.5	21.0	23.0	21.5
9	17.5	12.0	18.0	12.0			---	---	23.5	21.5	23.5	21.0
10	17.5	12.0	18.5	12.0			---	---	23.5	21.5	23.5	21.0
11	16.5	12.0	18.5	12.5			---	---	23.5	21.5	23.5	21.5
12	15.5	12.0	19.0	12.5			---	---	23.5	21.5	23.5	21.0
13	15.0	13.0	19.0	13.0			---	---	23.0	21.5	23.0	21.0
14	14.0	12.0	19.0	12.5			---	---	23.5	21.0	23.0	21.0
15	14.0	11.5	19.0	12.5			---	---	23.0	21.0	22.5	20.5
16	14.0	12.0	18.5	12.5			---	---	23.0	20.5	22.5	20.5
17	16.5	12.0	17.5	12.5			---	---	22.5	20.5	22.0	19.5
18	18.0	12.5	18.5	12.5			---	---	22.5	20.5	22.0	20.0
19	---	---	19.0	12.5			---	---	22.0	20.5	23.0	18.5
20	15.5	12.0	19.0	12.5			---	---	22.5	21.0	22.0	19.0
21	15.5	12.0	19.0	12.5			---	---	22.5	21.0	21.0	18.5
22	15.0	12.0	18.0	13.5			---	---	22.5	20.5	20.5	18.5
23	14.0	11.5	18.0	13.0			---	---	23.0	21.0	20.0	19.0
24	17.5	11.0	19.0	13.0			---	---	23.0	20.5	20.0	19.0
25	18.0	12.0	19.0	13.0			---	---	23.0	20.5	19.5	18.5
26	18.5	12.5	19.0	13.0			---	---	23.0	20.5	19.5	18.0
27	17.5	13.0	19.5	13.5			22.5	15.0	23.0	20.5	19.5	18.5
28	17.0	12.5	19.5	13.5			22.5	20.0	24.0	21.0	19.5	18.0
29	18.0	12.5	13.5	12.0			22.5	20.5	23.5	21.5	19.5	18.0
30	14.5	12.0	18.0	12.0			23.0	20.5	23.0	20.5	19.0	17.5
31	---	---	18.5	12.5			22.5	20.5	23.0	21.0	---	---
MONTH	---	---	19.5	11.0			---	---	24.0	20.5	24.0	17.5

## BUENA VISTA LAKE BASIN

11192500 KERN RIVER NEAR DEMOCRAT SPRINGS, CA

LOCATION.--Lat 35°31'15", long 118°40'34", in NE 1/4 SE 1/4 sec.6, T.28 S., R.31 E., Kern County, Hydrologic Unit 18030003, on left bank 1.0 mi southwest of Democrat Springs and 2.1 mi upstream from Cow Creek.  
DRAINAGE AREA.--2,258 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1950 to current year. Prior to October 1954, records for river and conduit published separately; combined flow only, October 1954 to September 1960.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder on river; water-stage recorder for conduit diversion. Datum of gage is 1,837.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Apr. 25-27, May 8-18, June 2, 4-8, 14. Kern River No. 1 conduit diverts up to about 420 ft<sup>3</sup>/s from left bank of Kern River 0.4 mi upstream from station in sec.13, T.28 S., R.30 E., for power development; water is returned to river 10 mi below station. Flow regulated by Isabella Lake 22 mi upstream beginning in 1954 (station 11190500). Many diversions above station for irrigation. See schematic diagram of Kern River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only, 38 years, 674 ft<sup>3</sup>/s, 488,300 acre-ft/yr.  
Combined river and diversion, 38 years, 1,011 ft<sup>3</sup>/s, 732,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge, 40,000 ft<sup>3</sup>/s, Nov. 19, 1950, gage height, 30.7 ft, from rating curve extended above 8,700 ft<sup>3</sup>/s on basis of computation of peak flow over dam (basic data for computation provided by Southern California Edison Co.); minimum daily, 0.7 ft<sup>3</sup>/s, Nov. 17-19, 1951. Maximum discharge since construction of Isabella Dam in 1954, 10,100 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 18.55 ft; no flow May 26-28, 1977.

Combined flow: Maximum discharge, 40,000 ft<sup>3</sup>/s, Nov. 19, 1950; minimum daily, 123 ft<sup>3</sup>/s, Sept. 22, 1951. Maximum discharge since construction of Isabella Dam in 1954, 10,100 ft<sup>3</sup>/s, Dec. 6, 1966; minimum daily, 10 ft<sup>3</sup>/s, Dec. 17, 1968.

EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 933 ft<sup>3</sup>/s, June 14, gage height, 8.44 ft; minimum daily, 2.5 ft<sup>3</sup>/s, Nov. 8.

Combined flow: Maximum daily discharge, 1,140 ft<sup>3</sup>/s, July 21; minimum daily, 154 ft<sup>3</sup>/s, Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	2.9	3.6	3.6	3.8	308	142	132	140	631	259	74
2	30	2.9	3.6	3.6	3.6	280	95	180	192	634	275	63
3	32	2.9	3.4	3.4	3.6	251	140	122	121	599	264	62
4	31	2.9	3.4	3.4	3.6	231	147	149	137	628	249	61
5	55	2.9	3.4	4.0	3.8	222	177	137	190	661	215	61
6	5.9	2.7	3.2	5.7	4.2	205	189	148	298	669	135	62
7	30	2.7	3.0	3.8	4.3	229	225	133	362	688	110	62
8	8.6	2.5	2.9	19	12	261	225	104	396	641	163	62
9	4.7	3.0	2.9	3.6	72	148	223	94	410	568	194	61
10	4.7	3.8	2.9	50	118	167	223	81	406	482	193	61
11	4.7	3.8	2.9	5.9	77	202	222	137	394	545	123	60
12	4.6	3.6	2.9	3.4	75	197	220	175	411	544	130	61
13	4.3	3.6	2.9	2.9	81	180	223	161	478	550	89	60
14	4.1	3.2	2.7	2.7	80	180	234	159	664	621	63	81
15	3.8	3.2	2.7	2.7	77	199	251	155	606	571	63	60
16	3.8	3.0	3.2	2.9	46	208	254	153	644	520	64	60
17	3.8	2.7	4.4	2.9	101	212	254	156	675	495	87	60
18	3.8	3.0	4.3	18	96	121	253	152	659	561	128	61
19	3.8	3.4	4.5	3.0	100	89	254	148	628	568	150	61
20	3.8	3.6	4.3	2.7	136	102	273	143	641	675	92	61
21	3.8	3.6	4.0	2.9	163	125	262	142	583	735	69	62
22	3.8	3.8	4.0	3.0	204	142	262	133	513	715	117	62
23	4.3	3.6	4.0	3.0	196	141	269	130	441	722	150	62
24	4.3	3.6	4.0	3.0	186	130	238	139	393	581	62	61
25	3.6	3.4	4.0	3.4	249	111	177	131	317	616	61	61
26	3.6	3.4	4.0	3.6	195	201	235	116	365	563	61	60
27	3.6	3.4	4.0	3.6	210	167	244	110	425	327	60	61
28	3.6	3.4	3.6	4.6	199	251	221	114	475	319	62	60
29	3.8	3.6	3.6	24	229	230	181	120	518	312	63	60
30	3.6	3.6	3.6	36	---	227	111	121	643	279	63	60
31	2.9	---	3.6	4.3	---	212	---	123	---	195	63	---
TOTAL	321.3	97.7	109.5	238.6	2928.9	5929	6424	4198	13125	17215	3877	1863
MEAN	10.4	3.26	3.53	7.70	101	191	214	135	437	555	125	62.1
MAX	55	3.8	4.5	50	249	308	273	180	675	735	275	81
MIN	2.9	2.5	2.7	2.7	3.6	89	95	81	121	195	60	60
AC-FT	637	194	217	473	5810	11760	12740	8330	26030	34150	7690	3700

CAL YR 1987 TOTAL 91724.2 MEAN 251 MAX 1050 MIN 1.7 AC-FT 181900  
WTR YR 1988 TOTAL 56327.0 MEAN 154 MAX 735 MIN 2.5 AC-FT 111700



## BUENA VISTA LAKE BASIN

11192501 KERN RIVER NEAR DEMOCRAT SPRINGS, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF KERN RIVER AND KERN RIVER NO. 1 CONDUIT  
NEAR DEMOCRAT SPRINGS, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	350	205	197	264	345	687	511	503	513	1040	655	415
2	342	205	179	254	327	659	465	550	548	1040	673	360
3	344	200	168	243	325	631	510	494	471	1010	660	274
4	343	255	160	237	304	610	517	522	469	1040	640	255
5	353	236	181	297	297	599	547	510	580	1070	605	328
6	314	241	271	320	329	581	562	522	679	1080	525	356
7	397	203	271	318	334	604	599	507	743	1100	477	341
8	376	202	268	334	381	636	599	479	776	1050	536	312
9	318	203	293	333	449	524	599	469	791	975	585	275
10	260	204	280	421	500	542	599	457	788	887	572	257
11	260	240	274	366	456	575	599	516	776	944	473	208
12	226	247	274	355	454	571	597	554	793	938	479	192
13	221	234	274	315	461	553	600	541	860	947	432	214
14	219	233	290	281	460	552	610	540	947	1020	370	203
15	228	233	221	287	457	570	625	537	1020	978	397	179
16	219	223	203	348	424	578	627	537	1050	927	398	171
17	219	209	253	322	484	581	627	540	1090	902	428	170
18	219	203	241	378	479	492	625	537	1070	966	474	199
19	233	200	241	292	484	459	627	534	1040	972	498	200
20	233	216	241	291	523	472	645	531	1050	1080	434	201
21	230	224	231	301	550	494	632	532	997	1140	406	249
22	206	224	233	331	585	509	631	523	927	1120	460	248
23	194	225	248	342	574	507	638	519	855	1120	493	228
24	194	226	248	342	565	495	608	529	806	982	335	206
25	194	225	206	342	627	476	548	521	729	1010	256	177
26	213	216	206	343	580	567	604	505	777	957	299	176
27	213	216	199	351	593	533	614	498	834	719	237	177
28	211	216	199	358	583	615	591	502	885	721	312	155
29	256	217	221	395	612	593	551	507	928	712	352	154
30	270	242	244	407	---	591	482	508	1050	681	330	154
31	269	---	260	352	---	578	---	511	---	589	369	---
TOTAL	8124	6623	7275	10120	13542	17434	17589	16035	24842	29717	14160	7034
MEAN	262	221	235	326	467	562	586	517	828	959	457	234
MAX	397	255	293	421	627	687	645	554	1090	1140	673	415
MIN	194	200	160	237	297	459	465	457	469	589	237	154
AC-FT	16110	13140	14430	20070	26860	34580	34890	31810	49270	58940	28090	13950
CAL YR 1987	TOTAL 211739	MEAN 580	MAX 1400	MIN 160	AC-FT 420000							
WTR YR 1988	TOTAL 172495	MEAN 471	MAX 1140	MIN 154	AC-FT 342100							

## BUENA VISTA LAKE BASIN

11192950 KERN RIVER FISHWATER RELEASE AT KERN CANYON POWERHOUSE DIVERSION DAM, NEAR BAKERSFIELD, CA

LOCATION.--Lat 35°27'37", long 118°46'43", in SE 1/4 SE 1/4 sec.29, T.28 S., R.30 E., Kern County, Hydrologic Unit 18030003, Sequoia National Forest, on left bank at diversion dam 16.4 mi northeast of Bakersfield.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1987 to September 1988.

GAGE.--Water-stage recorder and sharp-crested rectangular weir. Elevation of gage is 975 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: May 17 to July 27. Flow regulated at diversion dam immediately upstream and does not include leakage through diversion dam radial gates. Diversion dam was damaged by landslide on Dec. 15 and discharge exceeding fishwater requirement bypassed the gage Dec. 15-17 and Jan. 11-25 when the diversion dam was under repair. Bypass flow entered the main channel immediately downstream from the gage. See schematic diagram of Kern River basin. No records computed above 36 ft<sup>3</sup>/s.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Minimum daily, 9.3 ft<sup>3</sup>/s, May 9, 11, 22-25, and Sept. 27, 1988.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	13	12	12	11	12	12	10	10	12	12	13
2	12	13	12	12	12	12	12	10	10	12	12	13
3	12	13	12	12	12	12	12	9.8	10	12	12	13
4	12	13	12	12	12	12	12	9.6	10	12	11	12
5	12	13	12	12	12	12	12	12	10	12	11	12
6	12	13	12	12	12	12	12	12	10	11	12	12
7	12	13	12	12	14	12	12	12	10	11	12	12
8	12	13	11	12	13	12	12	9.9	11	11	11	12
9	12	12	12	12	12	13	12	9.3	11	11	11	12
10	13	12	12	14	12	13	12	9.7	10	11	13	12
11	13	12	12	---	12	13	12	9.3	10	11	14	12
12	13	12	12	---	12	13	12	9.6	10	11	14	12
13	13	12	12	---	13	13	11	9.7	10	11	14	12
14	12	12	13	---	13	13	11	9.6	10	11	14	12
15	12	12	---	---	13	13	11	9.4	10	10	14	12
16	12	12	---	---	12	13	12	9.5	11	10	14	12
17	12	12	---	---	12	13	12	9.9	10	11	13	12
18	12	11	13	---	12	13	11	10	10	11	13	12
19	12	11	12	---	13	13	10	10	10	11	13	12
20	12	12	12	---	13	12	10	9.8	10	10	13	12
21	12	12	12	---	12	12	11	9.5	11	11	13	12
22	12	13	12	---	12	12	11	9.3	11	12	13	12
23	12	13	12	---	13	12	11	9.3	11	12	13	12
24	13	13	12	---	12	12	11	9.3	12	11	13	12
25	13	12	12	---	13	12	9.8	9.3	11	11	13	11
26	13	12	12	15	12	12	9.5	9.8	11	11	13	11
27	13	12	12	16	12	12	9.8	9.8	11	11	13	9.3
28	13	12	12	15	12	12	9.9	9.8	11	11	13	12
29	13	12	13	12	12	12	10	9.5	12	12	13	13
30	13	12	12	12	---	12	10	9.5	12	12	13	13
31	13	---	12	12	---	12	---	9.8	---	12	13	---
TOTAL	384	369	---	---	357	383	335.0	306.0	316	348	396	360.3
MEAN	12.4	12.3	---	---	12.3	12.4	11.2	9.87	10.5	11.2	12.8	12.0
MAX	13	13	---	---	14	13	12	12	12	12	14	13
MIN	12	11	---	---	11	12	9.5	9.3	10	10	11	9.3
AC-FT	762	732	---	---	708	760	664	607	627	690	785	715

## TULARE LAKE BASIN

11199500 WHITE RIVER NEAR DUCOR, CA

LOCATION.--Lat 35°48'36", long 118°55'03", in NW 1/4 SE 1/4 sec.26, T.24 S., R.28 E., Tulare County, Hydrologic Unit 18030012, on left bank 0.6 mi upstream from Tyler Gulch and 9.0 mi southeast of Ducor.

DRAINAGE AREA.--90.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1942 to September 1953, February 1971 to current year. Monthly discharge only for October 1942 to September 1944, published in WSP 1315-A.

GAGE.--Water-stage recorder. Elevation of gage is 715 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1942 to September 1946, at site 3,800 ft downstream; October 1946 to September 1953, at site 4,300 ft downstream; and October 1971 to November 1978, at site 4,000 ft downstream, all at different datums.

REMARKS.--No estimated daily discharges. Records good. No storage or diversion above station.

AVERAGE DISCHARGE.--28 years (water years 1943-53, 1972-88), 10.4 ft<sup>3</sup>/s, 7,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,300 ft<sup>3</sup>/s, estimated by U.S. Bureau of Reclamation, Mar. 9, 1943; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 30 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	2030	*66	*1.76	Jan. 18	1015	33	1.49

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.0	1.5	2.7	4.1	4.9	1.8	2.7	2.0	.0	.0	.0
2	.0	.0	1.4	2.5	3.9	13	1.8	2.6	1.9	.0	.0	.0
3	.0	.0	1.6	2.7	3.8	6.4	1.8	2.5	1.4	.0	.0	.0
4	.0	.0	2.8	3.0	3.5	4.5	2.0	2.3	1.3	.0	.0	.0
5	.0	.0	9.3	22	3.4	3.6	2.0	2.5	1.1	.0	.0	.0
6	.0	.0	5.8	25	3.4	3.4	1.9	3.8	1.1	.0	.0	.0
7	.0	.0	8.3	11	3.3	3.2	1.8	4.5	.98	.0	.0	.0
8	.0	.0	9.5	6.9	3.3	2.9	1.7	4.1	.92	.0	.0	.0
9	.0	.0	4.0	5.4	3.3	2.6	1.7	3.9	.83	.0	.0	.0
10	.0	.0	2.7	4.8	3.5	2.4	1.5	3.8	.67	.0	.0	.0
11	.0	.0	2.2	4.5	3.5	2.3	1.4	3.7	.56	.0	.0	.0
12	.0	.0	2.1	4.1	3.5	2.3	1.2	3.3	.44	.0	.0	.0
13	.0	.0	2.5	3.9	3.3	2.2	1.4	2.8	.37	.0	.0	.0
14	.0	.0	2.0	3.8	3.1	2.2	2.8	2.5	.24	.0	.0	.0
15	.0	.0	1.6	3.7	3.0	2.2	6.5	2.5	.13	.0	.0	.0
16	.0	.0	3.2	3.9	3.0	2.1	5.0	2.2	.06	.0	.0	.0
17	.0	.0	3.9	5.6	2.8	2.0	4.4	2.4	.01	.0	.0	.0
18	.0	.0	3.4	19	2.8	2.0	4.4	2.7	.0	.0	.0	.0
19	.0	.0	4.1	11	2.6	2.2	4.6	2.5	.0	.0	.0	.0
20	.0	.0	4.0	7.0	2.4	2.0	11	1.9	.0	.0	.0	.0
21	.0	.54	3.8	5.9	2.5	2.1	7.1	1.4	.0	.0	.0	.0
22	.0	.91	3.9	5.4	2.5	2.2	6.2	1.1	.0	.0	.0	.0
23	.0	1.3	4.7	5.2	2.4	2.5	7.1	1.0	.0	.0	.0	.0
24	.0	1.3	5.2	5.1	2.3	2.5	6.1	.93	.0	.0	.0	.0
25	.0	1.3	4.2	5.0	2.3	2.6	4.4	.85	.0	.0	.0	.0
26	.0	1.5	3.1	4.9	2.2	2.6	3.9	.88	.0	.0	.0	.0
27	.0	1.7	2.4	4.8	2.2	2.3	3.4	.98	.0	.0	.0	.0
28	.0	1.7	2.5	4.8	2.5	2.1	3.1	1.1	.0	.0	.0	.0
29	.0	1.7	2.5	4.6	3.4	2.1	2.8	1.8	.0	.0	.0	.0
30	.0	1.6	2.7	4.4	---	2.0	2.8	4.0	.0	.0	.0	.0
31	.0	---	3.0	4.4	---	1.9	---	2.6	---	.0	.0	---
TOTAL	0.0	13.55	113.9	207.0	87.8	93.3	107.6	75.84	14.01	0.0	0.0	0.0
MEAN	.00	.45	3.67	6.68	3.03	3.01	3.59	2.45	.47	.00	.00	.00
MAX	.00	1.7	9.5	25	4.1	13	11	4.5	2.0	.00	.00	.00
MIN	.00	.00	1.4	2.5	2.2	1.9	1.2	.85	.00	.00	.00	.00
AC-FT	.0	27	226	411	174	185	213	150	28	.0	.0	.0

CAL YR 1987 TOTAL 1158.04 MEAN 3.17 MAX 37 MIN .00 AC-FT 2300  
WTR YR 1988 TOTAL 713.00 MEAN 1.95 MAX 25 MIN .00 AC-FT 1410

## TULARE LAKE BASIN

11200800 DEER CREEK NEAR FOUNTAIN SPRINGS, CA

LOCATION.--Lat 35°56'30", long 118°49'19", in SE 1/4 NE 1/4 sec.10, T.23 S., R.29 E., Tulare County, Hydrologic Unit 18030005, on left bank 1.0 mi upstream from Pothole Creek, 6.3 mi northeast of Fountain Springs, and 12 mi east of Terra Bella.

DRAINAGE AREA.--83.3 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No storage or diversion above station.

AVERAGE DISCHARGE.--20 years, 35.9 ft<sup>3</sup>/s, 26,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,340 ft<sup>3</sup>/s, Feb. 24, 1969, gage height, 9.85 ft, from rating curve extended above 600 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 8.83 ft in gage well, 9.18 ft from floodmarks, and 12.54 ft from floodmarks; no flow for periods in several years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 6, 1966, reached a stage of 12.54 ft, from floodmarks, discharge, 5,330 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1700	*322	*4.82				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	6.8	7.2	10	16	23	7.1	12	9.8	1.8	.0	.0
2	.13	10	7.2	9.8	16	40	8.0	11	8.8	1.4	.0	.0
3	.0	9.8	7.2	10	15	24	7.8	11	7.5	2.0	.0	.0
4	.47	7.5	8.0	11	14	20	7.5	10	6.4	1.1	.0	.0
5	.44	11	23	136	14	18	7.9	10	5.9	.82	.0	.0
6	.39	15	13	66	13	17	8.1	17	6.1	.99	.0	.0
7	.22	15	29	31	13	17	7.7	16	6.8	.76	.0	.0
8	.36	10	17	22	13	16	7.5	18	6.1	.71	.0	.0
9	.70	8.6	13	19	13	15	6.8	17	6.1	.58	.0	.0
10	1.3	7.9	11	17	13	14	6.1	16	5.9	.47	.0	.0
11	1.7	7.5	10	16	13	14	5.1	15	4.7	.40	.0	.0
12	1.7	7.3	11	17	12	13	5.6	13	4.0	.25	.0	.0
13	1.8	7.2	11	15	12	13	6.3	11	3.6	.16	.0	.0
14	2.0	7.5	9.9	14	12	13	9.3	11	4.2	.12	.0	.0
15	1.9	7.9	9.5	14	12	12	15	10	3.9	.04	.0	.0
16	1.6	7.5	8.6	15	12	12	13	8.8	4.0	.0	.0	.0
17	1.5	7.5	8.6	29	12	12	11	10	3.4	.0	.0	.0
18	1.8	7.5	9.1	47	12	11	13	12	4.1	.0	.0	.0
19	1.9	7.2	9.1	26	11	11	11	11	5.0	.0	.0	.0
20	1.4	7.2	9.1	21	11	11	29	9.5	4.5	.0	.0	.0
21	1.5	8.4	9.1	19	11	10	22	8.5	4.9	.0	.0	.0
22	2.9	8.1	9.4	19	11	9.3	23	7.3	4.2	.0	.0	.0
23	5.1	7.6	12	18	10	9.1	23	5.3	3.2	.0	.0	.0
24	4.2	7.2	11	19	10	9.4	19	5.3	2.4	.0	.0	.0
25	4.3	7.2	9.3	21	10	9.8	17	6.6	1.9	.0	.0	.0
26	4.3	7.2	9.0	21	11	9.3	16	5.5	3.1	.0	.0	.0
27	4.2	7.2	9.1	21	10	9.0	15	5.0	3.1	.0	.0	.0
28	4.5	7.2	9.2	21	12	9.0	14	5.8	3.6	.0	.0	.0
29	7.0	7.2	10	20	13	9.2	13	15	2.7	.0	.0	.0
30	8.6	7.2	11	18	---	9.4	12	14	2.7	.0	.0	.0
31	6.3	---	11	17	---	7.5	---	11	---	.0	.0	---
TOTAL	74.89	250.4	341.6	759.8	357	427.0	366.8	338.6	142.6	11.60	0.0	0.0
MEAN	2.42	8.35	11.0	24.5	12.3	13.8	12.2	10.9	4.75	.37	.00	.00
MAX	8.6	15	29	136	16	40	29	18	9.8	2.0	.00	.00
MIN	.00	6.8	7.2	9.8	10	7.5	5.1	5.0	1.9	.00	.00	.00
AC-FT	149	497	678	1510	708	847	728	672	283	23	.0	.0

CAL YR 1987 TOTAL 4083.11 MEAN 11.2 MAX 127 MIN .00 AC-FT 8100  
WTR YR 1988 TOTAL 3070.29 MEAN 8.39 MAX 136 MIN .00 AC-FT 6090

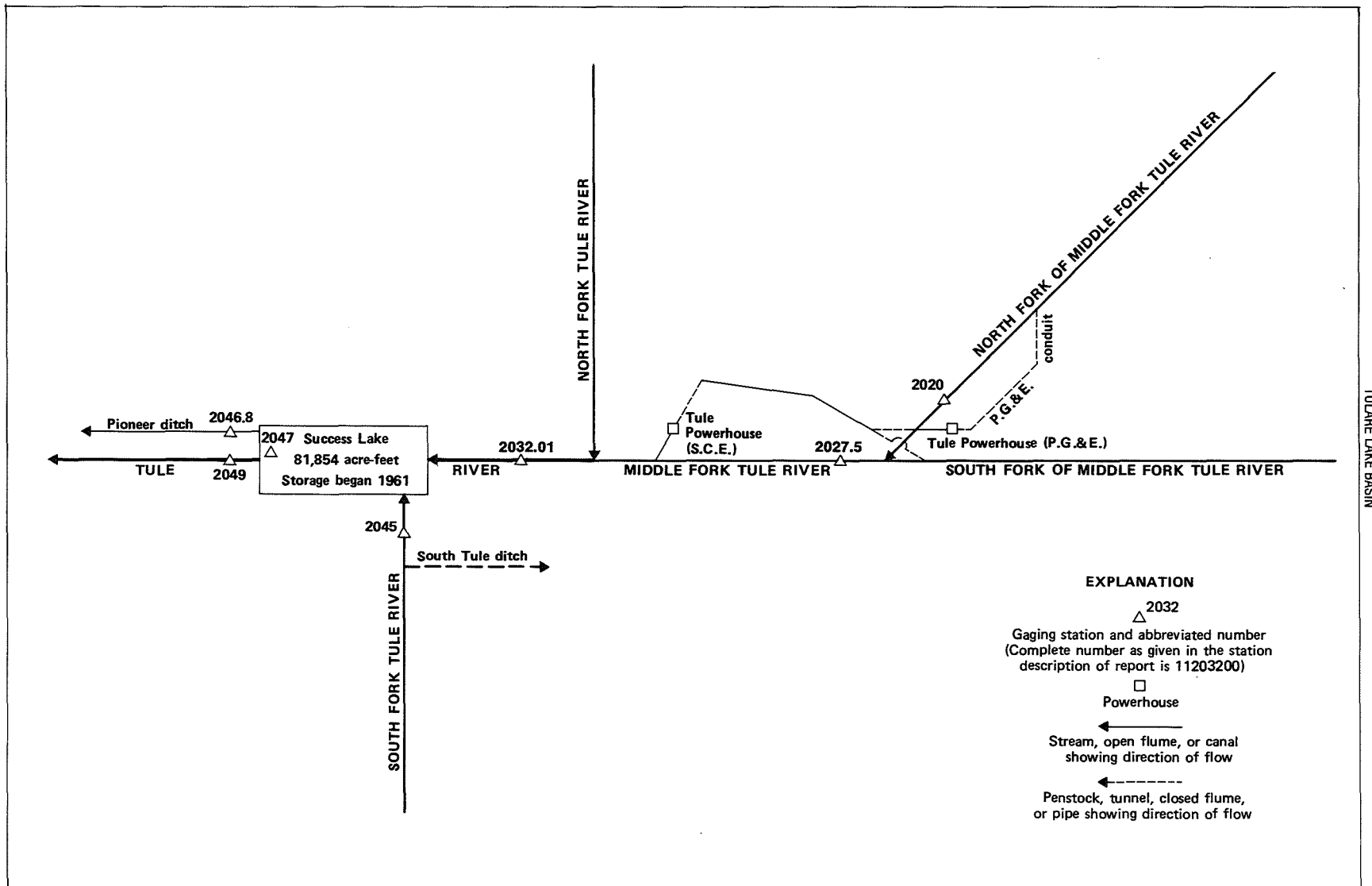


Figure 28.--Schematic diagram showing diversions and storage in Tule River basin.

## TULARE LAKE BASIN

11202000 NORTH FORK OF MIDDLE FORK TULE RIVER NEAR SPRINGVILLE, CA

LOCATION.--Lat 36°10'29", long 118°41'41", unsurveyed, in T.20 S., R.30 E., Tulare County, Hydrologic Unit 18030006, on right bank 1.2 mi upstream from mouth, 2.2 mi downstream from Hossack Creek, and 7.4 mi northeast of Springville.

DRAINAGE AREA.--39.3 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1939 to current year. Monthly discharge only for some periods, published in WSP 1315-A. January 1909 to December 1912 at site 2 mi upstream, records not equivalent. Prior to October 1954, records for river and Pacific Gas & Electric Co. conduit published separately; combined flow only, October 1954 to September 1960. Prior to October 1982, combined flow consisted of river and conduit. October 1982 to present, combined flow consists of river and Pacific Gas & Electric Co. Tule River powerplant.

REVISED RECORDS.--WSP 1445: 1951.

GAGE.--Water-stage recorder. Concrete control on river since Aug. 6, 1958. Elevation of gage is 2,920 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. See schematic diagram of Tule River basin. For records of combined discharge of river and powerplant, see following page.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission Project.

AVERAGE DISCHARGE.--River only: 49 years, 27.5 ft<sup>3</sup>/s, 19,920 acre-ft/yr.  
Combined river and diversion: 49 years, 59.9 ft<sup>3</sup>/s, 43,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 16,900 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 13.83 ft, from floodmarks, from rating curve extended above 1,820 ft<sup>3</sup>/s on basis of critical-depth determinations at gage heights 9.67 and 12.47 ft; no flow Sept. 10, 11, 1955.  
Combined flow: Maximum discharge, 16,900 ft<sup>3</sup>/s, Dec. 6, 1966; minimum daily, 6.7 ft<sup>3</sup>/s, Aug. 15, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 196 ft<sup>3</sup>/s, Jan. 5, gage height, 4.20 ft; minimum daily, 0.61 ft<sup>3</sup>/s, Aug. 20.  
Combined flow: Maximum daily discharge, 161 ft<sup>3</sup>/s, Jan. 5; minimum daily, 5.0 ft<sup>3</sup>/s, Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	1.6	1.5	2.0	2.8	5.2	1.7	3.3	2.5	.90	.74	.85
2	5.2	3.6	1.5	2.1	2.8	4.1	1.7	3.3	2.2	.85	.74	.87
3	5.3	1.7	1.5	2.7	2.8	3.2	1.7	3.2	2.0	.82	.73	.92
4	5.3	1.5	1.9	4.2	2.6	2.9	1.7	3.0	2.0	.82	.74	.91
5	5.2	3.1	2.8	95	2.5	2.8	1.8	3.1	2.0	.84	.75	.84
6	5.2	2.9	9.7	14	2.4	2.8	1.7	3.8	2.0	.82	.75	3.4
7	5.1	2.5	11	5.3	2.2	3.1	1.7	3.6	1.9	.91	.75	8.9
8	4.4	2.0	2.5	4.5	2.2	2.8	1.8	3.7	1.8	1.2	.73	7.1
9	1.1	1.9	2.1	3.4	2.2	2.6	1.7	3.4	1.8	.78	.68	5.3
10	1.0	1.9	1.9	3.1	2.2	2.4	1.7	3.3	1.7	.77	.67	.76
11	.98	1.9	1.8	3.3	2.2	2.3	1.7	3.1	1.7	1.5	.66	.64
12	1.0	2.0	1.9	3.2	2.3	2.1	1.7	3.1	1.7	.81	.68	.65
13	1.0	3.2	1.9	2.9	2.4	2.0	1.7	3.3	1.6	.77	.71	.63
14	1.1	4.7	1.7	2.6	2.5	2.0	2.7	3.0	1.5	.80	.72	.62
15	1.0	1.8	1.7	2.8	2.5	1.9	2.9	2.9	1.4	.77	.71	.63
16	.99	1.5	1.6	4.1	2.1	1.9	2.5	3.0	1.4	.74	.72	.67
17	.99	1.6	1.6	15	1.8	1.8	2.8	3.1	1.4	.74	.71	.70
18	1.0	1.7	1.6	9.8	1.8	1.8	2.8	3.0	1.4	.71	.66	.70
19	1.0	2.7	1.6	5.7	1.7	1.8	2.6	2.7	1.5	.72	.62	.71
20	1.0	2.0	1.6	4.7	1.7	1.8	6.3	2.4	1.4	.71	.61	.98
21	1.1	3.2	1.6	4.2	1.6	1.8	4.7	2.2	1.2	.80	.63	.84
22	1.5	1.6	1.9	4.1	1.6	1.8	5.1	2.0	1.1	.94	.66	1.4
23	1.4	1.5	1.9	4.1	1.6	1.8	4.9	2.0	1.1	.89	.68	1.0
24	1.2	1.5	1.7	4.3	1.6	1.8	3.9	1.9	1.2	1.2	.73	1.0
25	1.1	1.5	1.7	4.2	1.6	1.9	3.8	1.8	1.1	1.1	.90	1.0
26	1.1	1.5	1.6	4.3	1.6	1.8	3.7	1.8	1.1	.79	.93	1.0
27	1.3	1.5	1.6	3.5	1.8	1.9	3.2	1.8	1.2	.74	.77	.99
28	1.8	1.5	1.7	3.3	1.9	1.9	3.1	1.7	1.0	.73	.89	.98
29	1.7	1.5	2.1	3.1	2.6	1.8	3.0	3.6	.96	.75	.89	.96
30	1.3	1.5	2.6	3.0	---	1.8	3.0	3.0	.94	1.6	.86	1.4
31	1.3	---	2.1	2.9	---	1.8	---	2.6	---	.82	.81	---
TOTAL	67.66	62.6	73.9	231.4	61.6	71.4	83.3	87.7	45.80	27.34	22.83	47.35
MEAN	2.18	2.09	2.38	7.46	2.12	2.30	2.78	2.83	1.53	.88	.74	1.58
MAX	5.3	4.7	11	95	2.8	5.2	6.3	3.8	2.5	1.6	.93	8.9
MIN	.98	1.5	1.5	2.0	1.6	1.8	1.7	1.7	.94	.71	.61	.62
AC-FT	131	124	147	459	122	142	165	174	91	54	45	94

CAL YR 1987 TOTAL 1373.02 MEAN 3.76 MAX 111 MIN .90 AC-FT 2720  
WTR YR 1988 TOTAL 882.88 MEAN 2.41 MAX 95 MIN .61 AC-FT 1750

## TULARE LAKE BASIN

11202001 NORTH FORK OF MIDDLE FORK TULE RIVER NEAR SPRINGVILLE, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF NORTH FORK OF MIDDLE FORK TULE RIVER  
AND PACIFIC GAS & ELECTRIC CO. TULE RIVER POWERPLANT NEAR SPRINGVILLE, CA  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	18	14	19	20	38	36	49	44	17	13	12
2	5.2	26	15	18	26	37	35	42	37	16	14	13
3	5.3	19	15	20	26	35	34	39	35	17	13	12
4	5.3	17	16	23	25	36	33	38	33	17	13	12
5	5.2	19	21	161	24	38	39	47	33	17	13	12
6	5.2	22	26	57	24	35	40	46	30	17	13	11
7	5.1	20	66	34	24	36	42	46	32	17	13	8.9
8	12	17	17	28	24	36	43	46	28	16	13	7.1
9	14	17	23	25	28	38	45	38	29	16	13	13
10	14	17	22	26	28	33	42	46	26	16	13	12
11	14	16	21	26	29	34	44	49	28	15	13	11
12	13	16	22	25	30	26	44	54	28	15	13	12
13	14	16	19	25	24	29	41	62	27	16	13	12
14	14	17	18	24	32	28	44	65	24	16	13	9.8
15	14	16	17	23	32	28	48	66	23	15	13	12
16	14	16	20	25	29	28	36	66	23	15	13	12
17	13	16	20	36	30	27	42	60	21	15	13	12
18	13	17	18	37	27	27	43	55	23	15	12	12
19	14	17	19	28	27	29	39	55	19	15	13	12
20	13	12	18	25	22	30	53	53	21	14	13	12
21	13	17	16	26	27	32	42	52	21	14	13	13
22	15	17	20	26	26	33	44	51	20	15	12	11
23	18	16	20	27	26	34	42	48	20	14	11	13
24	14	15	19	30	28	35	41	48	19	14	12	13
25	15	15	16	33	25	38	43	47	20	15	13	12
26	14	15	18	35	28	39	56	43	20	14	14	13
27	14	15	18	35	28	48	53	42	19	14	13	12
28	16	15	18	34	32	42	49	39	19	14	13	12
29	18	14	19	35	31	41	49	49	18	14	14	12
30	17	15	18	35	---	41	43	42	18	14	13	12
31	14	---	19	35	---	37	---	40	---	13	12	---
TOTAL	380.3	505	628	1036	782	1068	1285	1523	758	472	400	352.8
MEAN	12.3	16.8	20.3	33.4	27.0	34.5	42.8	49.1	25.3	15.2	12.9	11.8
MAX	18	26	66	161	32	48	56	66	44	17	14	13
MIN	5.0	12	14	18	20	26	33	38	18	13	11	7.1
AC-FT	754	1000	1250	2050	1550	2120	2550	3020	1500	936	793	700

CAL YR 1987 TOTAL 10065.2 MEAN 27.6 MAX 167 MIN 5.0 AC-FT 19960  
WTR YR 1988 TOTAL 9190.1 MEAN 25.1 MAX 161 MIN 5.0 AC-FT 18230

## TULARE LAKE BASIN

11202750 MIDDLE FORK TULE RIVER ABOVE SPRINGVILLE, CA

LOCATION.--Lat 36°09'00", long 118°44'56", unsurveyed, T.20 S., R.30 E., Tulare County, Hydrologic Unit 18030006, Sequoia National Forest, on right bank 0.6 mi downstream from Coffee Canyon and 4.0 mi northeast of Springville.

DRAINAGE AREA.--92.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder and concrete control on river; water-stage recorder and metal flume for conduit diversion. Elevation of gage is 1,680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: May 29-31, June 5-12, 21-27. Southern California Edison Co.'s Tule River conduit diverts from the right bank of Middle Fork Tule River 2.5 mi upstream from station. Flow from this conduit passes through Tule River powerplant of Southern California Edison Co. Diversions are made from powerplant tailrace ditch to Springville diversion and Duncan diversion ditches. Diversion during water year 1988 occurred Oct. 1 to Jan. 12, Jan. 20 to Mar. 20, Mar. 24, Mar. 27 to Sept. 30. Remaining water is returned to the Tule River 1.5 mi upstream from confluence of Middle and North Forks. See schematic diagram of Tule River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 10 years, 104 ft<sup>3</sup>/s, 75,350 acre-ft/yr.  
Combined river and diversion: 10 years, 137 ft<sup>3</sup>/s, 99,260 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge, 12,300 ft<sup>3</sup>/s, Jan. 13, 1980, gage height, 12.63 ft, from rating curve extended above 760 ft<sup>3</sup>/s, on basis of runoff comparisons with nearby stations; minimum daily, 4.7 ft<sup>3</sup>/s, Oct. 4, 5, 1987.

Combined river and diversion: Maximum discharge, 12,300 ft<sup>3</sup>/s, Jan. 13, 1980; minimum daily, 15 ft<sup>3</sup>/s, Sept. 6, 1988.

EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 615 ft<sup>3</sup>/s, Jan. 5, gage height, 6.13 ft; minimum daily, 4.7 ft<sup>3</sup>/s, Oct. 4, 5.  
Combined river and diversion: Maximum daily discharge, 331 ft<sup>3</sup>/s, Jan. 5; minimum daily, 15 ft<sup>3</sup>/s, Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	6.9	5.1	7.1	14	46	18	34	35	12	13	12
2	5.2	18	5.2	7.3	12	39	16	31	27	12	14	12
3	4.9	14	5.1	9.1	11	32	17	30	21	12	13	12
4	4.7	7.3	7.4	10	9.2	28	17	28	18	12	13	12
5	4.7	12	20	296	9.2	26	18	28	17	12	13	12
6	4.8	20	12	87	10	26	20	34	15	12	14	11
7	4.9	18	86	37	10	26	22	31	15	12	13	14
8	7.0	9.9	19	23	11	26	24	33	15	12	13	12
9	7.9	6.5	10	16	12	26	22	36	14	14	12	13
10	7.4	5.8	6.7	13	12	22	23	35	14	18	12	13
11	7.0	5.6	6.2	15	13	20	22	34	15	15	12	13
12	7.2	5.2	6.5	24	13	17	23	40	15	12	12	13
13	7.4	5.3	6.2	43	12	16	21	48	13	13	12	13
14	6.3	6.5	7.3	42	12	16	30	50	12	13	13	13
15	5.7	5.7	8.6	44	12	17	34	51	12	13	12	13
16	5.7	5.2	12	48	12	17	28	51	12	13	12	14
17	6.0	5.3	14	96	12	16	29	48	12	13	12	14
18	6.1	5.4	10	84	11	17	31	45	12	13	12	13
19	6.4	5.4	9.5	59	9.5	19	25	41	13	13	12	13
20	6.3	5.6	8.9	40	9.5	45	53	36	15	12	12	13
21	5.5	8.7	8.6	21	11	52	40	35	12	13	12	13
22	9.8	5.3	12	14	10	53	39	35	12	13	12	13
23	11	5.2	16	15	11	55	37	32	13	14	12	14
24	5.7	5.2	9.5	16	12	57	32	30	17	15	12	13
25	5.6	5.2	6.5	21	12	59	42	28	16	13	12	13
26	5.6	5.2	6.6	23	13	61	48	26	18	12	14	14
27	5.1	5.1	6.4	24	14	61	46	24	16	12	12	14
28	7.4	5.1	6.6	24	14	41	41	20	14	13	12	14
29	11	5.1	9.0	23	28	25	39	35	14	16	13	14
30	6.1	5.1	10	19	---	23	38	34	12	13	12	14
31	5.1	---	8.1	16	---	22	---	27	---	14	12	---
TOTAL	202.5	228.8	365.0	1216.5	361.4	1006	895	1090	466	406	386	391
MEAN	6.53	7.63	11.8	39.2	12.5	32.5	29.8	35.2	15.5	13.1	12.5	13.0
MAX	11	20	86	296	28	61	53	51	35	18	14	14
MIN	4.7	5.1	5.1	7.1	9.2	16	16	20	12	12	12	11
AC-FT	402	454	724	2410	717	2000	1780	2160	924	805	766	776

CAL YR 1987 TOTAL 8762.4 MEAN 24.0 MAX 263 MIN 4.7 AC-FT 17380  
WTR YR 1988 TOTAL 7014.2 MEAN 19.2 MAX 296 MIN 4.7 AC-FT 13910



DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	33	28	36	52	82	60	75	69	31	19	20
2	21	44	28	36	50	75	58	71	61	30	20	20
3	21	39	28	41	49	68	59	70	56	29	20	20
4	21	32	29	45	47	65	59	68	54	28	20	19
5	21	38	46	331	46	63	60	68	53	28	20	18
6	21	46	42	123	46	63	61	73	50	27	21	15
7	21	43	117	74	46	63	63	69	49	27	21	18
8	22	35	54	62	47	63	66	71	47	26	22	18
9	23	31	46	55	49	63	64	74	45	28	21	20
10	22	31	43	52	49	58	65	73	44	31	21	20
11	22	30	41	54	51	56	63	72	46	27	20	19
12	22	28	40	50	52	53	64	77	46	25	20	19
13	24	27	38	43	51	52	61	85	43	25	20	19
14	23	31	34	42	51	52	70	87	41	25	21	18
15	23	30	36	44	52	52	73	88	40	25	20	19
16	23	29	34	48	52	51	67	87	39	25	20	20
17	23	30	35	96	53	50	69	84	39	24	20	20
18	23	30	34	84	52	51	72	81	39	23	20	19
19	23	29	34	59	49	48	66	76	39	23	20	19
20	24	28	34	55	47	49	92	72	42	22	19	19
21	23	35	34	53	49	52	80	71	37	22	19	21
22	30	30	37	52	48	53	79	72	34	23	19	21
23	35	30	41	54	48	55	77	69	32	24	19	22
24	30	29	35	55	49	57	72	68	36	26	20	20
25	29	28	32	61	49	59	82	67	35	25	21	20
26	28	28	34	63	50	61	89	66	36	24	25	21
27	26	28	34	63	51	67	87	63	33	23	21	21
28	28	28	35	62	62	71	82	58	32	22	22	21
29	36	28	39	61	65	67	80	72	33	24	24	19
30	31	28	40	58	---	65	78	70	32	18	21	19
31	28	---	37	55	---	62	---	61	---	20	20	---
TOTAL	769	956	1219	2067	1462	1846	2118	2258	1282	780	636	584
MEAN	24.8	31.9	39.3	66.7	50.4	59.5	70.6	72.8	42.7	25.2	20.5	19.5
MAX	36	46	117	331	65	82	92	88	69	31	25	22
MIN	21	27	28	36	46	48	58	58	32	18	19	15
AC-FT	1530	1900	2420	4100	2900	3660	4200	4480	2540	1550	1260	1160
CAL YR 1987	TOTAL 17663	MEAN 48.4	MAX 292	MIN 18	AC-FT 35030							
WTR YR 1988	TOTAL 15977	MEAN 43.7	MAX 331	MIN 15	AC-FT 31690							

## TULARE LAKE BASIN

11203201 TULE RIVER AT HIGHWAY 190, NEAR SPRINGVILLE, CA  
(Formerly published as 11203200 Tule River near Springville, CA)

LOCATION.--Lat 36°06'02", long 118°52'07", in NE 1/4 SW 1/4 sec.17, T.21 S., R.29 E., Tulare County, Hydrologic Unit 18030006, on left bank 10 ft downstream from highway bridge, 3.5 mi southwest of Springville, and 4.1 mi upstream from Success Dam.  
DRAINAGE AREA.--247 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1968 to current year. October 1957 to March 1968, at site 1.9 mi upstream; records not equivalent because of inflow between sites. Prior to October 1984 and in 1986, published as "11203200 Tule River near Springville".  
REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 3, Dec. 19 to Jan. 7. Records good except those for periods of estimated daily discharges, which are fair. Many small diversions above station for irrigation. Power is developed on Middle Fork and tributaries. Diversion to Tule River diversion ditch starts 400 ft upstream, most of which is returned to the river 0.5 mi downstream. Records include flow diverted to Tule River diversion ditch.

AVERAGE DISCHARGE.--20 years (water years 1969-88), 184 ft<sup>3</sup>/s, 133,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft<sup>3</sup>/s, Jan. 12, 1980, gage height, 11.97 ft; no flow Aug. 16, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 49,600 ft<sup>3</sup>/s, Dec. 6, 1966, gage height 16.9 ft, present datum, from high-water profile on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 350 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1530	*1,860	*7.65	Jan. 17	1715	519	5.68

Minimum daily, 0.06 ft<sup>3</sup>/s, Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	30	41	46	92	140	66	101	69	11	.22	.32
2	4.1	47	38	47	86	175	64	95	59	9.5	.21	.25
3	4.2	54	35	51	80	118	63	86	53	8.0	.17	.17
4	3.6	41	39	65	76	105	61	82	49	7.5	.23	.29
5	4.0	40	67	879	71	100	61	77	46	8.5	.21	.21
6	3.9	59	52	341	68	97	63	92	46	6.6	.19	.11
7	3.5	56	127	173	68	96	65	89	44	6.7	.20	.09
8	4.3	45	83	128	67	91	66	91	41	5.5	.34	.09
9	4.7	39	67	103	69	88	63	90	43	4.8	.29	.08
10	5.2	35	60	92	72	88	56	88	37	4.4	.35	.09
11	5.2	34	57	90	73	82	55	84	35	3.7	.52	.18
12	5.5	32	57	92	74	78	55	81	35	3.9	.33	.14
13	5.8	32	56	83	75	75	54	87	31	1.3	.67	.08
14	7.1	34	50	77	74	72	69	94	26	1.1	.76	.08
15	7.6	37	46	77	72	68	98	92	23	1.5	.50	.08
16	8.1	34	48	85	70	66	86	93	20	1.7	.55	.08
17	7.6	33	43	288	70	64	78	90	20	2.8	.99	.09
18	6.3	35	44	272	68	61	83	91	20	3.6	.36	.06
19	7.2	34	45	150	67	62	78	86	21	1.4	.28	.11
20	7.9	33	43	119	64	61	157	80	27	.50	.41	.20
21	8.3	39	42	104	61	67	130	72	32	.42	.57	.40
22	10	42	45	99	61	67	139	66	25	.22	.66	.59
23	18	38	56	96	61	69	129	64	22	.26	.94	1.4
24	19	35	52	96	60	68	114	63	20	.27	1.3	1.2
25	17	34	43	106	59	71	109	60	20	.26	.98	.68
26	13	39	40	113	59	74	120	56	21	.14	.69	.65
27	16	39	41	115	60	78	122	54	18	.12	.83	.90
28	18	40	42	117	73	79	112	53	15	.12	.78	.79
29	30	35	51	111	84	74	109	66	14	.27	.65	.97
30	39	37	60	104	---	72	104	74	14	.18	.74	.76
31	30	---	51	98	---	70	---	67	---	.21	.76	---
TOTAL	328.4	1162	1621	4417	2034	2576	2629	2464	946	96.47	16.68	11.14
MEAN	10.6	38.7	52.3	142	70.1	83.1	87.6	79.5	31.5	3.11	.54	.37
MAX	39	59	127	879	92	175	157	101	69	11	1.3	1.4
MIN	3.5	30	35	46	59	61	54	53	14	.12	.17	.06
AC-FT	651	2300	3220	8760	4030	5110	5210	4890	1880	191	33	22
CAL YR 1987 TOTAL	21565.00			MEAN 59.1	MAX 725	MIN 1.8	AC-FT 42770					
WTR YR 1988 TOTAL	18301.69			MEAN 50.0	MAX 879	MIN .06	AC-FT 36300					

## TULARE LAKE BASIN

11203201 TULE RIVER AT HIGHWAY 190, NEAR SPRINGVILLE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-67, 1969 to September 1988 (discontinued).

CHEMICAL DATA: Water years 1964-66.

WATER TEMPERATURE: Water years 1966-67, 1969 to September 1988 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1965 to September 1967, October 1968 to September 1988 (discontinued).

INSTRUMENTATION.--Temperature recorder October 1965 to September 1967, and October 1968 to September 1988.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 35.5 °C, July 1, 1972; minimum recorded, 2.5 °C, Jan. 5-8, 1971.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 32.0 °C, July 17; minimum recorded, 5.0 °C, Dec. 15, 24.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	21.0	19.0	16.5	15.5	9.5	7.5	---	---	9.5	8.0	12.0	10.5
2	21.0	19.5	15.5	14.0	10.5	8.5	6.5	5.5	8.5	7.5	10.5	9.0
3	21.0	19.0	14.0	12.5	11.0	9.0	8.0	6.5	8.5	7.0	11.5	9.0
4	21.0	19.5	14.5	13.0	11.0	9.5	9.0	8.0	8.5	6.5	12.5	10.0
5	21.0	19.0	14.5	13.0	11.0	10.0	9.5	7.5	8.5	6.0	13.5	11.0
6	20.5	18.5	14.0	13.5	10.5	9.5	7.5	6.0	8.5	6.5	13.0	12.0
7	20.0	18.5	14.5	13.0	10.5	10.0	7.5	6.5	9.0	6.5	13.5	11.0
8	20.5	17.5	14.5	13.0	10.0	9.0	8.0	6.5	9.5	7.5	14.0	11.0
9	20.5	17.5	14.5	12.5	10.0	8.5	8.0	7.0	10.0	8.0	13.5	11.5
10	20.5	17.5	15.0	13.0	10.5	9.0	8.5	6.5	10.5	8.0	11.5	9.0
11	20.0	17.0	15.5	14.0	10.5	10.0	8.5	8.0	11.0	8.5	11.0	8.5
12	20.5	18.0	15.0	13.0	10.0	9.0	9.0	7.5	11.0	8.5	11.0	8.0
13	20.5	17.5	15.0	13.5	9.0	7.0	8.0	7.0	11.0	8.5	11.5	8.5
14	21.0	17.0	14.0	13.0	7.0	6.0	8.0	6.5	11.0	9.0	12.5	9.0
15	21.0	16.5	14.0	12.5	6.0	5.0	8.0	7.5	11.5	9.0	13.0	9.5
16	20.5	16.0	13.0	11.5	8.0	6.0	8.0	7.0	11.5	9.0	13.0	10.0
17	20.0	15.5	12.5	11.0	8.5	7.0	8.0	7.5	11.0	8.5	13.5	10.5
18	19.5	15.5	12.5	11.0	8.0	6.5	8.0	7.0	10.0	8.0	14.0	10.5
19	20.0	16.0	13.0	11.0	9.0	7.5	7.5	6.5	11.5	7.5	15.0	11.5
20	19.0	15.5	12.5	10.5	9.0	7.5	8.5	5.5	10.5	7.5	15.5	12.0
21	19.0	16.0	12.0	11.5	8.5	7.0	7.0	6.0	11.0	8.5	15.5	12.5
22	18.0	17.0	12.0	11.0	8.5	7.5	7.5	5.5	11.0	8.5	15.5	12.5
23	19.5	16.5	12.0	11.0	8.0	7.0	8.0	6.5	11.5	9.0	15.5	12.5
24	19.5	16.5	11.5	10.0	8.0	5.0	9.5	6.5	12.0	9.5	16.0	13.0
25	19.0	16.5	11.0	10.0	---	---	9.0	7.0	12.0	9.5	16.0	13.0
26	19.5	16.0	10.0	8.5	---	---	9.5	7.5	12.5	10.5	16.5	13.5
27	18.5	17.0	9.0	7.5	---	---	10.0	8.5	13.5	12.0	16.0	14.0
28	19.5	17.5	9.5	7.5	---	---	10.5	8.5	14.0	12.0	16.0	12.5
29	18.5	17.0	9.5	7.5	---	---	10.5	9.5	13.0	12.0	14.5	11.0
30	18.0	16.5	9.5	7.5	---	---	9.5	8.5	---	---	14.5	11.5
31	17.0	16.0	---	---	---	---	9.5	8.5	---	---	14.0	11.0
MONTH	21.0	15.5	16.5	7.5	---	---	---	---	14.0	6.0	16.5	8.0

## TULARE LAKE BASIN

11203201 TULE RIVER AT HIGHWAY 190, NEAR SPRINGVILLE, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	14.5	11.0	13.5	10.5	19.5	16.0	29.5	22.5	29.5	26.5	28.5	26.0
2	15.0	11.5	14.5	10.5	22.5	17.5	29.5	23.0	28.5	26.0	28.0	26.0
3	15.5	12.5	16.0	12.0	23.5	19.0	29.5	23.5	28.5	25.5	28.0	25.5
4	15.5	12.5	17.0	13.5	21.5	18.5	29.0	23.5	27.5	25.5	28.0	25.5
5	16.5	13.0	15.5	12.5	20.5	17.0	28.5	22.5	28.5	25.5	28.0	26.0
6	17.5	14.0	12.5	10.5	20.0	16.0	27.5	22.0	28.0	25.5	28.5	26.0
7	17.5	15.0	14.0	10.5	20.5	16.0	29.0	23.0	27.5	24.5	28.0	25.0
8	16.5	14.0	15.0	11.5	21.0	15.5	29.5	23.5	28.0	24.5	27.0	24.5
9	17.0	13.0	17.0	13.0	22.0	16.5	28.0	24.0	28.0	25.0	26.5	24.0
10	18.0	14.0	18.5	14.5	23.0	17.0	30.5	24.5	28.0	25.0	25.5	23.0
11	19.0	15.0	20.5	16.5	24.0	18.0	28.5	24.5	27.0	24.5	25.0	22.5
12	17.0	15.5	21.0	17.5	24.5	18.5	28.0	23.5	27.0	24.0	24.5	22.0
13	16.0	14.5	20.0	18.0	26.0	19.5	27.0	24.5	26.5	24.0	24.0	21.5
14	14.5	12.5	19.5	16.0	27.0	21.0	27.5	24.5	26.5	24.0	23.5	21.0
15	12.5	11.5	20.5	17.0	28.0	21.0	28.0	25.0	26.5	23.5	23.5	21.0
16	12.5	10.5	19.5	17.5	27.5	21.0	29.5	25.5	26.5	23.5	23.5	20.5
17	12.5	11.5	18.0	15.0	26.0	21.0	32.0	26.5	27.0	24.0	23.0	20.5
18	15.0	11.5	18.0	14.0	27.0	21.0	30.5	26.5	28.0	24.5	22.5	20.0
19	14.5	13.0	20.0	16.0	29.5	22.5	30.0	27.0	28.0	25.0	22.0	19.5
20	14.0	11.5	21.0	17.0	26.5	23.0	29.0	26.5	27.5	24.5	21.5	20.0
21	12.5	11.0	22.0	18.0	27.0	21.0	29.0	27.0	27.0	24.5	22.0	20.0
22	12.0	10.5	22.0	18.5	28.5	22.0	30.5	27.0	27.5	25.0	22.0	19.5
23	11.5	10.5	22.0	18.5	28.0	23.5	29.5	27.5	28.0	25.5	22.0	20.0
24	14.5	10.5	22.5	18.5	29.0	23.5	30.5	27.5	28.0	26.5	22.0	20.5
25	15.5	12.5	22.5	19.0	25.5	22.5	31.0	27.5	28.0	26.5	22.0	20.0
26	15.5	13.0	22.5	18.5	28.0	21.5	31.0	28.0	29.0	26.5	21.5	20.0
27	15.5	14.0	22.5	18.5	28.5	22.0	30.5	27.5	29.5	27.0	21.5	19.5
28	15.0	13.0	22.0	18.5	28.5	22.5	30.5	27.5	28.5	27.0	22.0	19.5
29	15.0	12.0	19.0	15.5	28.0	22.5	29.0	26.5	28.5	26.0	22.0	20.5
30	14.0	12.0	18.0	14.0	29.0	22.0	29.5	26.5	28.0	26.0	22.5	20.5
31	---	---	18.5	14.5	---	---	29.5	26.5	28.5	26.0	---	---
MONTH	19.0	10.5	22.5	10.5	29.5	15.5	32.0	22.0	29.5	23.5	28.5	19.5

## TULARE LAKE BASIN

11204500 SOUTH FORK TULE RIVER NEAR SUCCESS, CA

LOCATION.--Lat 36°02'33", long 118°51'24", in NW 1/4 SW 1/4 sec.4, T.22 S., R.29 E., Tulare County, Hydrologic Unit 18030006, on left bank 0.5 mi upstream from Crew Creek, 4 mi southeast of Success, and 5 mi upstream from mouth.

DRAINAGE AREA.--109 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1930 to December 1954, January 1956 to current year. Monthly and yearly discharge only for some periods, published in WSP 1735.

REVISED RECORDS.--WSP 1315-A; 1931-32(M). WSP 1445: 1952-53(P), drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 770 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 26, 1951, at site 0.4 mi downstream at different datum.

REMARKS.--Estimated daily discharges: July 6-12, 14-28, Sept. 14-21, 24-30. Records good except those for estimated daily discharges, which are fair. Diversions for irrigation of about 640 acres above station.

AVERAGE DISCHARGE.--56 years, 45.5 ft<sup>3</sup>/s, 32,960 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 12.50 ft in gage well, 13.3 ft from floodmarks, from rating curve extended above 4,300 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 325 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1530	*475	*4.51				

Minimum daily, 0.02 ft<sup>3</sup>/s, on several days in September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.38	3.7	6.6	9.9	24	42	15	21	14	2.7	.07	.20
2	.34	9.6	6.2	10	21	46	14	18	13	2.1	.04	.24
3	.31	9.7	4.9	11	19	32	14	16	11	2.0	.06	.17
4	.31	4.4	7.2	14	17	26	14	15	11	1.7	.09	.18
5	.31	8.4	25	205	17	23	14	15	10	1.8	.13	.11
6	.26	14	15	79	16	22	13	22	10	1.8	.15	.07
7	.22	13	54	40	16	23	13	21	10	2.7	.14	.07
8	.39	7.3	22	30	15	21	13	24	9.8	1.5	.20	.06
9	.38	5.7	15	25	16	21	13	23	9.5	1.1	.17	.06
10	.48	6.5	13	22	16	21	11	23	8.9	.86	.15	.08
11	.68	5.8	12	22	16	18	8.4	19	8.7	.67	.13	.16
12	.41	5.2	12	24	16	19	8.1	17	8.3	.94	.20	.09
13	.43	5.4	12	21	15	20	8.0	16	8.2	1.4	.14	.07
14	.46	8.1	9.9	19	15	19	12	16	7.6	.17	.35	.04
15	.42	7.7	9.6	18	15	18	19	15	6.5	.12	.51	.02
16	.39	6.1	9.9	21	15	18	15	15	5.6	.09	.22	.02
17	.33	6.2	9.8	54	15	17	14	15	5.7	.08	.22	.02
18	.32	6.3	10	86	14	17	15	16	5.8	.08	.31	.07
19	.32	5.3	9.8	39	13	17	13	15	5.6	.08	.32	.03
20	.29	5.4	9.2	31	13	16	36	13	12	.07	.26	.02
21	.30	10	9.1	27	12	16	30	12	8.5	.07	.21	.03
22	.52	8.7	9.7	26	12	16	49	12	6.2	.07	.28	.23
23	4.1	6.6	15	25	12	16	37	11	5.5	.65	.26	.02
24	1.5	5.2	11	26	12	16	28	11	5.3	.75	.24	.02
25	.50	5.5	9.1	30	12	17	31	11	4.9	.13	.20	.03
26	.44	6.3	8.6	31	12	16	29	10	5.3	.11	.25	.02
27	.30	6.3	8.7	30	13	16	27	10	4.5	.10	.48	.02
28	.58	6.4	9.0	29	20	16	24	10	4.1	.07	.24	.02
29	5.7	5.7	11	28	20	16	22	20	3.5	.08	.21	.02
30	8.6	6.0	13	27	---	15	21	17	3.1	.10	.42	.02
31	3.1	---	11	26	---	15	---	14	---	.05	.34	---
TOTAL	33.07	210.5	388.3	1085.9	449	631	580.5	493	232.1	24.14	6.99	2.21
MEAN	1.07	7.02	12.5	35.0	15.5	20.4	19.4	15.9	7.74	.78	.23	.074
MAX	8.6	14	54	205	24	46	49	24	14	2.7	.51	.24
MIN	.22	3.7	4.9	9.9	12	15	8.0	10	3.1	.05	.04	.02
AC-FT	66	418	770	2150	891	1250	1150	978	460	48	14	4.4

CAL YR 1987	TOTAL	5670.39	MEAN 15.5	MAX 175	MIN .13	AC-FT 11250
WTR YR 1988	TOTAL	4136.71	MEAN 11.3	MAX 205	MIN .02	AC-FT 8210

## TULARE LAKE BASIN

## 11204680 PIONEER DITCH BELOW SUCCESS DAM, CA

LOCATION.--Lat 36°03'34", long 118°55'22", in SW 1/4 NW 1/4 sec.35, T.21 S., R.28 E., Tulare County, Hydrologic Unit 18030006, on left bank 0.1 mi downstream from Success Dam and 5.5 mi east of Porterville.

PERIOD OF RECORD.--April 1959 to current year. Prior to October 1960, monthly diversions only, published with Tule River near Porterville.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 549.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 1, 1961, at site 0.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Ditch receives water from Success Lake (station 11204700).

AVERAGE DISCHARGE.--29 years, 6.96 ft<sup>3</sup>/s, 5,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 29 ft<sup>3</sup>/s, Apr. 15, 1961; no flow at times most years.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	1.4	5.1	2.8	1.1	.98	5.6	1.9	7.7	10	13	14
2	14	.96	2.6	2.8	1.0	1.2	4.8	2.0	7.3	12	15	13
3	13	1.0	1.3	2.8	.90	1.2	7.4	2.5	7.1	12	15	14
4	11	1.3	1.3	1.3	1.1	1.2	9.2	3.5	7.0	11	15	12
5	8.6	1.6	1.3	.50	1.2	1.2	9.7	4.7	7.0	12	14	9.6
6	6.9	1.5	1.3	.50	1.2	1.2	9.5	4.5	8.6	10	12	12
7	8.4	1.4	1.3	.50	.98	1.2	9.7	5.4	8.3	13	10	14
8	4.3	1.5	1.4	6.4	1.4	1.7	7.9	6.1	7.8	15	6.9	16
9	9.7	1.6	1.4	9.3	1.7	2.9	6.9	6.1	9.9	13	7.5	13
10	14	1.5	1.4	9.1	1.6	3.2	6.9	5.3	11	12	8.6	14
11	13	1.7	1.4	8.9	1.7	3.2	9.6	7.5	12	8.0	10	16
12	11	1.6	1.4	8.9	1.9	3.2	11	11	11	5.2	9.2	16
13	9.3	1.5	1.7	3.7	4.2	3.1	14	12	12	6.3	10	9.9
14	7.8	1.6	1.7	1.0	5.5	2.4	15	15	14	6.4	8.8	12
15	9.3	1.6	1.6	1.0	5.6	1.1	5.8	16	16	6.8	11	11
16	11	1.6	.97	1.0	6.3	2.0	1.7	13	12	6.6	11	11
17	11	1.5	.66	1.0	4.2	3.5	1.6	10	12	6.7	13	11
18	9.6	1.4	.66	1.0	2.9	7.1	1.8	6.2	11	12	11	13
19	7.7	1.2	.66	1.1	2.9	8.5	1.7	2.9	11	17	8.9	13
20	6.6	3.9	.66	1.1	2.9	8.2	1.7	1.7	3.5	19	9.6	9.3
21	5.4	2.7	.70	1.1	3.0	9.7	.99	7.3	1.4	18	9.0	15
22	4.9	1.3	.74	1.1	3.1	12	.66	9.6	11	18	13	16
23	4.9	1.3	.74	1.1	3.1	11	1.4	10	17	16	14	15
24	4.9	1.0	4.5	1.1	2.8	9.6	.98	13	18	16	14	11
25	4.9	.58	6.7	1.1	2.2	8.3	.50	13	19	15	14	12
26	3.7	.58	6.7	1.1	2.2	7.4	.90	13	16	16	14	12
27	2.3	.68	4.1	1.1	2.1	7.0	1.1	13	14	14	14	9.4
28	4.9	.74	2.8	1.1	2.1	6.8	1.1	14	16	13	13	11
29	4.3	.74	2.8	1.1	1.3	6.1	1.5	14	15	11	16	12
30	2.1	3.7	2.8	1.1	---	5.5	1.9	12	11	10	16	12
31	1.4	---	2.8	1.0	---	5.5	---	9.5	---	10	14	---
TOTAL	245.9	44.68	65.19	76.70	72.18	147.18	152.53	265.7	334.6	371.0	370.5	379.2
MEAN	7.93	1.49	2.10	2.47	2.49	4.75	5.08	8.57	11.2	12.0	12.0	12.6
MAX	16	3.9	6.7	9.3	6.3	12	15	16	19	19	16	16
MIN	1.4	.58	.66	.50	.90	.98	.50	1.7	1.4	5.2	6.9	9.3
AC-FT	488	89	129	152	143	292	303	527	664	736	735	752
CAL YR 1987	TOTAL	2798.87	MEAN 7.67	MAX 18	MIN 0	AC-FT 5550						
WTR YR 1988	TOTAL	2525.36	MEAN 6.90	MAX 19	MIN .50	AC-FT 5010						

## TULARE LAKE BASIN

11204700 SUCCESS LAKE NEAR SUCCESS, CA

LOCATION.--Lat 36°03'40", long 118°55'18", in SE 1/4 NW 1/4 sec.35, T.21 S., R.28 E., Tulare County, Hydrologic Unit 18030006, in control tower near right abutment of Success Dam on Tule River, 5 mi east of Porterville.  
DRAINAGE AREA.--391 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam and dike. Storage began November 1961. Usable capacity, 81,734 acre-ft between elevations 559.0 ft, invert of outlet structure, and 652.5 ft, spillway crest. Surcharge flood control storage, 120,413 acre-ft between ungated spillway crest and elevation 686.8 ft, maximum spillway design flood pool. Dead storage, 557 acre-ft. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records were provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 101,300 acre-ft, Dec. 7, 1966, elevation, 658.63 ft; minimum since reservoir first filled, 3,856 acre-ft (revised), Oct. 17, 1972, elevation, 579.52 ft (based on capacity table then in use); minimum elevation, 579.09 ft, Oct. 23-26, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,899 acre-ft, June 10-12, elevation, 613.43 ft; minimum, 3,989 acre-ft, Oct. 23-26, elevation, 579.09 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from table dated September 1978)

575	2,975	590	7,747	640	56,084
580	4,241	600	12,902	660	102,684
585	5,813	620	29,183	690	217,100

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4547	4278	6786	10194	8918	13383	16856	20197	22495	20748	13271	9291
2	4500	4352	6856	9973	9122	13666	16987	20418	22599	20533	13067	9175
3	4453	4462	6931	9750	9311	13781	17112	20616	22687	20320	12908	9065
4	4409	4556	7030	9581	9482	13870	17156	20765	22766	20075	12847	8942
5	4366	4645	7186	11339	9635	13960	17112	20915	22819	19799	12805	8796
6	4329	4757	7329	11660	9785	14050	16987	21107	22846	19527	12768	8689
7	4292	4889	7713	11217	9932	14147	16856	21284	22863	19296	12708	8597
8	4269	5004	7941	10545	10075	14218	16740	21478	22872	19193	12606	8506
9	4230	5099	8107	9816	10220	14271	16624	21666	22890	19122	12445	8410
10	4188	5186	8244	9065	10376	14310	16488	21845	22899	19035	12244	8311
11	4140	5264	8383	8478	10529	14316	16345	22009	22899	18996	12010	8226
12	4121	5333	8519	8289	10683	14323	16196	22138	22899	18925	11762	8138
13	4112	5402	8652	8298	10834	14323	16054	22277	22854	18785	11501	8054
14	4104	5472	8764	8307	10969	14323	16019	22433	22775	18583	11250	7976
15	4104	5549	8867	8311	11101	14395	16075	22582	22687	18382	11035	7910
16	4099	5620	8970	8356	11233	14513	16132	22635	22599	18183	10850	7833
17	4093	5692	9075	8867	11378	14632	16182	22626	22529	17993	10699	7751
18	4077	5775	9175	9320	11518	14745	16245	22617	22460	17766	10593	7671
19	4049	5831	9281	9291	11648	14865	16452	22599	22390	17526	10513	7612
20	4025	5912	9389	9151	11768	14986	16863	22556	22294	17281	10434	7574
21	4006	5993	9487	8965	11889	15128	17230	22503	22225	17053	10355	7536
22	3997	6083	9595	8764	12004	15264	17616	22451	22129	16842	10266	7503
23	3989	6162	9720	8565	12121	15408	17970	22372	22009	16509	10173	7473
24	3989	6283	9826	8370	12250	15559	18267	22259	21871	16090	10085	7444
25	3989	6360	9917	8325	12385	15725	18560	22147	21743	15635	9998	7395
26	3989	6435	9998	8383	12522	15893	18871	22017	21632	15196	9907	7317
27	4011	6510	10080	8451	12678	16068	19169	21991	21521	14785	9821	7231
28	4038	6578	10183	8542	12866	16245	19455	22043	21394	14434	9725	7146
29	4074	6651	10303	8634	13080	16409	19719	22121	21183	14128	9645	7066
30	4146	6720	10455	8703	---	16567	19961	22242	20957	13838	9526	6986
31	4216	---	10418	8759	---	16718	---	22372	---	13546	9408	---
MAX	4547	6720	10455	11660	13080	16718	19961	22635	22899	20748	13271	9291
MIN	3989	4278	6786	8289	8918	13383	16019	20197	20957	13546	9408	6986
a	579.91	587.47	595.62	592.27	600.29	605.73	609.96	612.83	611.17	601.04	593.63	588.15
b	-381	+2504	+3698	-1659	+4321	+3638	+3243	+2411	-1415	-7411	-4138	-2422
c	117	37	36	39	78	187	224	409	518	592	380	266

CAL YR 1987 b +547

WTR YR 1988 b +2389

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.

## TULARE LAKE BASIN

11204900 TULE RIVER BELOW SUCCESS DAM, CA

LOCATION.--Lat 36°03'23", long 118°55'22", in NW 1/4 SW 1/4 sec.35, T.21 S., R.28 E., Tulare County, Hydrologic Unit 18030012, on right bank 1,000 ft downstream from Success Dam and 5 mi east of Porterville.

DRAINAGE AREA.--393 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1960, published as "at Worth Bridge, near Porterville."

GAGE.--Water-stage recorder and broad-crested weir. Datum of gage is 536.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to October 1960, at site 0.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Success Lake beginning Nov. 23, 1961 (station 11204700). Discharge records during periods of high flow include flow over spillway that bypasses the gaging station. Pioneer ditch (station 11204680) diverts above station for irrigation.

AVERAGE DISCHARGE (adjusted for change in contents, evaporation, and diversion).--35 years, 205 ft<sup>3</sup>/s, 148,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 21.65 ft, site and datum then in use, from rating curve extended above 1,400 ft<sup>3</sup>/s on basis of upstream peaks; no flow at times in 1954-57, 1959-61. Maximum discharge since construction of Success Dam in 1961, 9,050 ft<sup>3</sup>/s, Dec. 6, 1966 (includes flow through spillway); no flow at times in 1962, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 19, 1950, reached a stage of 26 ft, from floodmarks, site and datum then in use, discharge, 32,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 492 ft<sup>3</sup>/s, Jan. 6, gage height, 5.96 ft; minimum daily, 0.08 ft<sup>3</sup>/s, Dec. 2, 3, 5, 15, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	.67	.13	153	51	48	.31	.41	3.8	92	125	34
2	12	.63	.08	152	15	95	.29	.40	2.2	92	83	34
3	14	.59	.08	151	15	100	.22	.41	2.2	91	54	34
4	13	.69	.11	151	15	92	36	9.7	2.2	106	15	41
5	14	.72	.08	210	15	82	89	16	4.8	119	.60	53
6	14	.57	.09	368	15	77	124	16	15	122	.62	34
7	13	.43	.09	455	15	76	124	13	19	99	9.2	23
8	10	.80	.11	485	15	80	124	11	19	29	37	24
9	13	.54	.11	475	15	84	124	11	17	19	62	24
10	13	.58	.11	465	15	85	122	11	16	19	85	24
11	13	.95	.11	391	15	95	122	12	15	7.0	96	24
12	5.8	.95	.10	208	15	92	119	15	16	18	108	24
13	.59	1.0	.09	104	15	92	115	16	33	52	113	24
14	.67	1.0	.09	100	15	92	96	16	44	83	107	24
15	.51	1.0	.08	100	16	48	87	16	39	85	86	24
16	.47	.89	.08	100	14	20	75	63	37	85	69	24
17	.55	.90	.09	101	10	17	68	96	32	84	54	24
18	6.4	.67	.11	163	10	14	68	100	29	92	32	24
19	12	.18	.11	215	10	8.9	23	100	37	97	23	9.0
20	12	.19	.11	223	9.9	5.4	.55	106	57	97	23	.79
21	12	.17	.13	223	9.7	2.5	.45	93	53	86	23	.77
22	12	.17	.13	221	9.6	.31	.42	86	50	79	23	.79
23	13	.17	.12	219	9.6	.29	.42	98	50	135	23	.85
24	13	.17	.12	218	3.7	.29	.45	103	50	180	23	.88
25	12	.15	.12	163	.26	.38	.48	103	50	198	23	8.7
26	5.2	.15	.12	126	.31	.51	.42	103	50	192	22	26
27	.70	.17	.13	127	.24	.45	.41	46	41	182	22	26
28	.77	.19	.13	113	.24	.29	.41	19	49	156	22	26
29	.79	.16	.14	104	4.1	.29	.41	18	92	135	17	25
30	.72	.16	.12	104	---	.30	.40	7.2	99	128	34	24
31	.66	---	.79	104	---	.31	---	1.2	---	132	34	---
TOTAL	251.83	15.61	82.22	6492	353.65	1309.22	1521.64	1306.32	1024.2	3091.0	1448.42	665.78
MEAN	8.12	.52	2.65	209	12.2	42.2	50.7	42.1	34.1	99.7	46.7	22.2
MAX	14	1.0	.79	485	51	100	124	106	99	198	125	53
MIN	.47	.15	.08	100	.24	.29	.22	.40	2.2	7.0	.60	.77
AC-FT	500	31	163	12880	701	2600	3020	2590	2030	6130	2870	1320

CAL YR 1987 TOTAL 22531.96 MEAN 61.7 MAX 537 MIN .08 AC-FT 44690 MEAN a 74.7 AC-FT a 54080  
WTR YR 1988 TOTAL 17561.89 MEAN 48.0 MAX 485 MIN .08 AC-FT 34830 MEAN a 62.1 AC-FT a 45080

a Adjusted for change in contents and evaporation from Success Lake and diversion to Pioneer Ditch. Evaporation figures provided by U.S. Army Corps of Engineers, not reviewed by U.S. Geological Survey.



## TULARE LAKE BASIN

11204900 TULE RIVER BELOW SUCCESS DAM, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-69, 1971 to current year.

CHEMICAL DATA: Water years 1962-69, 1971-79.

WATER TEMPERATURE: Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in record were due to malfunction of the recording instrument. Water temperature is affected by regulation from Success Dam.

EXTREMES PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 34.0 °C, July 15, Sept. 9, 1977; minimum recorded, 3.0 °C, Jan. 3, 1975.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 31.5 °C, Aug. 29; minimum recorded, 4.5 °C, Dec. 24-27, 31.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	26.5	20.0	18.0	17.0	16.0	9.0	8.0	7.5	10.0	8.0	10.5	10.0
2	26.0	20.5	18.5	15.0	16.5	9.5	8.0	7.5	9.5	8.0	11.0	9.5
3	26.0	20.0	21.0	12.0	16.5	10.5	8.0	7.5	10.5	8.0	11.0	10.0
4	26.5	20.5	19.0	14.0	14.5	12.0	8.0	7.5	10.5	8.0	11.0	10.0
5	26.0	20.5	19.5	13.5	15.0	10.5	9.0	8.0	10.5	8.0	11.0	10.0
6	26.0	20.5	19.0	15.0	14.0	10.0	8.5	8.0	10.5	8.0	11.0	10.0
7	26.0	20.0	21.5	14.0	16.0	10.5	8.5	8.0	10.5	8.0	11.0	10.0
8	26.5	20.5	22.0	13.5	14.0	11.0	8.0	8.0	11.0	8.0	11.5	10.0
9	25.5	21.0	21.5	13.0	15.0	9.5	8.0	8.0	10.5	8.5	11.5	10.0
10	25.5	20.0	20.0	15.0	16.0	9.5	8.5	7.0	10.5	8.5	12.0	10.0
11	25.5	21.0	20.0	16.0	13.5	11.5	8.5	8.0	11.0	8.5	11.5	10.5
12	28.5	20.5	20.0	13.5	11.5	9.0	8.5	8.0	11.0	8.0	11.5	10.5
13	28.0	17.5	19.5	16.0	11.5	7.0	9.0	7.5	11.0	8.0	11.5	10.5
14	28.0	16.5	18.0	15.0	11.0	5.0	9.0	8.0	11.0	8.5	11.5	10.5
15	28.5	16.0	20.0	14.0	8.0	5.0	9.0	7.5	11.0	8.5	12.5	10.0
16	28.0	15.5	20.0	13.5	10.5	7.5	8.5	6.5	10.5	8.5	13.0	10.0
17	27.0	14.5	17.0	13.5	11.5	7.0	9.0	8.0	11.5	8.0	13.5	10.0
18	24.0	14.5	19.5	13.0	12.5	6.0	8.5	8.0	11.5	8.5	13.5	10.0
19	23.5	20.0	20.5	10.5	12.5	8.5	8.5	8.0	12.0	8.0	16.0	10.0
20	23.0	18.5	19.0	10.0	14.0	7.0	9.0	8.0	12.5	8.5	16.0	10.0
21	22.5	20.0	15.0	12.5	11.0	6.0	8.5	8.0	12.0	8.5	23.0	10.0
22	21.5	20.0	16.0	12.5	10.5	8.0	9.0	8.0	12.5	8.5	24.0	10.5
23	23.0	19.5	15.5	13.0	10.5	6.5	9.0	8.0	12.5	8.5	24.5	12.0
24	22.5	19.5	17.5	11.0	8.5	4.5	9.0	8.0	18.5	8.5	24.5	12.5
25	22.5	20.0	14.0	10.0	9.5	4.5	9.0	8.0	20.0	9.0	27.0	12.5
26	25.5	20.0	15.5	8.0	9.5	4.5	9.0	8.5	20.0	11.0	27.0	14.0
27	22.5	18.0	15.0	8.0	8.5	4.5	9.0	8.5	19.5	13.0	25.5	15.0
28	25.5	18.5	13.5	8.5	8.5	5.5	9.5	8.0	21.0	12.5	24.0	12.0
29	23.5	18.0	14.5	9.5	8.5	7.0	9.0	8.5	15.5	10.0	25.0	11.5
30	23.5	17.0	12.5	8.5	11.5	5.5	9.5	8.5	---	---	24.0	12.5
31	19.5	17.0	---	---	8.5	4.5	9.5	8.5	---	---	25.0	11.5
MONTH	28.5	14.5	22.0	8.0	16.5	4.5	9.5	6.5	21.0	8.0	27.0	9.5

## TULARE LAKE BASIN

11204900 TULE RIVER BELOW SUCCESS DAM, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	25.0	11.5	23.5	12.5	24.5	15.0	16.5	15.5	23.0	21.5	27.5	25.5
2	26.0	12.5	24.5	14.0	26.5	14.5	17.0	15.5	23.0	20.5	28.0	26.0
3	27.5	14.0	25.5	15.5	24.5	14.5	17.0	15.5	22.5	20.5	27.5	25.5
4	18.0	12.0	21.0	13.5	22.0	14.0	17.5	16.0	26.0	20.5	27.5	26.0
5	14.5	12.0	15.5	13.5	22.5	13.5	17.5	16.0	30.0	20.5	27.5	26.0
6	13.5	11.0	16.0	13.5	17.0	14.0	17.5	16.0	29.0	20.5	27.5	25.0
7	13.5	12.0	17.5	13.5	17.0	14.0	17.5	16.0	29.0	20.0	27.5	25.0
8	13.5	12.5	17.5	13.5	16.5	14.5	18.0	15.0	23.0	20.5	27.5	25.0
9	13.5	12.5	18.0	13.5	17.5	14.5	18.0	15.0	24.0	21.0	27.5	25.5
10	14.0	12.5	18.0	14.0	17.5	14.5	18.0	15.5	24.5	23.0	27.5	25.0
11	14.0	12.5	18.0	14.0	17.5	14.5	27.5	15.0	25.5	23.5	28.0	25.0
12	14.0	13.0	17.5	14.5	17.0	14.5	20.5	15.5	26.0	24.0	27.5	25.5
13	14.0	13.0	17.0	14.5	16.5	14.5	17.5	15.5	26.0	25.0	27.5	25.5
14	14.0	13.0	---	---	16.0	14.5	17.5	16.0	26.0	25.0	27.5	25.5
15	13.5	12.5	---	---	16.5	14.5	18.0	16.5	26.0	24.5	27.0	25.0
16	13.5	12.5	---	---	16.5	14.5	18.0	16.5	26.0	24.0	27.0	25.0
17	13.5	12.5	---	---	16.0	14.5	18.0	17.0	26.0	24.0	26.5	25.0
18	15.0	13.0	---	---	16.5	14.5	18.0	17.0	26.5	23.0	26.5	25.0
19	17.0	13.0	---	---	16.5	15.0	19.0	17.0	26.5	22.5	29.0	24.0
20	21.5	12.5	16.0	15.0	16.5	15.0	19.0	17.5	27.0	23.0	27.5	20.0
21	22.0	13.0	16.0	15.0	16.5	15.0	19.5	17.5	27.0	23.5	28.0	19.5
22	20.0	13.5	15.5	15.0	16.5	15.0	19.5	17.5	27.0	23.0	28.0	18.0
23	18.5	13.0	16.0	15.0	16.5	15.0	20.0	17.5	27.0	25.0	28.5	18.0
24	26.0	14.0	16.0	14.5	16.5	15.0	21.0	19.0	27.0	25.0	28.5	18.5
25	25.5	15.5	16.0	15.0	16.5	15.0	21.5	20.0	27.0	23.5	27.5	17.5
26	26.0	16.0	16.0	15.0	17.0	15.5	21.5	20.5	27.5	24.0	24.5	23.0
27	24.5	17.0	16.5	14.5	16.5	15.0	21.5	20.5	27.5	24.5	24.5	23.0
28	20.5	16.0	17.0	14.0	16.5	15.0	21.5	20.5	27.0	24.5	25.0	23.0
29	24.5	15.0	16.5	14.0	16.5	15.0	22.0	20.5	31.5	24.5	24.5	23.0
30	21.0	15.0	23.5	14.5	16.5	16.0	22.0	20.5	27.5	25.5	24.5	23.0
31	---	---	24.0	15.0	---	---	23.0	20.5	27.5	25.0	---	---
MONTH	27.5	11.0	---	---	26.5	13.5	27.5	15.0	31.5	20.0	29.0	17.5

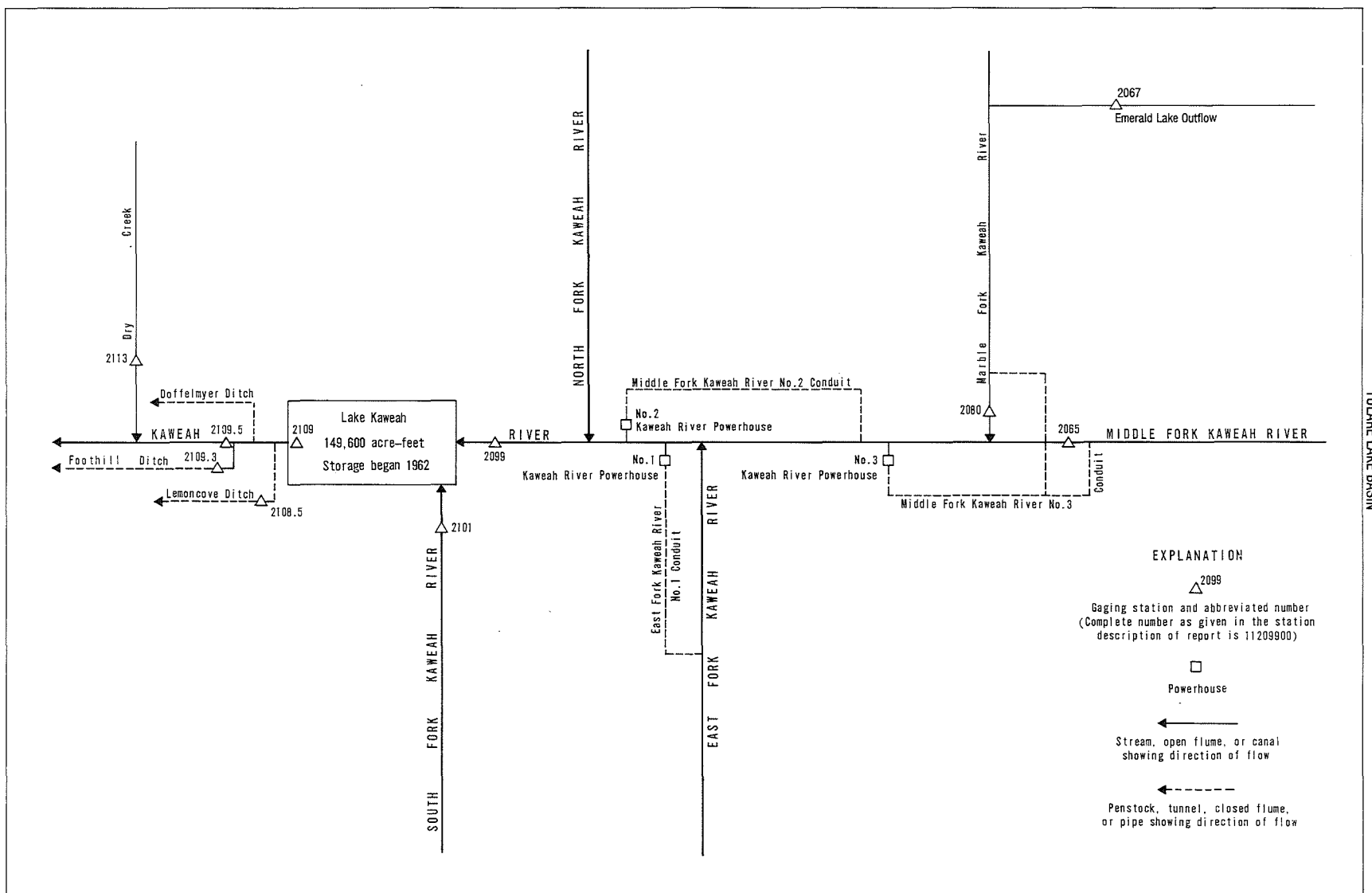


Figure 29.--Schematic diagram showing diversions and storage in Kaweah River basin.

## TULARE LAKE BASIN

11206500 MIDDLE FORK KAWEAH RIVER NEAR POTWISHA CAMP, CA

LOCATION.--Lat 36°30'48", long 118°47'27", unsurveyed, T.16 S., R.29 E., Tulare County, Hydrologic Unit 18030007, Sequoia National Park, on right bank 0.5 mi southeast of Potwisha Camp, and 0.7 mi upstream from confluence with Marble Fork Kaweah River.

DRAINAGE AREA.--102 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1949 to current year. Monthly discharge only for water years 1956-57, published in WSP 1735. Prior to October 1954, records for river and conduit published separately; combined flow only, October 1954 to September 1960.

GAGE.--Water-stage recorder and concrete control on river; water-stage recorder and concrete-lined channel for conduit diversion. Elevation of gage is 2,100 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1955, at datum 0.70 ft higher.

REMARKS.--No estimated daily discharges. Middle Fork No. 3 conduit diverts from left bank of Middle Fork Kaweah River, 0.1 mi upstream from station. Flow from this conduit joins with that of Marble Fork Kaweah River No. 3 conduit, and the combined flow passes through Kaweah River No. 3 powerplant of Southern California Edison Co. Diversion during water year 1988 occurred Oct. 23 to Aug. 3, Aug. 26 to Sept. 30. Water is returned to Kaweah River 2.7 mi downstream from confluence of Marble and Middle Forks. See schematic diagram of Kaweah River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 39 years, 143 ft<sup>3</sup>/s, 103,600 acre-ft/yr.  
Combined river and diversion: 39 years, 185 ft<sup>3</sup>/s, 134,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 46,800 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 29.0 ft, from floodmarks, datum then in use, by slope-area measurement of peak flow; minimum daily, 0.1 ft<sup>3</sup>/s, Nov. 12-15, 1949.  
Combined flow, maximum discharge, 46,800 ft<sup>3</sup>/s, Dec. 23, 1955; minimum daily, 7.7 ft<sup>3</sup>/s, Oct. 4, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 691 ft<sup>3</sup>/s, Jan. 5, gage height, 6.91 ft; minimum daily, 11 ft<sup>3</sup>/s, for many days.  
Combined flow, maximum daily discharge, 487 ft<sup>3</sup>/s, Jan. 5; minimum daily, 11 ft<sup>3</sup>/s, Oct. 1-12, 15-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	20	11	15	17	61	72	112	186	19	16	32
2	11	59	12	15	18	55	79	102	167	16	18	13
3	11	13	12	31	17	88	90	106	174	16	21	12
4	11	12	13	51	18	72	94	106	178	15	23	12
5	11	12	26	431	18	51	117	103	166	15	23	12
6	11	15	102	92	18	52	138	91	139	15	22	12
7	11	12	154	45	19	48	149	80	104	15	22	12
8	11	12	35	28	22	53	150	78	66	19	21	11
9	11	11	29	18	21	60	147	80	59	18	19	11
10	11	11	29	16	22	43	164	112	78	16	18	11
11	11	11	18	18	27	33	164	194	89	16	17	11
12	11	11	11	17	23	29	157	273	81	15	17	11
13	12	11	11	16	18	26	128	307	90	15	17	12
14	12	11	11	18	21	26	143	320	95	16	17	11
15	11	11	11	23	27	26	127	338	99	16	17	11
16	11	11	11	24	28	25	104	325	102	16	16	11
17	11	11	11	46	23	25	95	244	89	16	16	12
18	11	11	11	29	24	26	94	233	69	17	15	12
19	11	11	11	19	18	39	83	238	83	16	14	12
20	11	11	11	22	20	55	115	240	113	17	14	12
21	11	11	11	25	23	64	89	245	105	16	14	15
22	20	11	15	24	22	56	80	239	81	23	13	15
23	21	11	12	25	22	68	73	226	65	24	13	14
24	11	11	11	27	20	80	81	237	72	19	13	13
25	11	12	11	29	24	102	111	221	68	19	19	13
26	11	12	11	25	29	128	126	206	51	18	50	13
27	11	12	11	25	32	137	120	189	39	17	54	12
28	12	12	11	20	51	122	107	163	35	16	49	12
29	13	11	11	18	54	110	119	223	27	17	38	12
30	12	11	11	16	---	101	138	190	22	18	32	12
31	11	---	14	15	---	76	---	160	---	17	32	---
TOTAL	366	401	669	1223	696	1937	3454	5981	2792	528	690	384
MEAN	11.8	13.4	21.6	39.5	24.0	62.5	115	193	93.1	17.0	22.3	12.8
MAX	21	59	154	431	54	137	164	338	186	24	54	32
MIN	11	11	11	15	17	25	72	78	22	15	13	11
AC-FT	726	795	1330	2430	1380	3840	6850	11860	5540	1050	1370	762

CAL YR 1987 TOTAL 20386 MEAN 55.9 MAX 378 MIN 11 AC-FT 40440  
WTR YR 1988 TOTAL 19121 MEAN 52.2 MAX 431 MIN 11 AC-FT 37930

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF MIDDLE FORK KAWEAH RIVER AND MIDDLE FORK KAWEAH RIVER NO. 3 CONDUIT NEAR POTWISHA CAMP, CA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	38	24	53	62	118	133	172	245	72	21	45
2	11	105	23	47	61	112	140	162	227	66	21	34
3	11	63	23	73	56	102	152	166	236	63	22	28
4	11	52	25	105	55	103	156	166	240	61	23	24
5	11	54	41	487	53	109	179	163	228	59	23	22
6	11	75	120	148	54	111	200	151	200	56	22	20
7	11	58	196	106	55	108	211	140	164	53	22	19
8	11	52	93	88	60	114	212	138	127	50	21	17
9	11	46	86	78	66	121	209	140	121	47	19	16
10	11	44	87	74	70	103	226	173	139	46	18	16
11	11	43	78	76	76	92	226	256	150	44	17	15
12	11	41	65	71	78	87	219	335	142	42	17	14
13	12	38	57	64	76	82	190	370	150	41	17	15
14	12	42	47	60	78	82	204	382	155	39	17	14
15	11	37	46	64	82	83	188	401	159	37	17	14
16	11	35	47	64	81	79	165	388	162	36	16	13
17	11	38	49	93	76	76	155	307	149	35	16	14
18	11	43	48	85	74	83	154	295	128	32	15	14
19	11	38	48	68	70	99	143	300	140	29	14	13
20	11	37	47	67	70	116	175	303	168	27	14	13
21	11	43	47	66	71	126	149	308	158	25	14	17
22	20	41	51	65	72	118	140	301	133	32	13	17
23	27	36	50	71	76	130	133	288	122	32	13	16
24	15	34	47	79	75	143	141	299	132	27	13	14
25	17	32	43	87	79	165	171	283	128	27	19	14
26	15	29	45	86	85	191	187	267	111	26	50	14
27	14	28	47	88	88	200	181	250	99	25	55	13
28	22	27	47	83	108	185	167	224	96	24	50	13
29	30	25	48	80	110	173	179	285	87	24	39	13
30	29	25	57	74	---	163	198	250	78	24	33	13
31	22	---	58	68	---	138	---	219	---	23	33	---
TOTAL	444	1299	1790	2818	2117	3712	5283	7882	4574	1224	704	524
MEAN	14.3	43.3	57.7	90.9	73.0	120	176	254	152	39.5	22.7	17.5
MAX	30	105	196	487	110	200	226	401	245	72	55	45
MIN	11	25	23	47	53	76	133	138	78	23	13	13
AC-FT	881	2580	3550	5590	4200	7360	10480	15630	9070	2430	1400	1040
CAL YR 1987	TOTAL 32422	MEAN 88.8	MAX 440	MIN 11	AC-FT 64310							
WTR YR 1988	TOTAL 32371	MEAN 88.4	MAX 487	MIN 11	AC-FT 64210							

## TULARE LAKE BASIN

11206700 EMERALD LAKE OUTFLOW NEAR GIANT FOREST, CA

LOCATION.--Lat 36°35'54", long 118°40'32", in NE 1/4 NE 1/4 sec.25, T.15 S., R.30 E., Tulare County, Hydrologic Unit 18030007, Sequoia National Park, on left bank at outlet of Emerald Lake and 5.9 mi northeast of Giant Forest.

DRAINAGE AREA.--0.44 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to to current year.

REVISED RECORDS.--WDR CA-86-3: 1985(M).

GAGE.--Water-stage recorder. Elevation of gage is 9,180 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges for missing and ice-affected periods: Oct. 1-9, Nov. 1, 2, Dec. 24, 28, 29, Jan. 4. Records fair except those for winter months, which are poor. No storage or diversion above station.

COOPERATION.--Periodic observations of gage height were provided by U.S National Park Service for acid precipitation research study.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40 ft<sup>3</sup>/s, July 3, 1986, gage height, 2.28 ft; no flow for several days during 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24 ft<sup>3</sup>/s, May 15, gage height, 2.10 ft; no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.37	.07	.09	.04	.32	.98	1.9	3.6	3.3	.13	.97
2	.04	.32	.05	.08	.04	.25	1.2	1.6	6.8	3.0	.16	.75
3	.03	.29	.03	.12	.05	.22	1.3	1.9	9.0	2.8	.17	.53
4	.03	.21	.06	.63	.05	.22	1.4	1.9	7.7	2.6	.15	.37
5	.02	.20	.10	1.2	.05	.21	1.9	1.6	4.9	2.3	.11	.28
6	.02	.23	.21	.20	.05	.21	2.8	1.2	1.9	2.2	.10	.22
7	.01	.23	.44	.11	.05	.22	2.5	.87	1.3	2.1	.10	.19
8	.01	.23	.24	.09	.06	.24	2.0	.74	1.1	2.0	.09	.17
9	.0	.22	.18	.08	.06	.23	2.1	.91	2.3	1.9	.07	.14
10	.0	.23	.18	.07	.11	.22	2.7	2.1	3.8	1.8	.06	.12
11	.0	.22	.16	.06	.15	.21	3.1	6.2	4.0	1.6	.05	.11
12	.0	.21	.13	.06	.16	.20	2.7	9.5	3.2	1.4	.04	.10
13	.0	.20	.13	.06	.18	.21	1.7	10	4.5	1.3	.03	.12
14	.0	.17	.12	.05	.19	.21	1.5	13	5.0	1.2	.02	.12
15	.0	.15	.12	.06	.21	.21	1.4	15	5.0	1.2	.01	.12
16	.0	.15	.17	.06	.22	.21	1.6	11	5.0	1.1	.01	.10
17	.0	.16	.15	.20	.20	.23	1.8	7.1	4.3	.97	.01	.08
18	.0	.16	.12	.12	.19	.25	1.8	7.9	4.4	.79	.01	.07
19	.0	.18	.12	.07	.20	.32	1.5	9.8	5.1	.44	.01	.05
20	.0	.18	.12	.07	.19	.42	1.7	11	5.3	.32	.01	.05
21	.0	.21	.13	.07	.22	.57	1.5	11	4.3	.24	.01	.07
22	.0	.19	.15	.05	.23	.53	1.3	10	4.3	.29	.01	.08
23	.01	.17	.15	.05	.24	.53	1.4	10	4.4	.45	.01	.09
24	.02	.14	.15	.04	.25	.66	1.4	11	5.5	.37	.0	.08
25	.04	.11	.15	.04	.27	1.0	1.3	10	5.5	.29	.02	.08
26	.05	.09	.14	.04	.29	1.4	1.8	8.9	4.7	.25	1.6	.07
27	.06	.07	.13	.04	.29	1.6	2.3	7.0	4.5	.22	1.8	.06
28	.16	.07	.20	.04	.34	1.7	2.3	6.5	4.6	.19	2.3	.06
29	.23	.06	.56	.04	.34	1.5	2.9	5.6	4.3	.17	.95	.06
30	.23	.05	.23	.04	---	1.2	3.4	2.6	3.8	.14	.56	.05
31	.32	---	.10	.04	---	.87	---	2.1	---	.13	.68	---
TOTAL	1.32	5.47	4.99	3.97	4.92	16.37	57.28	199.92	134.1	37.06	9.28	5.36
MEAN	.043	.18	.16	.13	.17	.53	1.91	6.45	4.47	1.20	.30	.18
MAX	.32	.37	.56	1.2	.34	1.7	3.4	15	9.0	3.3	2.3	.97
MIN	.00	.05	.03	.04	.04	.20	.98	.74	1.1	.13	.00	.05
AC-FT	2.6	11	9.9	7.9	9.8	32	114	397	266	74	18	11

CAL YR 1987 TOTAL 285.83 MEAN 0.78 MAX 6.0 MIN .00 AC-FT 567  
WTR YR 1988 TOTAL 480.04 MEAN 1.31 MAX 15 MIN .00 AC-FT 952

## TULARE LAKE BASIN

11206700 EMERALD LAKE OUTFLOW NEAR GIANT FOREST, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--

CHEMICAL DATA: October 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	FILTER PORE SIZE (MICRO- METERS)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)
OCT									
27...	1130	.06	4	6.30	11.0	0.10	1	0	0.46
NOV									
19...	1430	.21	3	6.40	--	0.10	1	0	0.49
DEC									
14...	1530	.13	5	6.00	1.0	0.10	2	0	0.60
JAN									
13...	1500	.05	4	5.80	0.0	0.10	2	0	0.56
FEB									
10...	1445	.15	5	5.90	1.0	0.10	2	0	0.57
MAR									
23...	0940	.70	5	5.70	2.0	0.10	2	0	0.60
APR									
11...	1500	2.5	4	6.00	1.0	0.10	1	0	0.50
26...	1400	1.8	4	6.00	2.0	0.10	1	0	0.50
MAY									
09...	1330	.96	4	5.70	1.5	0.10	--	0	--
09...	1335	.96	4	5.70	1.5	0.10	--	0	--
24...	1030	7.3	4	6.20	5.0	0.10	1	0	.49
JUN									
07...	1500	1.2	3	6.10	7.5	0.10	1	0	0.41
21...	1330	3.6	5	6.00	--	0.10	1	0	0.38
21...	1335	3.6	5	6.00	--	0.10	1	1	0.36
JUL									
05...	1300	2.5	4	6.40	18.5	0.10	1	0	0.36
19...	1330	.45	5	6.60	20.0	0.10	1	0	0.38
AUG									
01...	1425	.15	4	6.00	21.0	0.10	1	0	0.37
16...	1230	.01	4	6.70	21.0	0.10	1	0	0.42
SEP									
06...	1430	.24	4	6.10	19.0	0.10	1	0	0.41
20...	1300	.04	5	6.20	14.0	0.10	1	0	0.42

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	BROMIDE DIS- SOLVED (MG/L AS BR)
OCT									
27...	0.06	0.20	21	0.1	0.24	0.38	0.26	0.04	0.010
NOV									
19...	0.05	0.46	37	0.2	0.23	0.36	0.27	0.02	<0.010
DEC									
14...	0.07	0.48	34	0.2	0.19	0.39	0.32	0.02	<0.010
JAN									
13...	0.06	0.47	33	0.2	0.30	0.38	0.27	<0.01	<0.010
FEB									
10...	0.06	0.44	34	0.2	0.16	0.37	0.20	<0.01	<0.010
MAR									
23...	0.06	0.39	31	0.1	0.15	0.43	0.20	0.01	<0.010
APR									
11...	0.05	0.45	37	0.2	0.18	0.34	0.16	0.04	<0.010
26...	0.05	0.40	35	0.2	0.12	0.39	0.15	0.02	<0.010
MAY									
09...	--	--	--	--	0.13	0.38	0.16	<0.01	<0.010
09...	--	--	--	--	0.12	0.36	0.12	<0.01	<0.010
24...	0.05	0.36	--	0.1	--	0.35	0.22	0.02	<0.010

See footnotes at end of table.

## TULARE LAKE BASIN

1206700 EMERALD LAKE OUTFLOW NEAR GIANT FOREST, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	BROMIDE DIS- SOLVED (MG/L AS BR)
JUN									
07...	0.05	0.41	38	0.2	0.21	0.34	0.16	0.02	<0.010
21...	0.05	0.45	42	0.2	0.17	0.32	0.12	0.01	<0.010
21...	0.05	0.41	41	0.2	0.14	0.33	0.10	<0.01	<0.010
JUL									
05...	0.04	0.47	44	0.2	0.17	0.33	0.15	0.03	<0.010
19...	0.04	0.44	43	0.2	0.12	0.46	0.18	0.02	<0.010
AUG									
01...	0.03	0.37	40	0.2	0.10	0.35	0.10	0.01	<0.010
16...	0.06	0.41	38	0.2	0.13	0.34	0.13	0.01	<0.010
SEP									
06...	0.05	0.37	37	0.2	0.11	0.35	0.14	0.02	<0.010
20...	0.05	0.41	38	0.2	0.15	0.36	0.24	<0.01	<0.010
DATE	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
OCT									
27...	1.6	4	0.030	<0.001	0.040	20	11	4	3.4
NOV									
19...	2.7	6	0.040	0.160	0.003	20	12	4	1.4
DEC									
14...	2.4	6	0.070	<0.002	0.006	--	9	3	<0.1
JAN									
13...	1.7	5	0.050	0.014	<0.001	20	22	5	1.3
FEB									
10...	1.9	5	0.060	0.024	<0.001	6	10	3	1.1
MAR									
23...	3.0	6	0.060	0.030	0.002	30	10	<1	0.9
APR									
11...	2.7	6	0.080	0.008	0.004	40	6	<1	1.2
26...	2.9	6	0.070	0.017	<0.001	30	4	<1	1.1
MAY									
09...	--	--	0.100	0.016	<0.001	40	2	3	1.1
09...	--	--	0.110	0.014	<0.001	30	2	3	0.9
24...	2.1	--	0.150	0.006	<0.001	20	10	5	1.0
JUN									
07...	1.9	5	0.100	0.029	<0.001	30	11	3	1.8
21...	1.9	5	0.070	0.038	<0.001	30	6	2	1.1
21...	1.9	4	0.080	0.037	<0.001	40	4	2	1.0
JUL									
05...	1.8	4	0.050	0.035	<0.001	30	6	1	1.2
19...	1.8	5	0.050	0.023	<0.001	20	9	2	1.2
AUG									
01...	1.9	4	0.040	0.008	0.002	20	4	2	1.3
16...	1.9	4	0.030	0.037	<0.001	30	10	2	1.1
SEP									
06...	1.9	4	0.040	0.009	<0.001	30	11	5	1.2
20...	1.8	5	0.010	0.033	<0.001	30	2	5	1.2

E Estimated.

&lt; Actual value is known to be less than the value shown.



## TULARE LAKE BASIN

## 11208000 MARBLE FORK KAWEAH RIVER AT POTWISHA CAMP, CA

LOCATION.--Lat 36°31'08", long 118°48'03", in NE 1/4 SW 1/4 sec.23, T.16 S., R.29 E., Tulare County, Hydrologic Unit 18030007, Sequoia National Park, on left bank 0.1 mi north of Potwisha Camp, 0.3 mi upstream from confluence with Middle Fork Kaweah River, and 7.9 mi northeast of Three Rivers.

DRAINAGE AREA.--51.4 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1950 to current year. Monthly discharge only for March 1950, published in WSP 1315-A. Prior to October 1954, records for river and conduit published separately; combined flow only, October 1954 to September 1960.

GAGE.--Water-stage recorder on river; water-stage recorder and concrete control for conduit diversion. Elevation of gage is 2,150 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Marble Fork Kaweah River No. 3 conduit diverts from left bank of Marble Fork 0.3 mi above station. Water is returned to Kaweah River 2.7 mi downstream from confluence of Marble and Middle Forks. Diversion during water year 1988 occurred Oct. 15, Oct. 23 to July 17, and Sept. 1-19. See schematic diagram of Kaweah River basin. For records of combined discharge of river and conduit, see following page.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--River only: 38 years, 79.6 ft<sup>3</sup>/s, 57,670 acre-ft/yr.  
Combined river and diversion: 38 years, 104 ft<sup>3</sup>/s, 75,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 12,500 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 13.4 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow Sept. 5-15, Oct. 24-28, 1953, Oct. 26-31, 1957.  
Combined flow, maximum discharge, 12,500 ft<sup>3</sup>/s, Dec. 23, 1955; minimum daily, 0.82 ft<sup>3</sup>/s, Oct. 4, 5, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 355 ft<sup>3</sup>/s, May 15, gage height, 4.91 ft; minimum daily, 1.7 ft<sup>3</sup>/s, Nov. 8, 9.  
Combined flow, maximum daily discharge, 250 ft<sup>3</sup>/s, May 15; minimum daily, 2.6 ft<sup>3</sup>/s, Oct. 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	11	8.3	12	8.9	28	56	81	85	11	6.8	13
2	2.8	30	7.8	13	8.5	22	65	72	89	9.5	6.5	2.3
3	2.8	6.7	8.2	15	9.1	50	78	78	98	9.3	6.2	3.0
4	2.8	1.8	10	15	9.9	45	79	78	87	8.4	5.6	5.2
5	2.8	3.5	16	152	11	32	101	69	68	8.0	5.4	4.0
6	2.6	9.9	26	51	11	35	117	62	44	8.7	5.3	4.1
7	2.6	3.4	78	20	13	27	119	55	29	8.7	5.1	5.3
8	2.8	1.7	12	11	13	34	108	49	21	10	5.1	3.7
9	3.0	1.7	2.4	9.0	12	42	109	55	23	12	5.0	4.2
10	3.7	2.2	3.4	8.6	11	27	129	92	36	11	4.7	4.4
11	3.7	2.6	6.0	9.9	9.3	18	125	153	46	10	4.7	4.2
12	3.7	2.8	3.8	8.5	12	16	119	199	38	9.6	4.9	3.3
13	4.0	3.6	6.4	9.8	11	16	91	209	41	9.4	5.1	2.4
14	4.0	6.1	9.1	11	11	16	93	207	40	9.2	5.2	2.3
15	3.2	5.4	12	10	14	16	78	218	38	8.8	5.1	2.3
16	2.8	5.7	9.9	9.3	14	14	65	186	33	8.4	5.1	2.6
17	2.8	6.9	3.4	13	9.6	14	64	128	24	7.9	5.1	3.1
18	3.4	10	3.8	10	9.2	19	67	145	15	8.2	4.9	3.0
19	3.0	6.5	4.6	10	8.9	30	58	149	23	8.0	4.6	3.8
20	3.0	7.1	3.9	10	9.4	45	63	150	39	7.4	4.4	4.3
21	3.0	8.8	6.0	9.6	13	51	51	150	22	7.0	4.2	5.7
22	5.5	10	9.1	9.1	12	40	44	141	13	6.8	4.5	6.8
23	9.5	5.5	7.6	9.2	12	54	41	130	15	9.1	4.4	5.9
24	2.6	5.6	8.5	8.9	9.9	61	47	141	16	12	4.5	5.4
25	3.1	10	14	9.6	11	82	80	133	13	11	4.6	5.4
26	2.2	9.1	7.3	9.2	14	103	98	116	12	10	21	5.6
27	2.1	7.3	5.0	9.9	19	106	95	97	17	9.1	22	5.6
28	2.8	9.0	4.6	9.7	32	88	83	85	17	8.6	27	4.9
29	9.6	8.7	4.2	9.0	30	80	99	113	14	8.2	22	4.8
30	1.9	8.5	6.6	8.7	---	75	114	77	13	7.8	18	4.8
31	1.8	---	11	8.9	---	55	---	74	---	7.1	18	---
TOTAL	106.4	211.1	318.9	509.9	368.7	1341	2536	3692	1069	280.2	255.0	135.4
MEAN	3.43	7.04	10.3	16.4	12.7	43.3	84.5	119	35.6	9.04	8.23	4.51
MAX	9.6	30	78	152	32	106	129	218	98	12	27	13
MIN	1.8	1.7	2.4	8.5	8.5	14	41	49	12	6.8	4.2	2.3
AC-FT	211	419	633	1010	731	2660	5030	7320	2120	556	506	269

CAL YR 1987 TOTAL 10352.7 MEAN 28.4 MAX 195 MIN 1.7 AC-FT 20530  
WTR YR 1988 TOTAL 10823.6 MEAN 29.6 MAX 218 MIN 1.7 AC-FT 21470

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF MARBLE FORK KAWEAH RIVER AND MARBLE FORK KAWEAH RIVER NO. 3 CONDUIT AT POTWISHA CAMP, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	17	16	22	32	62	89	114	120	21	6.8	24
2	2.8	50	15	20	30	58	99	105	124	18	6.5	15
3	2.8	35	15	28	28	59	111	112	133	17	6.2	13
4	2.8	24	17	36	27	65	111	112	121	17	5.6	10
5	2.8	22	25	176	26	67	133	102	102	16	5.4	8.6
6	2.6	34	37	75	26	70	149	95	78	15	5.3	7.2
7	2.6	29	114	51	28	61	150	88	63	14	5.1	7.1
8	2.8	25	49	41	31	69	139	83	55	13	5.1	6.1
9	3.0	23	34	35	36	77	140	89	57	13	5.0	6.1
10	3.7	21	33	34	40	62	159	126	71	12	4.7	5.9
11	3.7	21	36	35	42	52	155	186	81	11	4.7	5.5
12	3.7	20	30	31	45	48	149	232	73	11	4.9	5.3
13	4.0	19	23	29	44	47	121	242	76	11	5.1	4.9
14	4.0	21	20	28	44	47	123	239	76	11	5.2	4.8
15	3.5	18	22	29	47	49	110	250	74	10	5.1	4.8
16	2.8	18	22	28	49	47	98	218	70	9.6	5.1	4.4
17	2.8	19	18	34	44	46	96	161	61	8.5	5.1	4.5
18	3.4	25	17	33	41	52	99	178	52	8.2	4.9	4.4
19	3.0	20	18	28	36	64	90	182	60	8.0	4.6	4.3
20	3.0	19	16	27	37	80	95	183	77	7.4	4.4	4.3
21	3.0	22	17	28	42	86	84	183	60	7.0	4.2	5.7
22	5.5	24	21	27	44	73	78	174	48	6.8	4.5	6.8
23	15	18	21	30	47	87	75	163	42	9.1	4.4	5.9
24	7.6	18	16	32	44	95	81	174	46	12	4.5	5.4
25	7.4	19	18	37	46	114	114	166	43	11	4.6	5.4
26	5.7	18	15	39	51	135	132	150	37	10	21	5.6
27	5.4	16	15	40	58	138	129	131	32	9.1	22	5.6
28	7.1	17	15	40	65	120	116	119	30	8.6	27	4.9
29	22	16	15	39	63	112	132	147	26	8.2	22	4.8
30	15	16	24	35	---	107	148	111	23	7.8	18	4.8
31	11	---	26	34	---	87	---	108	---	7.1	18	---
TOTAL	167.3	664	780	1201	1193	2336	3505	4723	2011	348.4	255.0	205.1
MEAN	5.40	22.1	25.2	38.7	41.1	75.4	117	152	67.0	11.2	8.23	6.84
MAX	22	50	114	176	65	138	159	250	133	21	27	24
MIN	2.6	16	15	20	26	46	75	83	23	6.8	4.2	4.3
AC-FT	332	1320	1550	2380	2370	4630	6950	9370	3990	691	506	407
CAL YR 1987	TOTAL 15111.3											
WTR YR 1988	TOTAL 17388.8											
			MEAN	41.4	MAX	232	MIN	2.6	AC-FT	29970		
			MEAN	47.5	MAX	250	MIN	2.6	AC-FT	34490		

## TULARE LAKE BASIN

11209900 KAWEAH RIVER AT THREE RIVERS, CA

LOCATION.--Lat 36°26'38", long 118°54'09", in SW 1/4 SW 1/4 sec.13, T.17 S., R.28 E., Tulare County, Hydrologic Unit 18030007, on right bank opposite schoolhouse in Three Rivers, 0.2 mi downstream from North Fork Kaweah River.

DRAINAGE AREA.--418 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 809.62 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diversions to 200 acres above station. Power is developed on the Middle and East Forks Kaweah River.

AVERAGE DISCHARGE.--30 years, 560 ft<sup>3</sup>/s, 405,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft<sup>3</sup>/s, Dec. 5, 1966, gage height, 16.69 ft in gage well, 19.0 ft from floodmarks, from rating curve extended above 13,000 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 13.68 and 16.69 ft; minimum daily, 14 ft<sup>3</sup>/s, Sept. 29, Oct. 4, 5, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 17.9 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1515	*3,530	*7.49				
Minimum daily, 16 ft <sup>3</sup> /s, Aug. 23.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	70	52	100	175	356	342	457	549	139	45	79
2	20	168	57	101	171	347	348	423	523	126	41	72
3	21	172	57	124	160	308	380	439	553	120	39	56
4	22	114	62	163	154	303	384	437	539	115	39	44
5	21	105	101	2030	149	303	442	425	474	111	38	39
6	26	145	91	668	150	304	505	400	377	107	38	35
7	27	140	583	337	151	287	538	380	317	102	36	34
8	27	114	236	256	160	294	530	356	279	94	37	33
9	28	97	185	220	178	320	510	372	270	91	34	31
10	29	92	172	206	192	281	573	420	295	86	31	29
11	28	89	170	209	205	256	571	613	322	83	29	28
12	28	87	150	210	212	234	572	830	308	80	29	28
13	29	82	129	182	210	230	480	928	316	78	30	27
14	29	89	106	171	208	225	515	949	318	75	29	28
15	27	82	105	169	215	225	497	988	316	72	29	30
16	24	75	107	178	221	218	415	995	316	69	27	28
17	23	75	105	372	210	211	394	764	288	65	27	26
18	23	92	98	299	202	220	401	747	252	60	25	27
19	23	84	98	213	186	242	375	766	269	57	23	27
20	22	79	94	194	183	279	532	760	355	53	22	26
21	23	98	92	187	193	308	414	764	320	50	22	32
22	28	94	100	180	199	292	410	764	265	52	20	37
23	69	82	129	187	205	317	377	696	237	63	16	33
24	48	75	99	200	203	347	345	718	256	59	21	31
25	44	71	85	217	204	397	451	699	241	59	26	29
26	38	67	88	224	216	466	546	650	225	57	56	28
27	34	64	90	227	230	524	535	589	200	52	109	27
28	48	61	93	224	278	470	482	523	186	48	84	26
29	106	59	108	218	304	434	498	689	171	45	72	24
30	106	55	115	204	---	412	544	550	154	45	60	24
31	71	---	104	192	---	352	---	494	---	43	54	---
TOTAL	1112	2777	3861	8662	5724	9762	13906	19585	9491	2356	1188	1018
MEAN	35.9	92.6	125	279	197	315	464	632	316	76.0	38.3	33.9
MAX	106	172	583	2030	304	524	573	995	553	139	109	79
MIN	20	55	52	100	149	211	342	356	154	43	16	24
AC-FT	2210	5510	7660	17180	11350	19360	27580	38850	18830	4670	2360	2020

CAL YR 1987 TOTAL 78183 MEAN 214 MAX 1350 MIN 20 AC-FT 155100  
WTR YR 1988 TOTAL 79442 MEAN 217 MAX 2030 MIN 16 AC-FT 157600

## TULARE LAKE BASIN

11209900 KAWEAH RIVER AT THREE RIVERS, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-66, 1968 to September 1988 (discontinued).

CHEMICAL DATA: Water years 1964-66, 1977.

WATER TEMPERATURE: Water years 1966, 1968 to September 1988 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1965 to December 1966, January 1968 to September 1988 (discontinued).

INSTRUMENTATION.--Temperature recorder October 1965 to December 1966, and since January 1968.

REMARKS.--Interruptions in record were due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.0 °C, July 14, 15, 1972; July 15, 18, 1977, July 26, 27, 1988; minimum recorded, 0.5 °C, Jan. 7, 1971; Dec. 12, 1972; Jan. 17, 18, 1987.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 30.0 °C, July 26, 27; minimum recorded, 1.5 °C, Dec. 26, 27, Jan. 1.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	23.5	18.5	15.0	14.0	9.5	6.5	4.0	1.5	8.5	6.0	10.0	8.5
2	23.5	17.5	14.0	12.0	10.0	7.0	4.5	3.0	7.5	5.5	8.5	6.5
3	23.5	18.5	13.0	10.5	10.5	7.0	6.0	4.5	8.0	5.0	10.5	6.5
4	23.0	18.0	11.5	10.0	10.0	8.0	7.5	6.0	8.0	4.5	11.0	8.0
5	23.0	18.0	12.0	11.0	10.0	8.5	8.0	5.5	8.0	4.0	12.0	9.0
6	22.5	17.5	13.0	11.0	9.5	8.0	6.0	4.5	7.5	4.0	11.5	9.5
7	21.5	17.5	13.5	11.0	9.5	7.5	6.5	4.5	8.5	4.5	12.0	9.5
8	21.0	17.0	13.5	10.5	8.0	7.0	7.0	5.0	9.0	5.5	13.0	9.0
9	20.5	16.5	13.5	10.5	9.0	6.5	7.5	5.0	9.0	6.0	13.0	9.5
10	20.5	16.5	14.0	10.5	9.5	7.0	7.5	5.0	9.5	6.5	11.0	7.0
11	20.0	16.0	14.0	11.5	9.5	8.5	7.0	6.5	10.0	6.5	10.0	6.5
12	20.0	16.5	13.5	10.5	9.0	7.0	8.0	6.0	10.0	6.5	10.0	5.5
13	19.5	16.0	12.5	11.0	7.0	5.0	7.5	5.0	10.0	6.5	10.5	6.0
14	19.5	15.5	13.0	11.5	6.0	3.5	7.0	4.5	10.0	6.5	11.0	6.5
15	19.5	15.0	12.0	10.5	4.5	3.0	6.5	6.0	10.5	6.5	11.5	7.0
16	19.0	15.0	12.0	9.5	6.5	4.5	6.5	5.5	10.0	7.0	12.5	7.5
17	18.5	14.5	11.0	9.5	7.5	5.5	7.5	6.0	10.0	7.0	13.0	7.5
18	18.0	14.0	12.5	9.5	7.5	5.0	7.0	6.0	9.0	6.0	13.5	8.0
19	18.5	14.5	12.5	9.5	7.0	6.0	7.0	4.5	9.0	5.0	13.5	9.0
20	17.5	14.0	11.5	8.5	7.5	5.0	6.5	4.0	9.5	5.0	14.0	9.5
21	17.0	14.5	10.0	8.0	7.5	4.5	6.5	4.0	9.5	5.5	14.0	9.5
22	16.5	15.5	9.5	9.0	6.5	5.5	7.0	4.0	10.5	6.0	14.0	9.5
23	18.0	14.5	11.0	9.0	6.5	4.5	7.5	5.0	10.5	6.5	14.5	10.0
24	18.0	15.0	10.0	7.5	5.5	3.0	8.0	5.0	11.0	7.0	14.5	10.0
25	18.0	14.5	9.0	8.0	5.0	2.5	9.0	5.5	11.5	7.0	15.0	10.0
26	18.0	14.5	9.0	6.5	4.5	1.5	9.0	6.0	11.0	8.0	15.0	10.5
27	17.5	15.0	8.5	5.5	4.0	1.5	9.5	6.5	12.0	9.5	14.0	11.0
28	19.0	16.0	8.0	5.0	4.0	2.5	9.5	7.0	12.5	10.0	13.0	9.5
29	18.0	15.5	8.5	5.5	4.5	3.5	9.5	7.5	11.0	9.5	13.0	8.5
30	17.0	15.0	8.0	5.5	5.0	3.0	9.0	6.5	---	---	12.5	8.5
31	15.5	14.0	---	---	4.5	2.0	9.0	6.5	---	---	12.5	8.0
MONTH	23.5	14.0	15.0	5.0	10.5	1.5	9.5	1.5	12.5	4.0	15.0	5.5

## TULARE LAKE BASIN

11209900 KAWEAH RIVER AT THREE RIVERS, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	13.0	8.0	10.5	7.0	16.5	11.5	24.5	19.0	28.5	23.0	25.0	21.5
2	13.0	8.5	12.5	7.0	18.5	13.5	25.0	19.0	28.0	23.0	25.0	21.0
3	13.5	9.0	14.0	9.0	19.5	15.0	25.5	20.0	28.0	23.0	26.5	19.5
4	14.0	10.0	15.0	10.5	17.5	15.5	25.0	20.0	26.5	22.5	27.0	21.0
5	15.0	10.5	13.0	9.5	15.5	13.0	24.0	19.0	28.5	23.0	27.0	21.5
6	15.5	11.0	9.5	7.5	15.0	11.0	24.5	18.0	27.0	22.5	27.0	22.0
7	15.0	11.5	11.5	7.5	15.5	10.5	25.0	19.5	27.0	21.5	26.5	21.5
8	14.5	11.0	13.5	8.5	16.0	10.5	26.0	20.0	27.5	21.5	26.0	18.5
9	15.0	10.0	15.0	10.0	17.5	11.5	26.5	21.0	27.5	21.5	25.5	20.5
10	15.0	11.5	17.0	11.0	18.0	13.0	27.0	21.5	27.0	21.5	25.0	19.5
11	15.5	11.5	17.5	13.0	19.0	14.0	27.0	21.5	26.5	20.5	24.5	19.0
12	13.5	11.0	17.0	13.5	19.5	14.0	26.0	20.5	26.5	21.0	24.0	19.0
13	12.5	11.0	15.5	13.0	21.0	15.0	25.0	19.5	26.0	20.0	23.5	18.0
14	11.5	9.5	16.0	12.5	21.0	16.5	27.0	21.0	26.5	18.0	23.5	18.0
15	9.0	8.0	16.5	13.0	21.5	16.5	27.0	21.5	25.5	19.5	23.5	18.0
16	10.5	7.5	15.5	13.5	21.0	17.0	28.0	22.0	26.0	20.0	23.0	18.0
17	10.5	8.5	13.5	12.0	20.5	16.5	29.0	23.0	27.0	18.5	23.0	18.0
18	14.0	9.0	14.5	11.0	22.0	16.5	29.5	23.5	27.5	21.0	22.0	17.5
19	12.0	10.5	16.0	12.5	21.0	18.0	29.0	24.0	27.5	21.5	22.0	16.5
20	11.0	9.0	16.5	13.0	21.0	18.0	29.5	23.0	27.0	21.5	19.5	17.5
21	11.0	7.0	17.0	13.0	21.5	17.0	28.5	24.0	27.0	21.0	20.0	17.0
22	9.5	7.5	16.5	13.5	23.0	18.0	29.0	23.5	27.5	21.5	21.0	15.5
23	9.5	7.5	17.0	14.0	22.5	19.0	28.0	23.5	28.0	22.5	21.5	16.0
24	13.0	7.5	18.0	14.5	22.0	18.0	29.0	23.0	27.5	23.5	22.0	17.0
25	14.0	9.5	17.5	14.5	21.0	19.0	29.5	23.5	27.5	24.0	21.5	17.0
26	14.0	10.5	17.5	14.5	23.5	17.5	30.0	24.5	28.5	23.5	21.5	16.5
27	14.0	11.0	17.5	14.0	24.0	19.0	30.0	24.0	27.0	23.0	21.5	16.5
28	12.5	10.5	17.5	14.0	24.0	19.0	29.5	23.5	24.5	22.0	21.5	16.5
29	13.5	9.5	16.0	10.5	23.5	19.0	26.5	23.0	26.5	20.0	22.0	17.0
30	12.0	9.5	12.0	8.5	23.5	18.5	28.5	22.5	27.0	22.0	22.5	17.0
31	---	---	14.5	9.0	---	---	28.5	23.0	27.0	21.5	---	---
MONTH	15.5	7.0	18.0	7.0	24.0	10.5	30.0	18.0	28.5	18.0	27.0	15.5

## TULARE LAKE BASIN

11210100 SOUTH FORK KAWEAH RIVER AT THREE RIVERS, CA

LOCATION.--Lat 36°25'00", long 118°54'48", in SW 1/4 SE 1/4 sec.26, T.17 S., R.28 E., Tulare County, Hydrologic Unit 18030007, on right bank 200 ft upstream from unnamed tributary, 0.5 mi upstream from mouth, and 1.8 mi southwest of Three Rivers.

DRAINAGE AREA.--86.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 807.22 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several small diversions above station for irrigation.

AVERAGE DISCHARGE.--30 years, 74.1 ft<sup>3</sup>/s, 53,690 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 9.30 ft in gage well, 10.4 ft from floodmarks, from rating curve extended above 2,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1960-62.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 9.5 ft from floodmarks, discharge, 10,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1315	*639	*3.86				

Minimum daily, 0.06 ft<sup>3</sup>/s, Sept. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	8.4	7.0	15	23	49	47	64	98	8.8	.36	.62
2	.09	16	6.8	15	23	48	48	56	85	7.6	.37	.50
3	.08	17	6.4	17	21	39	52	63	70	6.1	.35	.46
4	.09	12	7.8	22	20	33	53	73	60	5.4	.38	.43
5	.09	12	17	358	19	31	61	73	53	5.3	.36	.20
6	.09	14	10	105	19	31	75	63	49	5.1	.44	.13
7	.11	13	47	50	18	31	80	56	45	4.8	.45	.11
8	.11	10	24	36	18	30	82	54	42	3.7	.45	.10
9	.10	8.7	20	30	18	31	84	58	39	3.4	.37	.09
10	.09	8.5	17	26	18	29	94	76	35	3.3	.30	.09
11	.15	8.6	16	27	19	27	94	112	33	3.1	.27	.09
12	.28	8.1	14	27	19	25	94	147	32	3.1	.25	.08
13	.42	8.3	14	23	19	24	80	163	30	3.0	.25	.07
14	.66	9.5	12	22	18	23	79	165	27	2.9	.25	.07
15	.75	9.3	12	22	18	22	71	169	25	2.9	.24	.07
16	.78	8.3	12	23	18	22	59	164	23	2.5	.24	.07
17	.74	8.9	12	102	18	21	60	131	21	1.6	.31	.07
18	.69	9.4	11	78	18	21	65	115	21	1.2	.25	.06
19	.85	8.8	11	43	17	23	65	119	20	.96	.20	.06
20	.90	8.3	11	34	17	27	96	117	28	.91	.16	.09
21	.93	13	11	30	17	30	63	114	25	.72	.15	.09
22	1.1	10	12	28	17	30	60	108	20	.77	.14	.07
23	2.4	9.3	15	27	17	32	57	97	18	1.0	.13	.07
24	2.9	7.8	13	28	17	37	52	94	19	.97	.10	.07
25	2.2	7.8	12	31	17	41	60	86	17	.94	.10	.07
26	2.3	7.7	12	33	17	50	71	77	19	.87	.09	.29
27	2.1	7.1	11	33	19	61	72	71	16	.73	.09	.34
28	2.6	7.0	12	32	27	57	68	66	13	.61	.12	.39
29	27	7.1	16	30	31	58	71	91	11	.49	.14	.39
30	12	7.0	21	28	---	56	81	80	9.9	.39	.96	.29
31	8.4	---	16	26	---	48	---	78	---	.39	.84	---
TOTAL	71.09	290.9	439.0	1401	557	1087	2094	3000	1003.9	83.55	9.11	5.53
MEAN	2.29	9.70	14.2	45.2	19.2	35.1	69.8	96.8	33.5	2.70	.29	.18
MAX	27	17	47	358	31	61	96	169	98	8.8	.96	.62
MIN	.08	7.0	6.4	15	17	21	47	54	9.9	.39	.09	.06
AC-FT	141	577	871	2780	1100	2160	4150	5950	1990	166	18	11

CAL YR 1987 TOTAL 10775.79 MEAN 29.5 MAX 258 MIN .08 AC-FT 21370  
WTR YR 1988 TOTAL 10042.08 MEAN 27.4 MAX 358 MIN .06 AC-FT 19920

## TULARE LAKE BASIN

## 11210850 LEMONCOVE DITCH BELOW TERMINUS DAM, CA

LOCATION.--Lat 36°24'55", long 119°00'22", in SW 1/4 SW 1/4 sec.25, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030007, on right bank 75 ft downstream from outlet tunnel of Terminus Dam and 2.4 mi northeast of Lemoncove.

PERIOD OF RECORD.--June 1962 to current year.

GAGE.--Water-stage recorder and artificial control. Prior to Dec. 18, 1987, water-stage recorder and Parshall flume at site 175 ft downstream at same datum. Datum of gage is 546.3 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharges: Dec. 16-18. Records good. Ditch receives water from Lake Kaweah (station 11210900), which is used for irrigation. At times up to 3 ft<sup>3</sup>/s is diverted 25 ft upstream into Doffelmyer ditch for irrigation.

AVERAGE DISCHARGE.--26 years, 4.86 ft<sup>3</sup>/s, 3,520 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 8.8 ft<sup>3</sup>/s, May 5, 1970; no flow at times in some years.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	5.1	1.2	.90	.82	2.9	7.1	2.7	7.9	5.2	8.1	8.1
2	7.0	4.2	1.2	.89	.82	.96	7.1	3.5	7.9	5.2	8.1	8.1
3	7.0	3.2	1.2	.90	.82	.92	7.1	4.4	7.9	5.2	8.1	8.1
4	7.0	3.2	1.2	.89	.82	.90	7.1	4.4	7.9	5.2	8.0	8.1
5	7.0	3.2	1.2	.93	.82	.90	6.4	4.4	7.9	6.9	7.9	8.1
6	7.0	2.0	1.2	.97	.82	.91	6.7	4.4	7.9	7.2	7.9	8.1
7	7.0	1.2	1.2	.96	.82	.91	7.3	4.4	7.9	6.7	7.9	8.1
8	6.9	1.2	1.1	.96	.82	.64	7.4	4.4	7.9	7.5	7.9	8.1
9	6.9	1.2	1.1	.96	.82	.90	7.4	4.4	7.9	8.1	7.9	8.1
10	6.9	1.2	1.3	.95	.82	.90	7.4	4.5	7.9	8.1	7.9	8.1
11	6.9	1.2	1.1	.88	.82	.90	7.3	4.5	7.9	8.1	7.9	8.1
12	6.9	1.1	1.1	.82	.82	.90	7.5	4.5	7.9	8.1	7.8	8.1
13	6.9	1.1	1.0	.82	.82	.90	7.5	4.5	7.9	8.1	7.3	8.1
14	7.0	1.1	1.0	.82	.82	.90	7.5	4.5	7.9	8.2	7.0	8.1
15	7.0	1.1	1.0	.82	.82	2.2	6.4	4.5	7.9	8.2	7.0	8.1
16	6.9	1.1	1.0	.77	.82	3.0	5.1	5.0	7.8	8.2	7.7	8.1
17	6.9	1.1	.98	.76	.82	3.0	5.1	5.4	7.8	8.2	7.6	8.1
18	6.9	1.1	.97	.76	.82	3.1	5.1	5.4	7.8	8.2	7.5	8.1
19	6.9	1.1	.95	.76	.82	3.0	5.1	4.2	7.8	8.2	7.5	8.1
20	6.9	1.1	.96	.75	4.3	3.0	5.1	4.3	7.8	8.2	7.6	8.1
21	6.9	1.1	.96	.75	6.0	4.0	5.1	5.4	7.8	8.2	7.6	8.1
22	6.9	1.1	.91	.75	6.0	4.8	5.1	5.3	7.8	8.2	7.6	8.1
23	6.9	1.1	.91	.81	6.0	4.8	5.1	6.6	7.8	8.2	7.6	7.4
24	6.9	1.4	.91	.82	6.1	4.8	5.1	7.3	6.6	8.2	7.5	6.9
25	6.9	1.3	.90	.82	6.1	5.6	5.1	7.7	5.4	8.1	7.7	6.9
26	6.4	1.3	.90	.82	6.1	6.1	5.1	7.9	5.4	8.1	8.0	6.9
27	6.1	1.3	.90	.82	6.1	6.1	3.5	7.9	5.4	8.1	8.0	6.9
28	6.1	1.2	.89	.81	6.1	6.1	2.7	7.8	5.9	8.1	8.1	7.0
29	5.5	1.2	.90	.80	5.5	6.1	2.7	7.8	5.7	8.1	8.1	7.0
30	5.1	1.2	.90	.82	---	6.1	2.7	7.8	5.6	8.1	8.1	7.0
31	5.1	---	.90	.82	---	6.6	---	7.9	---	8.1	8.1	---
TOTAL	207.7	49.0	31.94	26.11	73.88	92.84	174.9	167.7	220.9	236.5	241.0	234.2
MEAN	6.70	1.63	1.03	.84	2.55	2.99	5.83	5.41	7.36	7.63	7.77	7.81
MAX	7.0	5.1	1.3	.97	6.1	6.6	7.5	7.9	7.9	8.2	8.1	8.1
MIN	5.1	1.1	.89	.75	.82	.64	2.7	2.7	5.4	5.2	7.0	6.9
AC-FT	412	97	63	52	147	184	347	333	438	469	478	465
CAL YR 1987	TOTAL	1710.14	MEAN 4.69	MAX 8.4	MIN 0	AC-FT 3390						
WTR YR 1988	TOTAL	1756.67	MEAN 4.80	MAX 8.2	MIN .64	AC-FT 3480						

## TULARE LAKE BASIN

11210900 LAKE KAWEAH NEAR LEMONCOVE, CA

LOCATION.--Lat 36°24'53", long 119°00'07", in SE 1/4 SW 1/4 sec.25, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030007, in control tower near left abutment of Terminus Dam on Kaweah River, 2.1 mi northeast of Lemoncove.

DRAINAGE AREA.--560 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1961 to current year. Fragmentary prior to March 1962.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 22, 1962, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam and earthfill auxiliary dam, completed in February 1962. Usable capacity, 142,931 acre-ft between elevations 520.0 ft, invert of outlet structure, and 694.0 ft, spillway crest. Dead storage, 33 acre-ft. Spillway design flood pool elevation, 745.1 ft, capacity, 256,167 acre-ft. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records were provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents (based on capacity table then in use; new capacity table put into use Oct. 1, 1978), 160,200 acre-ft, July 3, 4, 1967, elevation, 699.39 ft, storage increased by a temporary sandbag dam in the ungated spillway; minimum since reservoir first filled, 5,926 acre-ft, Sept. 30, 1988, elevation, 566.26 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 106,426 acre-ft, June 10, elevation, 673.67 ft; minimum, 5,926 acre-ft, Sept. 30, elevation, 566.26 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from table dated September 1978)

520	33	540	1,347	580	10,112	660	84,644
525	170	550	2,703	600	19,970	680	117,289
530	436	560	4,509	620	35,541	700	154,644
535	832	570	6,903	640	57,212	720	196,552

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9604	8850	13882	13916	9494	18492	34498	63654	102648	83607	26093	6516
2	9572	9171	13983	13868	9400	18498	35197	64505	103375	82131	24147	6535
3	9544	9576	14074	13859	9375	18427	35943	65428	104121	80697	22197	6527
4	9516	9809	14209	13930	9572	18433	36727	66384	104804	79261	20343	6495
5	9480	10013	14414	17750	9801	18439	37609	67335	105321	77780	18593	6453
6	9445	10284	14581	17964	10013	18439	38621	68170	105706	76198	16931	6409
7	9428	10584	15623	16628	10235	18839	39680	68997	105990	74576	15328	6369
8	9407	10805	15534	14910	10469	19503	40706	69720	106191	72958	14088	6338
9	9389	10981	15138	13764	10738	20197	41675	70502	106359	71343	13128	6320
10	9375	11133	14710	12897	11037	20811	42794	71399	106426	69693	12246	6307
11	9361	11285	14350	12044	11354	21360	43899	72678	106409	67765	11354	6294
12	9337	11432	13992	11221	11695	21853	44977	74421	106392	65666	10450	6263
13	9309	11571	13590	10738	12023	22326	45875	76413	106157	63511	9540	6222
14	9281	11716	13492	10465	12341	22792	46926	78432	105822	61304	8596	6181
15	9257	11854	13580	10213	12705	23252	47891	80506	105354	59138	7899	6148
16	9226	11972	13665	9980	13114	23696	49686	82622	104904	57002	7421	6115
17	9192	12087	13754	10344	13543	24118	49478	84192	104304	54897	7064	6078
18	9157	12233	13825	10580	13949	24545	50312	85686	103591	52800	6903	6048
19	9130	12380	13892	10427	14331	25015	51246	87239	102945	50611	6801	6030
20	9113	12520	13954	10153	14680	25572	52400	88759	101857	48383	6722	6020
21	9099	12692	13992	9936	15047	26177	53320	90244	100414	46366	6652	6010
22	9096	12861	14050	9737	15425	26706	54249	91742	98592	44538	6580	6017
23	9154	13005	14141	9547	15817	27282	55126	93062	96593	42794	6493	6022
24	8970	13132	14132	9389	16205	27929	55926	94406	95011	41072	6411	6020
25	8661	13260	14083	9368	16595	28676	56941	95712	93567	39362	6356	6015
26	8364	13380	14031	9424	17014	29561	58177	96882	92071	37619	6336	6007
27	8136	13482	13983	9494	17476	30590	59390	97929	90493	35812	6450	5998
28	8099	13604	13954	9551	18051	31486	60463	98884	88774	33889	6495	5978
29	8322	13707	13973	9590	18315	32312	61522	100186	87025	31928	6532	5953
30	8580	13797	13992	9597	---	33117	62680	101216	85262	29985	6524	5926
31	8727	---	13959	9565	---	33807	---	101873	---	28033	6508	---
MAX	9604	13797	15623	17964	18315	33807	62680	101873	106426	83607	26093	6535
MIN	8099	8850	13492	9368	9375	18427	34498	63654	85262	28033	6336	5926
a	576.04	588.76	589.10	578.49	597.28	618.11	644.33	670.93	660.41	611.32	568.54	566.26
b	-909	+5070	+162	-4394	+8750	+15492	+28873	+39193	-16611	-57229	-21525	-582
c	237	78	77	55	112	290	449	943	1323	1402	408	250

CAL YR 1987 b +1872

WTR YR 1988 b -3710

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.



## TULARE LAKE BASIN

11210930 FOOTHILL DITCH BELOW TERMINUS DAM, CA

LOCATION.--Lat 36°24'48", long 119°00'47", in NW 1/4 NW 1/4 sec.35, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030012, on left bank 0.7 mi downstream from Terminus Dam and 2.1 mi northeast of Lemoncove.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 492.8 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Ditch receives water from Lake Kaweah (station 11210900) which is used for irrigation.

AVERAGE DISCHARGE.--27 years, 15.6 ft<sup>3</sup>/s, 11,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 50 ft<sup>3</sup>/s, Apr. 7, 1979; no flow many days in 1975, 1978-85, 1987-88.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	6.4	.0	.0	.0	6.1	11	4.2	18	19	14	9.2
2	14	2.6	.0	.0	.0	3.7	11	7.4	17	19	14	8.9
3	14	.0	.0	.0	.0	4.4	11	9.9	17	18	14	9.0
4	14	.0	.0	.0	.0	4.4	11	11	17	18	13	8.7
5	14	.0	.0	.0	.0	4.2	11	11	17	19	13	8.7
6	15	.0	.0	.0	.0	4.2	11	11	17	19	13	12
7	14	.0	.0	.0	.0	5.6	7.7	11	16	19	13	13
8	15	.0	.0	.0	.0	6.4	10	11	16	19	12	12
9	15	.0	.0	.0	.0	6.6	12	11	16	19	11	12
10	15	.0	.0	.0	.0	6.6	12	11	17	19	11	11
11	15	.0	.0	.0	.0	8.1	12	11	16	19	10	10
12	14	.0	.0	.0	.0	8.8	12	12	16	19	14	10
13	13	.0	.0	.0	.0	8.7	13	12	17	19	15	10
14	13	.0	.0	.0	.0	8.7	13	11	17	19	16	9.5
15	13	.0	.0	.0	2.8	8.7	11	9.4	17	19	15	9.7
16	14	.0	.0	.0	5.0	8.7	8.7	13	17	18	13	9.6
17	14	.0	.0	.0	4.9	8.7	8.3	16	18	18	13	9.9
18	14	.0	.0	.0	4.5	8.9	8.0	15	18	18	12	10
19	15	.0	.0	.0	4.4	9.0	7.9	15	18	18	12	10
20	15	.0	.0	.0	6.5	9.0	7.8	15	18	18	11	11
21	15	.0	.0	.0	7.6	9.2	6.4	15	19	18	11	10
22	15	.0	.0	.0	7.6	10	5.1	15	19	5.9	11	10
23	16	.0	.0	.0	7.6	12	4.8	15	19	.20	12	10
24	12	.0	.0	.0	7.7	12	4.6	15	19	10	13	10
25	8.2	.0	.0	.0	7.6	12	4.6	15	19	4.5	11	10
26	7.9	.0	.0	.0	7.6	12	4.4	16	19	.05	9.9	10
27	7.4	.0	.0	.0	7.6	12	4.0	16	19	7.8	9.7	10
28	6.5	.0	.0	.0	7.6	12	4.1	15	19	11	9.3	10
29	5.6	.0	.0	.0	7.9	12	4.2	15	19	13	9.5	10
30	5.7	.0	.0	.0	---	11	4.2	15	19	14	9.1	9.5
31	6.2	---	.0	.0	---	11	---	17	---	14	9.0	---
TOTAL	389.5	9.0	0.0	0.0	96.9	264.7	255.8	396.9	530	471.45	373.5	303.7
MEAN	12.6	.30	.00	.00	3.34	8.54	8.53	12.8	17.7	15.2	12.0	10.1
MAX	16	6.4	.00	.00	7.9	12	13	17	19	19	16	13
MIN	5.6	.00	.00	.00	.00	3.7	4.0	4.2	16	.05	9.0	8.7
AC-FT	773	18	.0	.0	192	525	507	787	1050	935	741	602

CAL YR 1987 TOTAL 3276.6 MEAN 8.98 MAX 18 MIN .00 AC-FT 6500  
WTR YR 1988 TOTAL 3091.45 MEAN 8.45 MAX 19 MIN .00 AC-FT 6130

## TULARE LAKE BASIN

## 11210950 KAWEAH RIVER BELOW TERMINUS DAM, CA

LOCATION.--Lat 36°24'51", long 119°00'42", in SE 1/4 SE 1/4 sec.26, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030012, on left bank 0.6 mi downstream from Terminus Dam and 2.2 mi northeast of Lemoncove.

DRAINAGE AREA.--561 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WDR CA-71-2: 1963.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 495.90 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Lake Kaweah (station 11210900). Lemoncove ditch (station 11210850) diverts water from Lake Kaweah for irrigation. Foothill ditch (station 11210930) diverts water from the gage pool for irrigation. Doffelmyer ditch diverts up to 3 ft<sup>3</sup>/s above station for irrigation. At times some of this water is returned to the river above the station.

AVERAGE DISCHARGE (adjusted for change in contents, evaporation, and diversion).--27 years, 689 ft<sup>3</sup>/s, 499,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,610 ft<sup>3</sup>/s, June 3, 1969, gage height, 8.77 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,270 ft<sup>3</sup>/s, June 22, gage height, 5.28 ft; minimum daily, 7.8 ft<sup>3</sup>/s, Mar. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	12	13	127	232	343	36	52	241	931	976	37
2	9.0	15	13	127	232	425	35	59	232	834	961	39
3	8.9	18	13	127	202	403	34	51	234	791	956	40
4	8.9	19	14	157	102	342	39	39	234	788	923	36
5	10	19	14	352	57	342	46	45	235	809	867	33
6	12	19	14	750	70	342	54	50	222	846	836	31
7	9.7	21	76	1080	63	167	70	50	207	859	818	25
8	11	21	312	1180	63	7.8	84	51	199	855	643	21
9	11	21	402	841	64	16	89	50	194	852	493	17
10	11	21	400	653	64	20	89	48	266	853	450	13
11	11	21	366	644	64	19	97	59	339	993	445	12
12	13	21	345	634	65	18	104	78	339	1080	441	17
13	18	22	343	450	65	18	105	90	436	1110	431	21
14	19	22	178	325	66	18	87	98	495	1120	420	22
15	19	22	65	314	55	18	87	109	536	1110	308	22
16	18	22	65	317	34	17	85	113	564	1090	208	22
17	17	22	65	322	21	18	68	106	577	1070	161	21
18	17	22	65	325	17	22	57	101	589	1060	86	18
19	15	20	66	350	16	27	55	99	589	1090	44	13
20	11	18	67	367	16	27	62	106	864	1120	37	11
21	9.7	18	69	326	15	36	60	113	1050	1020	30	11
22	9.7	18	69	301	16	49	43	115	1160	932	31	12
23	10	18	90	300	16	52	24	114	1220	912	32	12
24	100	16	110	298	16	52	18	114	1050	883	31	12
25	152	14	110	259	16	53	21	114	951	894	27	12
26	151	14	109	230	16	54	22	114	947	918	23	12
27	122	14	109	232	16	54	22	114	966	937	30	12
28	57	9.4	109	232	17	64	35	104	1000	988	37	14
29	16	9.9	120	232	184	66	49	95	1020	1000	37	16
30	12	15	128	232	---	53	49	95	1000	987	37	16
31	12	---	127	232	---	43	---	202	---	985	37	---
TOTAL	909.9	544.3	4046	12316	1880	3185.8	1726	2748	17956	29717	10856	600
MEAN	29.4	18.1	131	397	64.8	103	57.5	88.6	599	959	350	20.0
MAX	152	22	402	1180	232	425	105	202	1220	1120	976	40
MIN	8.9	9.4	13	127	15	7.8	18	39	194	788	23	11
AC-FT	1800	1080	8030	24430	3730	6320	3420	5450	35620	58940	21530	1190

CAL YR 1987 TOTAL 81220.7 MEAN 223 MAX 1330 MIN 6.6 AC-FT 161100 MEAN a 246 AC-FT a 178100  
WTR YR 1988 TOTAL 86485.0 MEAN 236 MAX 1220 MIN 7.8 AC-FT 171500 MEAN a 252 AC-FT a 182400

a Adjusted for change in contents and evaporation from Lake Kaweah and for diversions to Lemoncove and Foothill ditches. Evaporation adjustments provided by U.S. Army Corps of Engineers; not reviewed by U.S. Geological Survey.

## TULARE LAKE BASIN

11210950 KAWEAH RIVER BELOW TERMINUS DAM, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962 to current year.

CHEMICAL DATA: Water years 1962-79.

WATER TEMPERATURE: Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from Terminus Dam.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.5 °C, Aug. 26, 1988; minimum recorded, 4.5 °C, Feb. 26, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 31.5 °C, Aug. 26; minimum recorded, 6.5 °C, Feb. 5.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	26.0	20.0	19.0	18.5	14.0	10.5	7.5	7.0	9.0	7.5	10.5	10.0
2	25.5	20.0	19.0	17.5	14.0	10.0	7.5	7.0	9.0	7.5	10.5	10.0
3	25.5	20.0	19.5	15.5	14.0	10.0	7.5	7.0	9.5	8.0	11.0	10.0
4	25.5	20.0	17.0	15.0	13.0	10.5	7.5	7.5	10.5	7.5	11.0	10.0
5	25.5	20.0	18.0	15.5	12.5	11.5	8.0	7.5	10.0	6.5	11.0	10.0
6	26.0	19.5	19.0	16.0	12.5	10.0	7.5	7.5	10.0	7.5	11.0	10.0
7	25.0	20.0	19.0	15.5	13.0	10.5	7.5	7.0	10.0	7.0	14.0	10.0
8	24.5	20.0	19.0	14.5	12.0	11.0	7.5	7.5	10.5	7.5	18.0	10.0
9	24.0	19.5	18.5	14.0	12.0	10.5	7.5	7.0	10.5	7.5	15.0	10.0
10	24.0	20.0	18.0	14.5	11.5	11.0	7.5	7.0	10.5	7.5	14.5	8.5
11	24.0	19.5	17.0	15.5	11.5	11.0	7.5	7.5	11.0	7.0	15.0	8.5
12	25.0	20.0	17.5	14.5	11.0	11.0	7.5	7.5	11.5	7.5	15.0	8.0
13	23.5	20.0	17.0	15.0	11.0	10.5	8.0	7.5	11.5	7.5	15.0	8.5
14	23.5	19.5	16.5	15.0	11.0	9.0	8.0	7.5	11.0	8.0	15.5	8.5
15	23.5	19.5	17.5	15.0	10.0	9.0	8.0	7.5	12.0	7.5	15.0	8.5
16	24.5	19.0	17.0	14.0	10.0	9.0	8.0	7.5	12.0	7.5	16.5	9.0
17	24.5	19.5	16.0	14.0	10.5	8.5	8.0	7.5	13.0	7.5	16.5	9.0
18	24.0	19.5	17.0	14.0	10.5	8.5	8.0	7.5	13.0	7.5	16.0	9.0
19	24.0	19.0	17.5	13.0	10.0	9.0	8.0	7.5	13.0	7.0	16.0	9.5
20	23.0	18.5	15.5	12.0	10.5	8.5	8.0	7.0	14.0	7.5	16.5	10.0
21	22.5	19.5	14.0	12.5	10.0	8.5	7.5	7.0	13.0	7.5	14.5	10.0
22	21.5	19.5	14.0	13.0	9.5	9.0	8.0	7.0	14.0	7.5	15.0	10.0
23	23.5	19.5	14.5	13.0	9.0	8.5	8.0	7.0	13.5	8.5	14.5	10.5
24	21.5	19.0	15.0	11.5	9.5	8.5	8.0	7.0	14.0	8.5	15.0	10.5
25	21.5	20.0	13.5	12.0	9.0	7.5	8.5	7.0	14.5	8.5	15.0	10.5
26	21.5	19.5	14.0	10.5	9.0	7.0	8.5	7.0	14.0	9.5	15.0	10.5
27	21.0	19.5	14.0	9.5	8.5	7.0	8.5	7.0	13.5	10.0	15.0	10.5
28	22.5	20.5	11.5	9.5	8.5	7.0	8.5	7.0	13.5	10.0	14.5	10.5
29	22.0	19.0	13.0	10.5	7.5	7.5	8.5	7.0	11.0	10.0	15.0	10.5
30	22.0	19.0	12.5	10.0	8.0	7.0	8.5	7.5	---	---	15.0	10.0
31	20.0	18.5	---	---	8.0	7.0	8.5	7.5	---	---	15.5	10.0
MONTH	26.0	18.5	19.5	9.5	14.0	7.0	8.5	7.0	14.5	6.5	18.0	8.0

## TULARE LAKE BASIN

11210950 KAWEAH RIVER BELOW TERMINUS DAM, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	16.5	10.5	16.5	10.5	14.5	12.5	16.0	15.0	27.0	26.5	29.5	24.5
2	16.5	10.5	16.5	10.5	15.0	13.0	16.5	15.5	27.5	27.0	29.0	24.0
3	16.5	10.5	17.5	10.5	15.0	13.0	16.5	15.5	28.0	27.0	29.5	24.0
4	16.5	10.5	17.5	10.5	14.5	12.5	16.5	15.5	28.0	28.0	29.0	23.5
5	16.0	10.0	15.0	10.5	15.0	12.0	16.5	15.5	29.0	26.5	29.0	24.0
6	16.0	10.0	15.0	10.5	15.0	12.5	16.5	15.5	29.0	28.5	30.5	24.5
7	15.0	11.0	16.0	11.5	15.0	12.5	16.5	15.5	29.0	28.5	30.0	24.0
8	15.0	11.5	17.0	12.0	15.5	12.5	17.0	15.5	28.5	26.5	30.0	24.0
9	15.0	11.5	17.5	11.5	15.5	12.0	17.0	16.0	29.0	26.5	29.0	23.0
10	15.0	11.0	18.0	11.5	15.0	12.0	17.5	16.5	28.5	27.5	28.5	23.0
11	15.0	11.5	17.5	12.0	15.0	12.5	18.0	16.5	28.5	27.5	28.5	23.0
12	14.5	12.0	16.5	11.5	15.0	12.5	18.5	17.5	29.0	27.5	28.5	23.5
13	13.5	12.0	15.5	11.5	14.5	13.5	18.5	17.5	28.5	27.5	28.0	23.0
14	13.0	11.5	16.0	12.0	15.0	12.0	19.0	17.5	28.0	26.0	28.0	22.0
15	13.0	11.5	15.5	11.5	15.5	12.0	19.5	17.5	28.5	26.0	27.5	21.5
16	14.5	11.5	15.0	11.0	15.5	12.0	19.5	18.0	28.5	26.0	28.0	22.0
17	14.0	11.5	13.5	12.0	15.0	11.5	20.0	19.0	29.0	25.0	24.5	21.5
18	16.5	11.5	16.0	11.5	15.5	12.0	20.5	19.5	29.5	25.0	26.5	21.0
19	13.0	11.5	16.0	12.0	14.5	12.5	20.5	19.5	29.0	24.0	27.0	21.0
20	14.5	11.5	16.0	11.5	14.5	12.0	21.5	19.5	29.0	24.0	27.0	21.0
21	15.5	11.5	16.0	12.0	14.0	12.5	22.0	20.5	30.0	24.0	27.0	21.0
22	15.5	11.5	16.0	12.0	14.5	12.5	22.5	21.5	28.0	24.5	26.5	21.0
23	14.0	10.5	15.5	12.0	15.0	12.5	23.0	22.0	28.5	24.5	26.0	21.0
24	19.0	11.5	16.0	11.5	16.0	13.0	23.5	22.0	28.0	25.0	26.5	20.5
25	19.0	10.5	16.5	12.0	15.5	12.0	24.5	22.0	31.0	26.0	27.0	20.5
26	18.5	11.5	16.0	12.0	15.5	13.5	25.0	24.0	31.5	25.5	27.0	21.0
27	18.5	11.5	16.0	11.5	15.5	14.0	25.0	24.0	29.0	25.0	23.5	20.0
28	15.0	11.5	16.0	11.5	15.5	14.5	25.5	24.5	29.5	24.5	25.0	20.5
29	17.0	11.5	14.5	11.5	15.5	14.5	26.0	25.0	29.5	24.5	---	---
30	15.5	11.5	16.5	12.0	16.0	14.5	26.5	25.5	30.5	24.5	---	---
31	---	---	14.5	12.0	---	---	27.0	26.0	31.0	26.0	---	---
MONTH	19.0	10.0	18.0	10.5	16.0	11.5	27.0	15.0	31.5	24.0	---	---

## TULARE LAKE BASIN

11211300 DRY CREEK NEAR LEMONCOVE, CA

LOCATION.--Lat 36°26'51", long 119°01'38", in NE 1/4 SE 1/4 sec.15, T.17 S., R.27 E., Tulare County, Hydrologic Unit 18030012, on right bank 0.5 mi downstream from Bequette Canyon, 2.9 mi upstream from mouth, and 4.4 mi north of Lemoncove.

DRAINAGE AREA.--75.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 570 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Mar. 8, 1969, 1.6 mi downstream at different datum.

REMARKS.--No estimated daily discharge. Small diversions above station for irrigation.

AVERAGE DISCHARGE.--29 years, 24.8 ft<sup>3</sup>/s, 17,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 7.30 ft in gage well, 8.94 ft from floodmarks, site and datum then in use; no flow for several months most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a discharge of 6,070 ft<sup>3</sup>/s, from slope-area measurement. Flood of 1867 is believed to have exceeded that of December 1955, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1845	*474	*4.01	Jan. 17	1930	152	2.98

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			0	8.8	6.3	9.8	2.7	5.6	1.8			
2			0	7.4	6.0	23	2.5	5.7	1.0			
3			0	7.5	5.7	13	2.3	5.4	.74			
4			0	12	5.4	9.6	2.2	5.2	.54			
5			0	290	5.2	7.9	2.2	5.0	.46			
6			0	83	5.1	7.2	2.0	6.6	.40			
7			0	26	4.9	6.7	1.9	6.4	.38			
8			0	16	4.9	6.2	1.7	5.6	.37			
9			0	11	4.7	5.8	1.5	5.0	.31			
10			.08	9.1	4.6	5.6	1.4	4.3	.24			
11			.33	8.2	4.6	5.4	1.2	3.9	.20			
12			.46	8.6	4.4	5.3	1.1	3.4	.15			
13			.59	7.7	4.4	5.0	1.0	2.9	.07			
14			.65	6.6	4.2	4.9	2.5	2.7	0			
15			.68	6.3	4.2	4.8	7.7	2.6	0			
16			.65	7.2	4.0	4.5	5.3	2.2	0			
17			.62	47	3.9	4.3	3.6	2.2	0			
18			.64	47	3.9	4.2	3.1	2.4	0			
19			.71	24	3.6	4.2	3.3	2.4	0			
20			.73	16	3.5	4.1	31	2.0	0			
21			.75	12	3.3	3.9	17	1.5	0			
22			.86	10	3.3	3.8	16	1.1	0			
23			1.0	9.3	3.3	3.6	16	.92	0			
24			1.4	8.7	3.3	3.6	11	.85	0			
25			2.4	8.5	3.2	3.6	8.7	.88	0			
26			2.0	8.3	3.1	3.6	7.5	.80	0			
27			1.6	8.1	3.0	3.6	6.5	.82	0			
28			2.0	7.8	4.2	3.3	5.8	1.1	0			
29			4.9	7.4	5.3	3.2	5.3	1.8	0			
30			19	6.9	---	3.0	5.3	2.6	0			
31		---	12	6.5	---	2.9	---	3.0	---			---
TOTAL	0	0	54.05	742.9	125.5	179.6	179.3	96.87	6.66	0	0	0
MEAN	0	0	1.74	24.0	4.33	5.79	5.98	3.12	.22	0	0	0
MAX	0	0	19	290	6.3	23	31	6.6	1.8	0	0	0
MIN	0	0	0	6.3	3.0	2.9	1.0	.80	0	0	0	0
AC-FT	0	0	107	1470	249	356	356	192	13	0	0	0

CAL YR 1987	TOTAL	1404.73	MEAN	3.85	MAX	180	MIN	0	AC-FT	2790
WTR YR 1988	TOTAL	1384.88	MEAN	3.78	MAX	290	MIN	0	AC-FT	2750

## TULARE LAKE BASIN

11211785 COTTONWOOD CREEK ABOVE COLLIER CREEK, NEAR ELDERWOOD, CA

LOCATION.--Lat 36°32'33", long 119°06'40", in NW 1/4 NE 1/4 sec.14, T.16 S., R.26 E., Tulare County, Hydrologic Unit 18030012, on left bank, 4.0 mi north of Elderwood and 8.0 mi north of Woodlake, on State Highway 245.

DRAINAGE AREA.--52.3 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,920 ft<sup>3</sup>/s, Feb. 15, 1986, gage height, 5.81 ft; no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 35 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	0615	*271	*2.97	Mar. 1	1800	83	2.17
Jan. 17	1600	162	2.56	Apr. 20	0915	49	1.92

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		.08	1.6	4.0	3.7	15	2.3	1.1	.33			
2		.88	1.5	3.3	3.7	15	2.3	1.1	.15			
3		.88	1.5	3.4	3.7	7.6	2.3	1.1	.08			
4		.70	1.7	4.0	3.7	6.3	2.3	1.1	.05			
5		1.0	3.2	111	3.7	5.6	2.3	1.1	.05			
6		1.4	2.2	24	3.7	5.0	2.3	2.1	.06			
7		1.5	2.1	11	3.7	4.3	2.1	2.0	.08			
8		1.3	1.9	8.3	3.7	3.5	1.9	2.1	.07			
9		1.2	1.9	7.2	3.3	3.4	1.9	1.9	.06			
10		1.1	1.7	6.1	3.3	3.0	1.8	1.6	.05			
11		.98	1.5	5.4	3.3	2.9	1.6	1.4	.05			
12		.96	1.5	5.1	3.3	2.6	1.4	1.2	.04			
13		.91	1.7	5.0	3.5	2.6	1.5	1.1	.02			
14		.98	1.7	4.7	3.3	2.6	4.1	1.2	.01			
15		1.0	1.7	4.7	3.3	2.6	6.3	1.2	0			
16		.97	1.7	4.7	3.3	2.6	2.9	1.1	0			
17		.99	1.7	41	3.3	2.6	1.8	1.2	0			
18		1.3	1.7	17	3.3	2.6	1.4	1.8	0			
19		1.3	1.7	9.1	3.3	2.6	1.7	1.7	0			
20		1.3	1.7	7.3	3.3	2.6	23	1.2	0			
21		1.7	1.8	6.1	3.3	2.3	6.2	.91	0			
22		1.6	2.0	4.9	3.4	2.3	4.7	.87	0			
23		1.5	2.4	4.3	3.3	2.2	4.1	.79	0			
24		1.5	2.4	4.0	3.3	2.5	2.8	.66	0			
25		1.4	2.3	4.0	3.3	2.6	2.0	.55	0			
26		1.4	2.1	4.0	3.3	2.6	1.4	.47	0			
27		1.5	2.1	4.0	3.3	2.6	1.3	.42	0			
28		1.6	3.3	4.0	3.7	2.5	1.2	.42	0			
29		1.6	5.7	4.0	3.8	2.4	1.2	.73	0			
30		1.6	8.2	3.8	---	2.6	1.1	1.5	0			
31		---	5.4	3.7	---	2.5	---	.80	---			---
TOTAL	0	36.13	73.6	333.1	100.1	122.1	93.2	36.42	1.10	0	0	0
MEAN	0	1.20	2.37	10.7	3.45	3.94	3.11	1.17	.037	0	0	0
MAX	0	1.7	8.2	111	3.8	15	23	2.1	.33	0	0	0
MIN	0	.08	1.5	3.3	3.3	2.2	1.1	.42	0	0	0	0
AC-FT	0	72	146	661	199	242	185	72	2.2	0	0	0

CAL YR 1987 TOTAL 1052.91 MEAN 2.88 MAX 86 MIN 0 AC-FT 2090  
WTR YR 1988 TOTAL 795.75 MEAN 2.17 MAX 111 MIN 0 AC-FT 1580

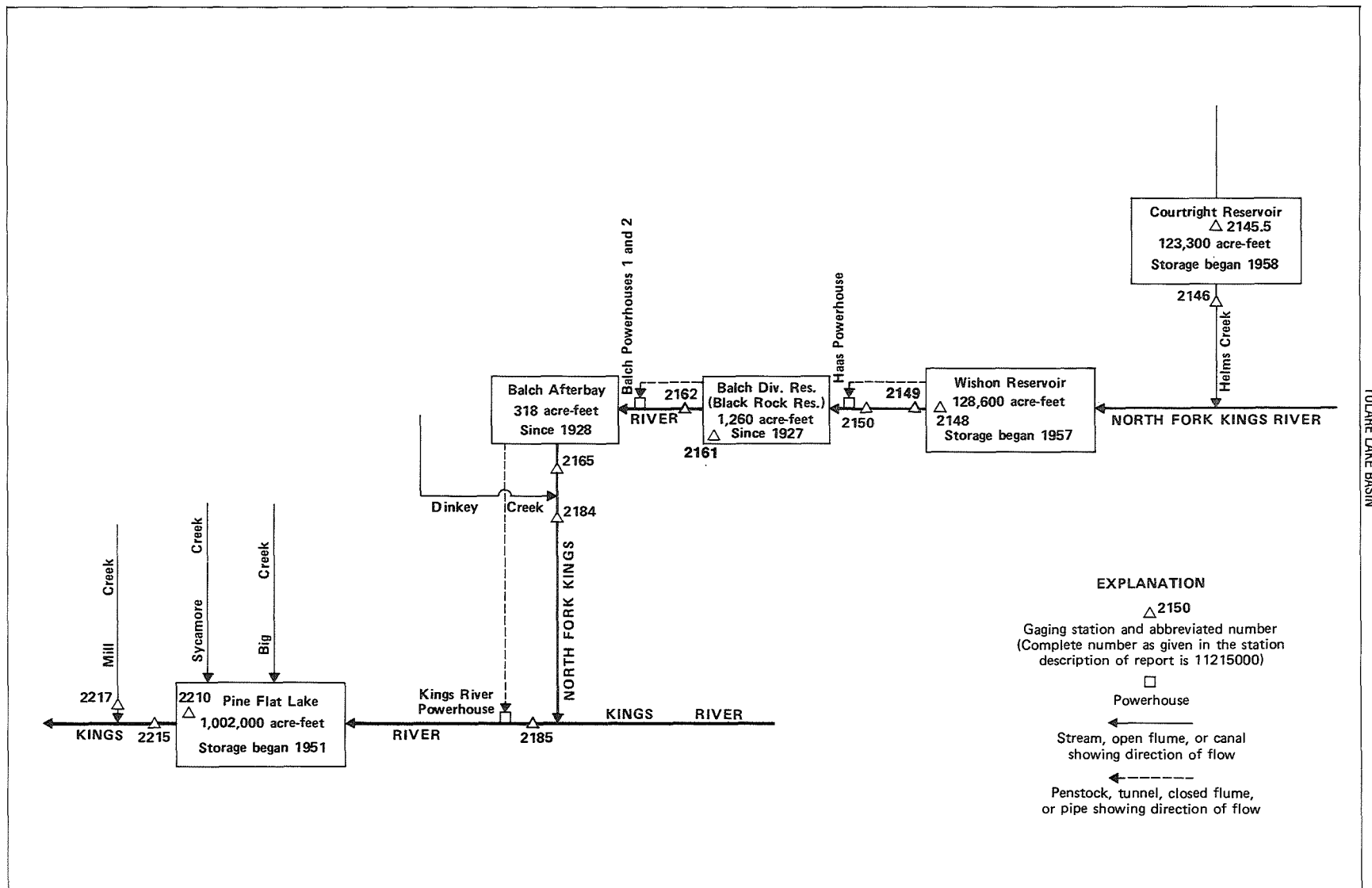


Figure 30.--Schematic diagram showing diversions and storage in Kings River basin.

## TULARE LAKE BASIN

11214550 COURTRIGHT RESERVOIR NEAR NELSON MOUNTAIN, CA

LOCATION.--Lat 37°04'45", long 119°58'07", in NW 1/4 NW 1/4 sec.7, T.10 S., R.28 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, at left end of dam on Helms Creek, 2.5 mi upstream from mouth, 4.6 mi east of Nelson Mountain, and 9.7 mi west of Blackcap Mountain.

DRAINAGE AREA.--39.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to September 1982 (monthend elevation and contents only), October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by rockfill dam completed in 1958. Usable capacity, 123,300 acre-ft between elevations 7,902 ft, invert of tunnel, and 8,184 ft, elevation of spillway. Dead storage negligible. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,220 acre-ft, Sept. 26, 1982, elevation, 8,184.57 ft; no contents in 1961-62, 1968, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 122,700 acre-ft, June 8, elevation, 8,183.64 ft; minimum, 26,604 acre-ft, Mar. 11, elevation, 8,092.27 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated Apr. 13, 1959)

7,902	0	7,970	736	8,035	6,269	8,115	42,141
7,950	267	7,990	1,617	8,060	12,298	8,150	75,878
7,960	462	8,010	3,129	8,085	22,584	8,184	123,286

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64014	35016	33026	38361	34543	39631	65361	89360	122472	117174	108278	65403
2	64461	31722	31781	39037	32797	37794	67756	91538	122326	115948	108218	62675
3	60861	29353	33127	38948	31532	34260	70871	91912	122488	117805	107350	59537
4	59993	28747	33677	35882	31342	33256	68187	90452	122537	120887	105837	61769
5	57748	30082	35318	35719	32423	33827	66994	90663	122618	122586	104969	63579
6	58603	31134	36848	34005	34946	36324	65582	90544	122651	120710	106993	64962
7	60082	30483	36231	33793	37559	37618	65235	91326	122684	118933	109437	64513
8	61587	36295	32891	35058	38993	35989	62982	93753	122700	117726	106221	64253
9	61546	36431	32456	37152	38970	34142	64409	94948	122667	117615	100934	64222
10	61830	37356	30146	40460	36510	31316	67336	89164	121322	117996	96003	65540
11	61789	38925	31160	41229	34529	28604	65172	85748	121322	119571	93685	68014
12	59685	39689	32483	40798	32503	32051	65109	84120	121355	119523	92795	69319
13	59586	38435	31212	39022	35114	38546	65487	82774	118249	118885	91379	66365
14	55110	38435	30528	39277	36568	40621	66524	86028	117158	118551	91938	65088
15	54850	40414	28313	37992	38464	42764	67702	94186	117679	118091	92045	64087
16	55157	39232	27998	37940	35811	44934	68675	94935	119236	109377	90782	64461
17	55129	38731	28710	37955	35578	46568	71976	96638	119236	105660	87424	64409
18	56313	36640	28894	37370	33752	48287	73523	98489	118408	101262	82293	64378
19	53661	35536	26909	37196	31414	51107	74551	99600	120710	103031	78381	62644
20	53890	33039	28465	33882	32303	55026	75901	97901	122635	101863	80921	61223
21	52520	32865	29578	32250	37138	55493	75473	99670	122635	100223	83358	60771
22	49655	32663	29785	33398	36942	57517	75577	103350	119875	98306	82009	59113
23	47044	31193	31466	35585	35268	58152	76053	102453	119044	100081	77552	58828
24	43793	29440	33134	37852	34404	58019	81788	104296	117774	103233	74826	61708
25	42732	28649	35268	37589	35100	57981	82231	106177	119331	102626	72391	65245
26	35522	34474	37007	38361	36060	59744	81176	107097	120806	101563	69834	62818
27	32717	35961	39135	38124	37428	62471	82280	107186	121581	101663	72391	58623
28	32932	38073	39262	38124	37662	63198	83308	110362	121484	102626	74896	55653
29	33800	39195	38043	38124	39593	63518	83507	116969	121468	101993	71116	54599
30	34032	37138	37109	38124	---	64774	83857	120212	121484	103902	68101	50720
31	34191	---	36661	38124	---	65740	---	121387	---	107022	67240	---
MAX	64461	40414	39262	41229	39593	65740	83857	121387	122700	122586	109437	69319
MIN	32717	28649	26909	32250	31342	26604	62982	82774	117158	98306	67240	50720
a	8104.20	8108.37	8107.71	8109.72	8111.69	8140.85	8156.62	8182.83	8182.89	8173.57	8142.26	8125.32
b	-30103	+2947	-477	+1463	+1469	+26147	+18117	+37530	+97	-14462	-39782	-16520

CAL YR 1987 b - 3922

WTR YR 1988 b -13574

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.



## TULARE LAKE BASIN

11214600 HELMS CREEK BELOW COURTRIGHT DAM, CA

LOCATION.--Lat 37°04'35", long 118°58'04", in SW 1/4 NW 1/4 sec.7, T.10 S., R.28 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on left bank 500 ft downstream from Courtright Dam, 2.5 mi upstream from North Fork Kings River, and 17 mi southeast of town of Huntington Lake.

DRAINAGE AREA.--39.7 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to current year. Record for water year 1986 is incomplete.

REVISED RECORDS.--WSP 1715: 1959. WSP 2130: 1959.

GAGE.--Water-stage recorder and broad-crested weir with trapezoidal notch. Elevation of gage is 7,836 ft above National Geodetic Vertical Datum of 1929, from photogrammetry survey.

REMARKS.--No estimated daily discharges. Flow regulated since October 1958 by Courtright Reservoir (station 11214550) 500 ft upstream and by Helms Creek Project pump/generator facility since June 1984. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (prior to operation of Helms Creek Project pump/generator facility, adjusted for change in contents in Courtright Reservoir).--25 years (1959-83), 82.8 ft<sup>3</sup>/s, 59,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,340 ft<sup>3</sup>/s, Aug. 29, 1969, gage height, 5.81 ft; maximum gage height, 7.70 ft, Aug. 23, 1978; no flow on several days in 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18 ft<sup>3</sup>/s, July 6, gage height, 1.10 ft; minimum daily, 3.9 ft<sup>3</sup>/s, Nov. 26, Dec. 14, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	4.8	4.3	4.1	4.3	4.1	7.0	6.6	14	16	13	7.4
2	6.0	4.9	4.1	4.1	4.3	4.1	7.0	6.9	14	16	13	7.1
3	6.0	4.6	4.1	4.1	4.3	4.1	7.0	7.3	14	16	13	6.8
4	6.1	4.2	4.1	4.1	4.3	4.1	7.0	7.5	14	16	13	6.6
5	5.9	4.1	4.1	4.1	4.3	4.1	6.3	7.6	14	17	13	6.8
6	5.7	4.2	4.2	4.1	4.3	4.1	5.6	7.5	14	17	13	6.9
7	5.7	4.3	4.3	4.2	4.3	4.1	5.6	7.4	14	16	13	6.8
8	5.7	4.3	4.3	4.3	4.3	4.1	5.5	7.4	14	16	13	6.8
9	5.7	4.4	4.1	4.3	4.3	4.1	5.3	7.6	14	16	13	6.6
10	5.9	4.4	4.1	4.3	4.3	4.1	5.2	7.6	14	16	12	6.6
11	5.9	4.5	4.0	4.3	4.3	4.1	5.2	7.6	14	16	11	6.7
12	5.9	4.6	4.0	4.3	4.3	4.1	5.2	7.4	14	16	11	6.8
13	5.9	4.6	4.0	4.3	4.3	4.1	5.2	7.4	14	16	11	6.7
14	5.8	4.6	3.9	4.3	4.3	4.1	5.2	7.2	14	16	10	6.6
15	5.6	4.6	3.9	4.3	4.3	4.1	5.2	7.4	14	16	10	6.3
16	5.6	4.7	4.1	4.3	4.3	4.1	5.2	7.9	14	16	10	6.2
17	5.4	4.8	4.1	4.3	4.3	4.1	5.2	8.0	14	15	10	6.1
18	5.4	4.7	4.1	4.3	4.3	4.1	5.2	8.4	14	14	10	6.1
19	5.4	4.6	4.1	4.3	4.3	4.1	5.2	8.8	14	13	9.4	6.1
20	5.2	4.5	4.0	4.3	4.3	4.1	5.4	9.1	15	13	9.2	5.9
21	5.2	4.4	4.0	4.3	4.1	4.4	5.4	9.0	16	13	9.4	5.7
22	5.2	4.4	4.0	4.3	4.1	4.8	5.4	9.1	16	13	9.4	5.7
23	4.9	4.4	4.0	4.3	4.1	5.4	5.4	9.4	16	13	9.2	5.6
24	4.7	4.3	4.1	4.3	4.1	5.7	5.8	9.4	16	13	8.8	5.6
25	4.5	4.1	4.1	4.3	4.1	6.0	6.6	9.8	15	13	8.4	5.7
26	5.1	3.9	4.1	4.3	4.1	6.3	6.8	10	15	13	8.2	5.8
27	5.4	4.1	4.1	4.3	4.1	6.5	6.7	10	16	13	8.0	5.6
28	4.9	4.1	4.1	4.3	4.1	6.6	6.6	11	16	13	8.0	5.4
29	5.0	4.2	4.1	4.3	4.1	6.8	6.6	11	16	13	8.1	5.2
30	4.8	4.3	4.1	4.3	---	7.0	6.6	13	16	12	7.8	4.9
31	4.8	---	4.1	4.3	---	7.0	---	14	---	13	7.6	---
TOTAL	169.2	132.6	126.7	132.0	122.9	148.5	175.6	268.3	439	455	323.5	187.1
MEAN	5.46	4.42	4.09	4.26	4.24	4.79	5.85	8.65	14.6	14.7	10.4	6.24
MAX	6.1	4.9	4.3	4.3	4.3	7.0	7.0	14	16	17	13	7.4
MIN	4.5	3.9	3.9	4.1	4.1	4.1	5.2	6.6	14	12	7.6	4.9
AC-FT	336	263	251	262	244	295	348	532	871	902	642	371
CAL YR 1987	TOTAL	2071.6	MEAN	5.68	MAX	9.3	MIN	3.3	AC-FT	4110		
WTR YR 1988	TOTAL	2680.4	MEAN	7.32	MAX	17	MIN	3.9	AC-FT	5320		

## TULARE LAKE BASIN

11214800 WISHON RESERVOIR NEAR CLIFF CAMP, CA

LOCATION.--Lat 37°00'19", long 118°58'07", in NW 1/4 NW 1/4 sec.6, T.11 S., R.28 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right end of dam on North Fork Kings River, 1.2 mi north of Cliff Camp, and 20 mi southeast of Big Creek.

DRAINAGE AREA.--177 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1957 to September 1982 (monthend elevation and contents only), October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by rockfill dam completed in 1957. Capacity, 128,600 acre-ft between elevations 6,317 ft, bottom of slide gates, and 6,550 ft, operating crest of spillway gates. Dead storage negligible. Water is diverted to Haas powerplant. Records, including extremes, represent contents at 2400 hours. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 129,700 acre-ft, July 29, 1958, elevation, 6,551.1 ft; no contents in 1960.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 97,784 acre-ft, May 27, elevation, 6,517.75 ft; minimum, 40,576 acre-ft, Sept. 12, elevation, 6,441.87 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated Apr. 13, 1959)

6,317	40	6,385	11,618	6,440	39,471	6,520	99,807
6,360	2,810	6,400	18,359	6,460	51,900	6,550	129,118
6,370	5,738	6,420	28,362	6,490	74,128	6,551.1	129,733

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73481	87375	89359	75712	72286	69766	60537	74168	87754	89567	56359	50692
2	71958	90906	90062	74979	73312	71910	59007	72814	88616	90305	54699	52596
3	74930	93025	88667	75520	73570	75752	56828	73500	89065	88193	53837	55328
4	75272	93122	88167	78057	73570	77061	60816	76046	89932	85043	53628	52297
5	76692	91885	86458	78552	72430	76823	63544	76774	90645	82248	52853	49628
6	74719	90933	85162	80177	69523	74670	66724	77694	91194	82962	49100	47458
7	72574	91657	85468	80318	66963	73651	68795	77595	91649	83586	45008	47162
8	70222	85783	88452	78758	65541	75679	72694	75777	92025	83594	46560	46660
9	69296	85519	88452	76717	65717	77982	72935	75272	92384	83232	50165	46366
10	68826	84567	90837	73473	68397	81127	71791	82256	93501	82265	53581	44971
11	68795	83046	89424	72766	70601	86184	75899	87513	93871	80401	54182	42378
12	70380	82231	88115	72951	72830	80860	77777	91605	94278	78403	53335	40576
13	69884	83560	89221	74549	70380	74492	78982	95820	97050	77299	52990	43123
14	73925	83611	89325	74208	69069	72574	79587	95429	97587	75940	50699	43995
15	73651	81528	90645	75060	67349	70672	79529	89975	96622	74646	49132	44977
16	72894	82811	90140	75182	70254	68654	79620	91780	94578	81955	48953	44559
17	72814	83476	88762	75003	70648	67225	77267	92025	93924	84161	50725	44528
18	71568	85698	88150	75288	72654	65748	76725	92121	94693	87126	54236	44516
19	73683	86878	90279	74963	75393	63386	76823	92902	92709	83282	56513	46254
20	72830	89533	88650	77859	74378	59995	76479	95963	91028	83215	52132	47705
21	72951	89758	87324	79205	69641	60112	77793	96212	90671	83299	47907	48142
22	75883	90001	86818	77554	70065	58604	78535	94313	92815	83350	47540	49854
23	77867	91526	84542	74898	71950	57661	78791	96854	92815	79844	50340	50087
24	81143	93360	82752	72670	73063	59689	73667	96693	93342	75028	51445	47118
25	81929	94101	80526	72518	72566	60801	74297	96292	91929	74241	52277	43482
26	88685	88201	78767	71044	71855	60324	76660	96702	90628	73812	53265	45924
27	90985	86638	76586	70886	70902	58805	76701	97784	89316	71640	49087	50165
28	90314	84474	76120	70364	71052	59152	76856	95696	88780	68857	44872	53144
29	89030	83072	76797	69641	69499	59864	77842	90332	87814	67791	47193	53540
30	88236	85119	77497	69115	---	59427	78734	88029	88072	64255	49505	57158
31	88089	---	77628	69092	---	59304	---	87874	---	59340	49654	---
MAX	90985	94101	90837	80318	75393	86184	79620	97784	97587	90305	56513	57158
MIN	68795	81528	76120	69092	65541	57661	56828	72814	87754	59340	44872	40576
a	6506.72	6503.25	6494.29	6483.67	6484.19	6470.72	6495.63	6506.47	6506.49	6470.77	6456.56	6467.72
b	+14164	-2970	-7491	-8536	+407	-10195	+19430	+9140	+198	-28732	-9686	+7504

CAL YR 1987 b +6012

WTR YR 1988 b -16767

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## TULARE LAKE BASIN

11214900 NORTH FORK KINGS RIVER BELOW WISHON RESERVOIR, CA

LOCATION.--Lat 37°00'05", long 118°58'20", in SE 1/4 NE 1/4 sec.1, T.11 S., R.27 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right bank 1,700 ft downstream from Wishon Dam and 20 mi southeast of Big Creek.

DRAINAGE AREA.--178 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch steel control and concrete weir. Elevation of gage is 6,300 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Wishon Reservoir (station 11214800) and Courtright Reservoir (station 11214550). Water diverted for power from Wishon Reservoir by tunnel to Haas powerplant. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33 ft<sup>3</sup>/s, Mar. 5, 1987, gage height, 3.40 ft; minimum daily, 12 ft<sup>3</sup>/s, Aug. 10, 11, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28 ft<sup>3</sup>/s, Jan. 5, gage height, 3.34 ft; minimum daily, 14 ft<sup>3</sup>/s, Oct. 2, 3, 8-10, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	16	16	17	17	18	16	18	19	19	16	16
2	14	16	16	17	17	18	16	18	19	19	16	16
3	14	16	16	17	17	18	16	17	19	19	16	16
4	15	16	16	18	17	18	16	17	19	19	16	15
5	15	16	16	23	17	18	16	18	20	19	16	15
6	15	17	17	18	17	18	16	18	20	19	15	15
7	15	16	17	18	17	18	17	18	20	19	15	15
8	14	16	16	18	17	18	17	18	20	19	16	15
9	14	16	17	18	17	18	17	17	20	19	16	15
10	14	16	17	17	17	18	17	18	20	19	16	15
11	15	16	17	17	17	18	17	18	20	19	16	15
12	15	16	17	17	17	19	17	19	20	18	16	15
13	15	16	16	17	17	18	18	19	20	18	16	15
14	15	16	17	17	17	17	18	20	20	18	16	15
15	14	16	17	17	17	17	18	20	20	18	15	15
16	15	16	17	17	17	17	18	19	20	19	16	15
17	15	16	17	17	17	17	18	20	20	19	16	15
18	15	16	17	17	17	17	18	20	20	19	16	15
19	15	16	17	17	17	17	18	20	20	19	16	15
20	15	16	17	17	17	16	18	20	20	19	15	15
21	15	17	17	18	17	16	19	20	20	19	15	15
22	15	16	17	18	17	16	19	20	20	19	16	15
23	15	16	17	18	17	16	19	20	20	18	16	15
24	15	17	17	17	17	16	19	20	20	18	16	15
25	15	17	17	17	17	16	19	20	20	18	16	15
26	15	17	17	17	17	16	18	20	19	18	15	15
27	15	16	16	17	18	16	18	20	20	18	15	15
28	16	16	16	17	19	16	18	20	19	17	15	15
29	16	16	17	17	18	16	18	20	19	17	15	16
30	16	16	17	17	---	16	18	19	19	17	15	16
31	16	---	17	17	---	16	---	19	---	17	15	---
TOTAL	463	485	518	541	497	529	527	590	592	572	485	455
MEAN	14.9	16.2	16.7	17.5	17.1	17.1	17.6	19.0	19.7	18.5	15.6	15.2
MAX	16	17	17	23	19	19	19	20	20	19	16	16
MIN	14	16	16	17	17	16	16	17	19	17	15	15
AC-FT	918	962	1030	1070	986	1050	1050	1170	1170	1130	962	902

CAL YR 1987 TOTAL 6959 MEAN 19.1 MAX 30 MIN 12 AC-FT 13800  
WTR YR 1988 TOTAL 6254 MEAN 17.1 MAX 23 MIN 14 AC-FT 12400

## TULARE LAKE BASIN

11215000 NORTH FORK KINGS RIVER NEAR CLIFF CAMP, CA

LOCATION.--Lat 36°59'38", long 118°58'49", in NE 1/4 NW 1/4 sec.12, T.11 S., R.27 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right bank at Cliff Camp bridge, 1 mi northwest of Cliff Camp, 1.2 mi downstream from Wishon Dam, and 2 mi downstream from Woodchuck Creek.

DRAINAGE AREA.--181 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1921 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1715: 1951, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,143.95 ft above National Geodetic Vertical Datum of 1929 (levels by San Joaquin Light and Power Corp.). Prior to Nov. 24, 1922, at site 1 mi upstream at different datum.

REMARKS.--Flow regulated since Dec. 5, 1957, by Wishon Reservoir (station 11214800) 1.2 mi upstream, and since Oct. 17, 1958, by Courtright Reservoir (station 11214550). Water diverted for power from Wishon Reservoir by tunnel to Haas powerplant since Dec. 10, 1958. See schematic diagram of Kings River basin. Monthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (adjusted for storage and diversion).--67 years, 376 ft<sup>3</sup>/s, 272,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (prior to regulation by Wishon Reservoir).--Maximum discharge, 14,000 ft<sup>3</sup>/s, Dec. 11, 1937, gage height, 18.0 ft, from floodmarks, from rating curve extended above 4,200 ft<sup>3</sup>/s on basis of velocity-area studies; minimum, 0.6 ft<sup>3</sup>/s, Dec. 30, 1930.  
1957 to current year.--Maximum discharge, 5,110 ft<sup>3</sup>/s, Sept. 5, 1978, gage height, 11.96 ft; minimum daily, 0.8 ft<sup>3</sup>/s, Dec. 14, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 82 ft<sup>3</sup>/s, Jan. 5, gage height 3.71 ft; minimum daily, 13 ft<sup>3</sup>/s, Oct. 1-21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	14	14	16	17	29	16	21	18	17	15	14
2	13	15	15	15	16	29	16	19	17	17	15	14
3	13	15	15	18	16	27	16	19	17	17	15	15
4	13	15	15	22	16	25	16	18	17	16	15	15
5	13	15	15	60	16	25	16	19	17	16	15	14
6	13	16	23	29	16	24	16	19	18	16	14	14
7	13	15	21	22	16	24	16	19	18	16	14	14
8	13	15	16	20	17	24	16	19	18	16	14	14
9	13	14	16	19	18	23	16	18	17	16	14	14
10	13	14	16	19	19	21	16	18	17	16	14	14
11	13	14	16	18	20	21	16	18	17	16	15	14
12	13	14	16	17	20	21	16	18	17	16	15	14
13	13	14	15	17	20	19	16	19	18	16	15	14
14	13	14	15	17	19	18	24	20	18	16	15	14
15	13	14	16	17	20	18	22	19	18	16	14	14
16	13	14	16	16	20	17	20	18	18	16	14	14
17	13	15	16	17	19	17	19	18	17	16	14	14
18	13	14	16	16	18	17	18	19	17	16	14	14
19	13	14	16	16	17	17	19	18	17	16	15	14
20	13	15	16	16	17	17	24	18	17	16	15	14
21	13	15	16	17	18	17	25	18	17	16	14	14
22	14	15	16	17	18	17	24	18	17	16	14	14
23	14	15	16	19	19	17	26	18	17	16	14	14
24	14	15	16	19	19	17	30	18	17	16	14	14
25	14	15	16	20	20	17	31	18	17	16	14	14
26	14	15	15	19	21	17	30	18	17	16	15	14
27	14	15	15	20	23	17	27	18	17	16	14	14
28	14	14	15	19	38	16	24	18	17	16	14	14
29	16	14	15	19	31	16	22	22	17	16	14	14
30	14	14	15	18	---	16	22	19	17	16	14	14
31	14	---	15	17	---	16	---	18	---	15	14	---
TOTAL	415	437	494	611	564	616	615	577	518	498	446	422
MEAN	13.4	14.6	15.9	19.7	19.4	19.9	20.5	18.6	17.3	16.1	14.4	14.1
MAX	16	16	23	60	38	29	31	22	18	17	15	15
MIN	13	14	14	15	16	16	16	18	17	15	14	14
AC-FT	823	867	980	1210	1120	1220	1220	1140	1030	988	885	837

CAL YR 1987 TOTAL 7256 MEAN 19.9 MAX 55 MIN 13 AC-FT 14390  
WTR YR 1988 TOTAL 6213 MEAN 17.0 MAX 60 MIN 13 AC-FT 12320

## TULARE LAKE BASIN

## 11216100 BLACK ROCK RESERVOIR NEAR BALCH CAMP, CA

LOCATION.--Lat 36°55'13", long 119°01'20", in NW 1/4 NW 1/4 sec.6, T.12 S., R.27 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on right bank at intake tower on North Fork Kings River, 5.6 mi east-northeast of Balch Camp.

DRAINAGE AREA.--233 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete arch-type dam, completed to elevation 4,054 ft in 1927 and raised to 4,098 ft in 1958. Storage began in 1927. Spillway is ungated. Capacity, 1,260 acre-ft between elevation 4,054 ft, fish release valve, and 4,098 ft, top of spillway crest. Water is diverted from reservoir through tunnel to Balch powerplant 3.7 mi downstream. Flow is diverted from powerplant tailrace in a closed conduit to Kings River powerplant. See schematic diagram of Kings River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,255 acre-ft, Nov. 1, 1986, elevation, 4,097.86 ft; minimum, 359 acre-ft, Nov. 3, 1986, elevation 4,064.51 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,228 acre-ft, Sept. 18, elevation, 4,097.08 ft; minimum, 578 acre-ft, Jan. 31, Feb. 1, elevation, 4,075.00 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Provided by Pacific Gas and Electric Co., from table dated Dec. 1, 1958)

4,050	165	4,065	367	4,080	706	4,095	1,157
4,055	219	4,070	465	4,085	846	4,100	1,331
4,060	286	4,075	579	4,090	996	4,108	1,635

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1148	1212	1155	1155	578	1003	1138	1076	1096	1161	1095	1145
2	1145	1169	1178	1082	787	1013	1151	939	1125	1147	1118	1125
3	1138	1192	1136	1135	1155	1108	1115	988	1158	1108	1139	1138
4	1158	1149	970	952	1099	1102	1113	1105	1157	1165	1158	1151
5	1044	1165	1027	985	1125	1003	1183	1090	1116	1185	1112	1148
6	1165	1131	915	1161	1155	1151	1167	1099	1107	1125	1131	1135
7	1182	1102	1099	1202	614	1125	1117	1086	1141	1047	1148	1153
8	1183	1115	1169	1158	634	1122	1161	1168	1108	1081	1161	1163
9	1175	1138	1161	1223	748	1127	1139	1116	1045	1131	1204	1187
10	1180	1131	1117	1086	857	1163	1057	1150	1195	1148	1100	1188
11	1167	1125	1155	1165	921	1096	1095	1155	1122	1099	1117	1218
12	1168	1126	1115	1168	994	1086	1112	1175	1112	1070	1137	1165
13	1155	1112	1158	1112	909	1146	1112	1183	1141	1076	1155	1131
14	1151	1168	1135	1149	989	1128	1038	1145	1166	1081	1173	1171
15	1182	1164	1148	1158	727	1125	1044	1050	1155	1122	945	1175
16	1172	1133	1149	1070	647	1178	1040	976	1118	1163	1135	1182
17	1118	1178	1164	1025	712	1128	1094	1043	1131	1202	1066	1199
18	1148	1164	1148	1074	833	1172	1130	1036	1099	1175	1082	1228
19	1172	1214	1144	1173	894	1102	1102	1057	1115	1204	1106	1174
20	1151	1185	1146	1168	912	1135	1040	1154	1016	1148	1120	1145
21	1172	1205	1168	1136	1008	1099	979	1089	1158	1148	1135	1182
22	1141	1050	1168	1138	1105	1079	1165	1095	1158	1102	1148	1219
23	1185	1067	1148	1158	1209	1029	1089	1112	1138	1151	1178	1087
24	1108	1075	1000	1141	1216	882	1151	966	1135	1079	1182	1121
25	1182	1073	1060	1168	1182	1078	1160	1115	1205	1150	1142	1123
26	1172	1118	1113	1178	1112	1086	1161	1111	1165	1071	1170	1123
27	1161	1141	1166	1186	1140	1102	1076	1035	1160	1105	1086	1115
28	1155	1165	1181	1160	1095	1063	1099	1135	1155	1140	1099	1147
29	1149	1202	1141	1178	976	1092	1125	1088	1148	1145	1172	1143
30	1149	1199	1165	1151	---	1112	1047	1089	1138	1041	1168	1148
31	1186	---	1165	578	---	1081	---	1192	---	1070	1172	---
MAX	1186	1214	1181	1223	1216	1178	1183	1192	1205	1204	1204	1228
MIN	1044	1050	915	578	578	882	979	939	1016	1041	945	1087
a	4095.83	4096.17	4095.20	4075.00	4089.30	4092.65	4091.64	4096.00	4094.40	4092.32	4095.40	4094.70
b	+48	+13	-34	-587	+398	+105	-34	+145	-54	-68	+102	-24

CAL YR 1987 b +14  
WTR YR 1988 b +10

a Elevation, in feet, at end of month.  
b Change in contents, in acre-feet.

## TULARE LAKE BASIN

## 11216200 NORTH FORK KINGS RIVER BELOW BALCH DIVERSION DAM, CA

LOCATION.--Lat 36°54'10", long 119°03'00", in NE 1/4 sec.8, T.12 S., R.27 E., Fresno County, Hydrologic Unit 18030010, on right bank 2.0 mi downstream from Balch Diversion Dam (Black Rock Reservoir), 400 ft upstream from Weir Creek, and 4 mi east of Balch Camp.

DRAINAGE AREA.--238 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Courtright Reservoir (station 11214550), Wishon Reservoir (station 11214800), and Black Rock Reservoir.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,830 ft<sup>3</sup>/s, Nov. 24, 1983, gage height, 7.63 ft; minimum daily, 0.89 ft<sup>3</sup>/s, Oct. 21, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 80 ft<sup>3</sup>/s, Jan. 5, gage height, 2.44 ft; minimum daily, 3.0 ft<sup>3</sup>/s, Aug. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	3.6	3.6	4.2	6.4	10	4.6	5.3	4.7	4.1	4.1	4.2
2	3.2	5.3	3.6	5.0	6.7	8.1	4.6	5.1	4.6	4.1	4.1	4.1
3	3.2	4.0	3.6	8.1	8.3	6.9	4.6	4.9	4.6	4.1	4.1	4.1
4	3.2	3.6	4.1	25	5.4	6.6	4.6	5.0	4.6	4.1	4.1	4.1
5	3.2	4.0	4.1	47	4.9	6.4	4.6	5.5	4.6	4.1	4.1	3.9
6	3.1	5.9	6.5	13	4.9	6.2	4.6	5.6	4.6	4.1	4.1	3.8
7	3.2	4.0	6.9	8.8	5.0	6.1	4.6	5.6	4.6	4.0	4.1	3.7
8	3.2	3.7	4.8	7.4	4.7	5.5	4.6	5.6	4.6	4.0	4.1	3.6
9	3.2	3.6	4.4	6.7	4.6	5.4	4.6	5.3	4.6	4.0	4.1	3.6
10	3.2	3.6	4.1	6.3	4.7	5.3	4.6	5.1	4.5	4.0	4.1	3.7
11	3.2	3.6	4.0	9.4	4.9	5.3	4.5	5.1	4.6	4.0	4.1	3.6
12	3.3	3.6	4.1	6.8	5.0	5.2	4.5	4.9	4.5	4.0	4.1	3.7
13	3.2	3.6	3.8	6.1	5.1	5.1	4.6	5.1	4.5	4.0	4.1	3.6
14	3.2	3.7	3.8	5.7	5.0	5.1	8.6	5.1	4.4	4.0	4.1	3.7
15	3.2	3.6	3.8	6.6	5.0	5.1	6.0	4.9	4.4	4.0	4.1	3.7
16	3.3	3.6	4.0	6.2	4.6	5.0	5.1	4.7	4.4	4.0	4.0	3.8
17	3.2	3.8	3.8	14	4.6	4.9	4.9	4.8	4.4	4.1	4.0	3.8
18	3.2	3.8	3.8	9.4	4.6	4.9	4.8	4.9	4.3	4.1	3.9	3.8
19	3.2	3.6	4.1	7.3	4.6	4.9	5.9	4.8	4.0	4.0	4.0	3.8
20	3.2	4.3	3.8	6.8	4.7	4.8	13	4.8	4.3	4.0	4.0	3.8
21	3.2	4.2	3.8	6.6	4.8	4.8	7.7	4.8	3.9	4.0	4.0	3.8
22	4.0	3.8	5.6	6.4	4.8	4.8	7.4	4.7	3.9	4.0	4.1	3.8
23	3.7	3.7	4.4	6.5	4.8	4.8	7.7	4.6	4.2	4.2	3.0	3.8
24	3.4	3.6	3.9	6.6	4.8	4.8	6.7	4.6	4.2	4.1	3.7	3.6
25	3.5	3.6	3.6	6.6	4.8	4.6	6.2	4.6	4.2	3.9	7.1	3.8
26	3.4	3.6	3.7	6.4	4.8	4.6	5.9	4.6	4.2	4.1	5.0	3.8
27	3.5	3.6	3.8	6.2	4.7	4.6	5.7	4.6	4.2	4.1	4.9	3.8
28	4.4	3.6	4.3	6.1	8.3	4.7	5.4	4.7	4.2	4.1	4.9	3.8
29	7.5	3.6	4.5	6.1	8.9	4.6	5.5	7.7	4.1	4.1	4.8	3.8
30	3.7	3.6	4.3	5.8	---	4.6	5.5	5.2	4.1	4.1	4.8	3.8
31	3.6	---	4.1	5.8	---	4.6	---	4.8	---	4.1	4.6	---
TOTAL	108.0	115.4	130.7	278.9	154.4	168.3	171.6	157.0	131.0	125.6	132.3	113.9
MEAN	3.48	3.85	4.22	9.00	5.32	5.43	5.72	5.06	4.37	4.05	4.27	3.80
MAX	7.5	5.9	6.9	47	8.9	10	13	7.7	4.7	4.2	7.1	4.2
MIN	3.1	3.6	3.6	4.2	4.6	4.6	4.5	4.6	3.9	3.9	3.0	3.6
AC-FT	214	229	259	553	306	334	340	311	260	249	262	226
CAL YR 1987	TOTAL	1364.1	MEAN 3.74	MAX 27	MIN 2.5	AC-FT 2710						
WTR YR 1988	TOTAL	1787.1	MEAN 4.88	MAX 47	MIN 3.0	AC-FT 3540						

## TULARE LAKE BASIN

## 11216400 DINKEY CREEK SIPHON FISH RELEASE AT BALCH CAMP, CA

LOCATION.--Lat 36°54'29", long 119°07'27", in NW 1/4 NE 1/4 sec.10, T.12 S., R.26 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, in concrete vault on right bank of Dinkey Creek, 200 ft downstream from Dinkey Creek Siphon at invert of Kings River powerplant conduit, and 1,700 ft northwest of Balch Camp.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Pressure differential flowmeter. Elevation of gage is 1,320 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Aug. 4 to Sept. 6. Flow release required for fishery enhancement from June 1 to Sept. 30 when natural flow of Dinkey Creek is equal to or less than 60 ft<sup>3</sup>/s. See records for North Fork Kings River above Dinkey Creek (station 11216500), North Fork Kings River below Dinkey Creek (station 11218400), and schematic diagram of Kings River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 8.5 ft<sup>3</sup>/s, Sept. 14, 15, 19, 20, 22-30, 1988; no flow from October to May in most years.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2								0	5.8	6.7	6.8
2	2.8								0	5.9	6.8	6.8
3	0								0	5.9	6.8	6.8
4	0								0	5.9	6.7	6.8
5	0								0	5.8	6.7	6.8
6	0								0	5.8	6.7	6.8
7	0								0	5.8	6.7	6.8
8	0								0	5.8	6.7	6.8
9	0								0	5.9	6.7	6.8
10	0								0	5.8	6.7	6.9
11	0								0	5.8	6.7	6.8
12	0								0	5.8	6.7	6.8
13	0								0	5.7	6.7	7.9
14	0								0	5.7	6.7	8.5
15	0								3.0	5.6	6.7	8.5
16	0								5.4	5.6	6.7	8.4
17	0								5.4	5.7	6.7	8.4
18	0								5.5	5.6	6.7	8.4
19	0								5.5	6.1	6.7	8.5
20	0								5.5	6.7	6.7	8.5
21	0								5.5	6.6	6.7	8.4
22	0								5.5	6.6	6.7	8.5
23	0								5.5	6.6	6.7	8.5
24	0								5.7	6.6	6.7	8.5
25	0								5.8	6.6	6.7	8.5
26	0								5.8	6.6	6.7	8.5
27	0								5.8	6.6	6.7	8.5
28	0								5.8	6.6	6.7	8.5
29	0								5.8	6.6	6.7	8.5
30	0								5.8	6.6	6.7	8.5
31	0	---			---		---		---	6.7	6.8	---
TOTAL	9.0	0	0	0	0	0	0	0	87.3	189.4	208.0	233.7
MEAN	.29	0	0	0	0	0	0	0	2.91	6.11	6.71	7.79
MAX	6.2	0	0	0	0	0	0	0	5.8	6.7	6.8	8.5
MIN	0	0	0	0	0	0	0	0	0	5.6	6.7	6.8
AC-FT	18	0	0	0	0	0	0	0	173	376	413	464
CAL YR 1987	TOTAL 624.60	MEAN 1.71	MAX 7.0	MIN 0	AC-FT 1240							
WTR YR 1988	TOTAL 727.40	MEAN 1.99	MAX 8.5	MIN 0	AC-FT 1440							

LOCATION.--Lat 36°54'12", long 119°07'14", in SE 1/4 NE 1/4 sec.10, T.12 S., R.26 E., Fresno County, Hydrologic Unit 18030010, Sierra National Forest, on left bank 12 ft downstream from bridge at Balch Camp, 300 ft upstream from Dinky Creek, and 9.3 mi east of Trimmer.

PERIOD OF RECORD.--October 1919 to September 1930 (published as "above Dinkey Creek"), March 1960 to current year. Records for water year 1920 incomplete; yearly estimate and monthly discharge only for some months, published in WSP 1315-A.

GAGE.--Water-stage recorder and Cippoletti weir since May 9, 1988. Concrete control Apr. 15, 1966 to May 9, 1988. Elevation of gage is 1,240 ft above National Geodetic Vertical Datum of 1929, from river-profile map. October 1919 to Sept. 30, 1930, and Mar. 24, 1960, to Apr. 14, 1966, at site 100 ft downstream at different datum.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 77 ft<sup>3</sup>/s, Jan. 5, gage height, 1.61 ft; minimum daily, 10 ft<sup>3</sup>/s, several days in May and June.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	16	13	12	14	13	12	11	11	11	13	13
2	17	16	12	12	14	13	12	11	10	11	12	13
3	17	16	12	12	14	12	11	10	11	11	12	13
4	17	16	13	13	14	12	12	11	11	12	12	13
5	17	16	13	60	14	12	11	12	11	12	12	12
6	17	16	13	22	13	12	11	11	11	13	12	12
7	17	16	13	15	13	12	11	12	12	12	11	12
8	17	16	13	14	13	12	11	12	11	12	11	12
9	17	17	13	13	13	12	11	12	10	12	11	12
10	17	18	13	13	13	12	12	13	10	12	11	12
11	17	18	13	13	13	12	11	12	11	12	11	12
12	17	18	13	13	13	12	11	12	10	12	11	12
13	17	18	12	13	13	13	11	12	11	12	12	12
14	17	18	12	13	13	13	13	11	11	12	12	12
15	17	18	12	12	13	12	12	11	11	12	12	12
16	17	18	12	12	13	12	12	11	11	12	12	12
17	17	18	12	23	13	12	12	11	11	11	11	12
18	18	18	13	16	13	12	11	11	12	11	12	12
19	17	15	13	14	12	12	11	11	12	11	12	12
20	18	12	13	14	11	12	14	10	12	12	12	12
21	16	12	12	13	12	12	12	11	12	12	12	13
22	17	13	13	13	12	12	12	11	14	12	12	13
23	17	13	12	13	12	12	12	11	16	12	12	13
24	17	13	12	13	12	12	12	11	11	12	13	13
25	16	13	12	13	12	12	11	11	11	12	13	13
26	16	13	12	12	12	12	11	11	12	13	13	12
27	16	12	12	12	12	11	11	10	12	13	13	12
28	17	12	12	13	12	12	11	10	12	12	13	12
29	16	12	12	13	13	13	11	11	12	13	12	12
30	17	12	12	14	---	13	11	11	12	13	12	12
31	17	---	12	14	---	12	---	11	---	13	13	---
TOTAL	524	459	386	472	371	377	346	346	344	372	372	369
MEAN	16.9	15.3	12.5	15.2	12.8	12.2	11.5	11.2	11.5	12.0	12.0	12.3
MAX	18	18	13	60	14	13	14	13	16	13	13	13
MIN	16	12	12	12	11	11	11	10	10	11	11	12
AC-FT	1040	910	766	936	736	748	686	686	682	738	738	732

CAL	YR	1987	TOTAL	4674	MEAN	12.8	MAX	27	MIN	11	AC-FT	9270
WTR	YR	1988	TOTAL	4738	MEAN	12.9	MAX	60	MIN	10	AC-FT	9400



DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	48	37	55	97	237	253	327	204	58	28	27
2	28	147	38	55	101	204	253	299	176	57	27	31
3	27	111	37	71	91	224	269	313	162	55	26	27
4	26	67	37	92	89	220	282	315	157	53	26	26
5	25	58	48	889	89	239	326	291	151	47	27	25
6	24	94	48	324	92	232	341	278	144	45	27	24
7	23	106	213	189	96	213	338	259	138	45	26	24
8	23	77	109	147	105	230	324	251	127	43	26	23
9	24	66	85	124	119	247	315	257	118	42	26	23
10	24	58	89	121	129	204	331	276	109	42	25	23
11	24	54	89	123	138	176	324	334	107	38	25	23
12	24	50	77	110	142	160	313	388	105	38	25	23
13	24	49	61	102	141	157	286	423	98	38	25	23
14	24	51	46	97	135	156	362	429	93	37	25	24
15	24	51	51	98	142	159	317	407	89	36	25	24
16	24	48	54	93	150	153	280	394	89	36	25	24
17	24	48	54	136	136	153	280	334	86	33	25	24
18	25	74	53	115	132	168	308	299	85	31	24	24
19	24	60	53	95	114	187	286	310	84	30	24	23
20	25	50	51	93	120	222	322	299	90	30	24	24
21	24	55	50	93	132	251	286	288	89	29	23	25
22	25	57	60	94	136	224	267	278	76	30	23	27
23	38	54	73	105	147	265	255	251	78	30	23	27
24	39	48	51	116	138	288	259	241	71	43	23	26
25	35	45	48	128	150	329	383	232	70	41	24	25
26	30	42	51	134	162	378	446	217	71	38	26	25
27	28	38	48	131	186	378	432	199	67	38	27	25
28	28	38	53	125	286	341	410	186	67	32	31	25
29	151	37	56	118	274	306	399	267	57	29	26	24
30	81	36	60	111	---	291	399	226	57	29	27	25
31	49	---	55	107	---	255	---	197	---	28	26	---
TOTAL	1024	1817	1935	4391	3969	7247	9646	9065	3115	1201	790	743
MEAN	33.0	60.6	62.4	142	137	234	322	292	104	38.7	25.5	24.8
MAX	151	147	213	889	286	378	446	429	204	58	31	31
MIN	23	36	37	55	89	153	253	186	57	28	23	23
AC-FT	2030	3600	3840	8710	7870	14370	19130	17980	6180	2380	1570	1470
CAL YR 1987	TOTAL 36774	MEAN 101	MAX 497	MIN 23	AC-FT 72940							
WTR YR 1988	TOTAL 44943	MEAN 123	MAX 889	MIN 23	AC-FT 89140							

## TULARE LAKE BASIN

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 36°52'29", long 119°08'27", in SW 1/4 NE 1/4 sec.21, T.12 S., R.26 E., Fresno County, Hydrologic Unit 18030010, on right bank 0.8 mi downstream from North Fork, 2.4 mi southwest of Balch Camp, and 8.5 mi southeast of Trimmer.

DRAINAGE AREA.--1,342 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1951 to current year. Prior to January 1952 monthly discharge only, published in WSP 1735. Published as Kings River below North Fork, October 1951 to September 1965. Records for 1962 to 1984 include flow diverted to Kings River powerplant.

REVISED RECORDS.--WSP 1930: Drainage area. WDR CA-72-2: Adjusted data for 1971.

GAGE.--Water-stage recorder. Datum of gage is 942.42 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Courtright and Wishon Reservoirs (stations 11214550 and 11214800). This station measures inflow to Pine Flat Lake. See schematic diagram of Kings River basin. For records of combined discharge of river and powerplant, see following page.

COOPERATION.--Records of diversion to Kings River powerplant and contents for Courtright and Wishon Reservoirs were provided by Pacific Gas & Electric Co.

AVERAGE DISCHARGE (adjusted for diversion to Kings River powerplant and change in contents in Wishon and Courtright Reservoirs).--37 years, 2,312 ft<sup>3</sup>/s, 1,675,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85,200 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 23.08 ft, from rating curve extended above 22,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 86 ft<sup>3</sup>/s, Oct. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 19, 1950, reached a stage of 21.6 ft from floodmarks, discharge, 74,200 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 6,010 ft<sup>3</sup>/s, May 16, gage height, 8.01 ft; minimum daily, 143 ft<sup>3</sup>/s, Oct. 20. Combined river and powerplant: Maximum daily discharge, 4,990 ft<sup>3</sup>/s, May 16; minimum daily, 146 ft<sup>3</sup>/s, Oct. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155	229	232	249	454	894	1230	1540	2150	1130	515	516
2	152	334	235	280	450	842	1270	1460	2060	1050	473	464
3	149	331	229	375	428	816	1390	1460	2500	981	435	421
4	148	275	232	463	412	789	1410	1490	2790	946	409	370
5	147	275	252	3630	396	804	1670	1420	2540	909	395	332
6	146	383	252	1200	400	803	1950	1330	1980	853	395	306
7	145	360	668	776	400	775	2060	1300	1610	797	377	310
8	145	314	383	668	412	801	2000	1200	1370	741	352	304
9	146	291	343	636	437	856	1940	1200	1250	701	329	282
10	147	279	339	600	463	788	2210	1330	1290	668	308	271
11	147	272	335	631	491	721	2370	1930	1480	645	293	261
12	146	263	310	646	506	668	2420	2930	1560	619	284	250
13	149	260	270	503	512	637	2120	3730	1660	588	276	242
14	150	266	234	472	509	622	2130	3970	1770	566	267	235
15	150	266	243	467	524	617	1900	4470	1830	550	257	226
16	148	263	264	454	541	602	1680	4830	1890	539	251	218
17	147	263	264	646	526	592	1540	3570	1770	515	243	211
18	146	301	258	615	516	619	1560	3270	1540	488	234	206
19	146	282	258	522	479	674	1480	3380	1620	464	225	200
20	143	272	252	494	484	790	1640	3290	2270	438	219	195
21	144	288	246	489	499	912	1440	3470	2650	415	220	231
22	146	282	270	485	510	908	1390	3590	2090	407	220	246
23	170	275	335	499	532	983	1280	3500	1760	421	218	245
24	179	263	270	526	528	1100	1220	3180	1690	512	217	238
25	175	257	240	555	545	1270	1450	3290	1930	636	234	229
26	168	252	240	570	574	1520	1630	3240	1820	570	301	220
27	163	240	237	565	631	1700	1640	2950	1570	549	567	212
28	164	237	255	560	824	1590	1590	2750	1500	648	645	205
29	308	232	289	545	847	1470	1580	3100	1380	605	612	197
30	266	229	299	522	---	1410	1750	2550	1240	539	514	190
31	235	---	264	494	---	1270	---	2220	---	503	489	---
TOTAL	5070	8334	8798	20137	14830	28843	50940	82940	54560	19993	10774	8033
MEAN	164	278	284	650	511	930	1698	2675	1819	645	348	268
MAX	308	383	668	3630	847	1700	2420	4830	2790	1130	645	516
MIN	143	229	229	249	396	592	1220	1200	1240	407	217	190
AC-FT	10060	16530	17450	39940	29420	57210	101000	164500	108200	39660	21370	15930
MEAN a	163	321	337	791	651	1277	2450	3577	2099	605	333	261
AC-FT a	10020	19100	20720	48640	37450	78520	145800	219900	124900	37200	20480	15530

CAL YR 1987 TOTAL 295220 MEAN 809 MAX 4620 MIN 143 AC-FT 585600 MEAN a 1007 AC-FT a 729000  
WTR YR 1988 TOTAL 313252 MEAN 856 MAX 4830 MIN 143 AC-FT 621300 MEAN a 1072 AC-FT a 778200

a Adjusted for diversion to Kings River powerplant and change in contents in Wishon and Courtright Reservoirs.

## TULARE LAKE BASIN

11218501 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF KINGS RIVER BELOW NORTH FORK  
AND KINGS POWERPLANT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	484	229	308	375	779	971	1300	1660	2290	1820	1350	965
2	616	425	517	412	750	912	1360	1630	2190	1410	1300	900
3	514	536	303	662	793	872	1500	1590	2750	1060	1270	671
4	357	527	367	731	607	893	1500	1490	2870	946	1250	728
5	608	319	252	4250	497	946	1740	1530	2640	1440	1220	719
6	568	480	472	1350	616	803	2050	1440	2080	1470	1220	704
7	387	439	801	918	754	877	2180	1400	1680	1420	1190	672
8	511	314	671	960	509	899	2090	1270	1470	1300	1180	627
9	569	382	638	692	437	955	2060	1310	1400	956	1120	443
10	246	279	409	719	463	869	2360	1510	1600	944	1120	271
11	147	272	575	702	491	835	2540	2170	1580	1180	1120	261
12	413	263	380	871	506	749	2520	3100	1640	1220	1120	478
13	440	260	390	719	647	681	2230	3840	2120	1400	1110	481
14	411	266	535	663	509	706	2310	4120	2270	1360	1100	418
15	372	266	729	703	720	696	2050	4650	2310	1350	1060	226
16	348	263	705	586	665	670	1790	4990	2340	1370	854	272
17	232	263	571	940	526	675	1630	3740	2270	1350	1060	211
18	146	301	495	907	516	690	1670	3370	1790	1330	1070	206
19	385	282	258	781	530	783	1590	3550	1620	1300	1060	200
20	425	272	303	798	484	872	1840	3750	2580	1110	1060	195
21	506	341	385	775	499	1010	1600	3620	3010	1230	1050	231
22	466	381	527	777	510	1000	1390	3700	2560	1230	1060	246
23	507	319	623	799	532	1090	1420	3690	2270	1240	1050	336
24	292	263	404	629	579	1260	1330	3340	2200	1330	1050	238
25	272	257	240	878	617	1270	1600	3340	1930	1450	1070	229
26	517	252	240	980	685	1620	1780	3360	1900	1340	1140	220
27	480	240	237	863	709	1810	1840	3100	1900	1360	1400	212
28	408	237	486	912	978	1710	1710	2820	1890	1480	1480	205
29	679	232	624	1000	1020	1550	1700	3300	1940	1440	1320	445
30	561	390	568	930	---	1500	1930	2690	1750	1370	940	352
31	235	---	456	819	---	1370	---	2300	---	1340	879	---
TOTAL	13102	9550	14469	28101	17928	31544	54610	87370	62840	40546	35273	12362
MEAN	423	318	467	906	618	1018	1820	2818	2095	1308	1138	412
MAX	679	536	801	4250	1020	1810	2540	4990	3010	1820	1480	965
MIN	146	229	237	375	437	670	1300	1270	1400	944	854	195
AC-FT	25990	18940	28700	55740	35560	62570	108300	173300	124600	80420	69960	24520
CAL YR 1987	TOTAL	366650	MEAN	1005	MAX	4790	MIN	146	AC-FT	727300		
WTR YR 1988	TOTAL	407695	MEAN	1114	MAX	4990	MIN	146	AC-FT	808700		

## TULARE LAKE BASIN

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956 to current year.

CHEMICAL DATA: Water years 1956-66, 1968-70, 1973 to current year.

BIOLOGICAL DATA: Water years 1978-81.

WATER TEMPERATURE: Water years 1967 to current year.

SEDIMENT DATA: Water years 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1966 to September 1988 (discontinued).

INSTRUMENTATION.--Temperature recorder since October 1966.

REMARKS.--Quality of water samples are obtained at the gaging station upstream from the powerplant. Temperature recorder located 1 mi downstream from gaging station. Temperature subject to fluctuation because of powerplant operation upstream. Temperature sensor inundated by backwater from Pine Flat Lake when lake elevation exceeds 903.0 ft. There was no backwater during the 1988 water year. Interruptions in record were due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 26.5 °C, Sept. 2, 1977; minimum recorded, 0.0 °C on several days in 1966 and 1967.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 22.5 °C, July 10; minimum recorded 1.5 °C, Dec. 26, 27, Jan. 1.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV , 1987												
24...	1215	260	50	7.40	9.0	0.30	750	11.6	102	K1	K4	18
JAN , 1988												
15...	1200	476	55	7.10	6.5	0.50	745	12.0	100	K2	K6	18
MAR												
15...	1220	626	41	7.10	10.0	0.40	740	11.2	102	K1	K2	14
MAY												
17...	1210	3740	17	6.90	12.5	0.70	740	10.6	102	K6	K5	6
JUL												
21...	1145	415	35	7.30	23.5	0.90	745	8.4	101	K12	K4	12
SEP												
21...	1215	232	47	7.40	17.0	0.50	740	9.5	101	K12	K4	16

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV												
24...	0	5.9	0.75	3.7	30	0.4	0.90	24	0	19	20	4.8
JAN												
15...	0	5.8	0.83	3.5	29	0.4	0.80	26	0	21	21	5.4
MAR												
15...	0	4.5	0.61	3.0	31	0.4	0.70	20	0	17	17	3.9
MAY												
17...	0	1.9	0.20	1.1	28	0.2	0.40	10	0	8	8	2.7
JUL												
21...	0	4.1	0.38	2.3	28	0.3	0.70	16	0	13	14	3.5
SEP												
21...	0	5.4	0.56	3.3	30	0.4	0.80	23	0	19	18	4.9

See footnote at end of table.

## TULARE LAKE BASIN

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, Ca--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)
NOV 24...	2.5	0.10	11	53	42	0.07	<0.010	<0.100	0.010	0.010	<0.20	<0.010
JAN 15...	2.2	0.20	12	42	43	0.06	<0.010	<0.100	<0.010	0.010	0.20	<0.010
MAR 15...	2.0	0.10	11	37	36	0.05	<0.010	<0.100	<0.010	0.010	<0.20	<0.010
MAY 17...	0.50	0.20	5.1	16	17	0.02	<0.010	<0.100	<0.010	<0.010	<0.20	0.010
JUL 21...	1.1	0.20	6.4	21	27	0.09	<0.010	<0.100	<0.010	<0.010	0.30	<0.010
SEP 21...	1.9	0.10	8.4	38	36	0.05	<0.010	<0.100	<0.010	<0.010	<0.20	0.010

DATE	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS F)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 24...	<0.010	<0.010	20	1	13	<0.5	<1	2	<3	2	14	<5
JAN 15...	<0.010	<0.010	--	--	--	--	--	--	--	--	--	--
MAR 15...	<0.010	<0.010	20	1	14	<0.5	<1	1	<3	4	16	<5
MAY 17...	0.020	<0.010	30	<1	8	<0.5	2	<1	<3	2	11	<5
JUL 21...	<0.010	<0.010	--	--	--	--	--	--	--	--	--	--
SEP 21...	0.010	<0.010	10	2	12	<0.5	<1	<1	<3	2	13	<5

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 24...	7	1	<0.1	<10	<1	<1	<1.0	38	<6	5
JAN 15...	--	--	--	--	--	--	--	--	--	--
MAR 15...	<4	2	<0.1	<10	<1	<1	<1.0	31	<6	6
MAY 17...	<4	1	<0.1	<10	1	<1	<1.0	12	<6	10
JUL 21...	--	--	--	--	--	--	--	--	--	--
SEP 21...	<4	1	<0.1	<10	3	<1	<1.0	33	<6	5

K Results based on colony count outside the acceptable range (non-ideal count).

&lt; Actual value is known to be less than the value shown.

## TULARE LAKE BASIN

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, Ca--Continued

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED CENT SATUR- ATION	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV										
24...*	1205	28.0	50	7.60	9.0	750	11.8	104	4	--
24...*	1210	40.0	50	7.50	9.0	750	11.8	104	2	--
24...*	1214	54.0	50	7.50	9.0	750	11.8	104	2	--
24...*	1220	74.0	50	7.50	9.0	750	11.7	103	1	--
24...*	1225	123	50	7.70	9.0	750	11.8	104	6	--
MAY										
17...*	1153	210	16	7.00	12.5	740	10.6	102	11	52
17...*	1203	237	16	7.00	12.5	740	10.6	102	22	27
17...*	1212	261	18	6.90	12.5	740	10.6	102	32	20
17...*	1220	288	17	6.90	12.5	740	10.7	103	11	44
17...*	1227	320	17	6.90	12.5	740	10.6	102	16	48

\* Instantaneous streamflow at the time of cross-sectional measurement:

Nov. 24, 260 ft<sup>3</sup>/s; May 17, 3,740 ft<sup>3</sup>/s

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17.5	14.0	---	---	8.5	6.5	4.5	1.5	7.0	5.0	8.5	8.0
2	---	---	14.5	13.0	8.0	7.0	5.0	3.0	6.5	4.5	9.0	7.5
3	---	---	13.5	12.0	9.0	7.0	6.5	4.5	6.0	4.5	10.0	7.0
4	---	---	12.5	12.0	8.5	7.5	7.5	5.5	6.0	4.0	10.5	8.0
5	---	---	12.5	11.5	9.0	8.5	7.0	6.0	6.0	4.0	11.0	8.5
6	---	---	13.5	12.0	8.5	8.0	6.0	5.0	6.0	4.0	11.5	9.5
7	---	---	13.5	11.5	9.0	8.0	6.0	5.0	6.5	4.5	12.0	9.0
8	---	---	13.0	11.0	7.5	7.0	7.0	5.0	8.0	4.5	12.0	9.0
9	16.0	12.0	13.0	11.0	8.0	7.0	7.5	6.0	8.5	6.0	12.0	9.0
10	---	---	13.0	11.0	9.0	7.5	7.0	5.5	8.5	6.5	10.0	7.5
11	---	---	13.0	10.5	9.0	8.0	8.0	6.0	9.0	6.5	9.0	6.5
12	---	---	13.5	10.0	9.0	7.5	7.5	5.5	9.0	6.5	8.5	6.0
13	---	---	13.0	10.5	7.5	6.0	7.0	5.0	9.0	6.5	9.5	6.5
14	15.0	11.5	13.0	10.5	7.0	4.5	6.5	5.0	9.0	6.5	10.5	7.0
15	---	---	12.5	9.5	6.5	4.0	6.5	5.5	9.0	6.5	10.5	7.5
16	---	---	12.0	9.5	7.0	5.5	6.5	5.5	9.5	6.5	11.0	8.0
17	---	---	12.5	10.0	7.5	6.5	6.0	5.5	9.0	7.0	11.5	8.5
18	---	---	12.0	9.5	7.0	6.0	6.5	5.0	8.5	6.0	12.0	9.0
19	---	---	11.5	9.5	7.0	6.0	6.0	4.5	8.0	5.5	12.5	9.0
20	---	---	10.0	8.5	7.0	6.0	5.0	4.0	8.5	5.5	13.0	9.5
21	15.0	11.5	10.5	8.0	7.0	5.0	5.5	4.0	9.0	6.5	12.0	9.5
22	15.5	13.0	10.0	9.5	6.5	6.0	6.0	4.0	10.0	7.0	13.0	9.5
23	15.5	13.0	9.5	8.0	7.0	6.0	6.0	4.5	10.0	7.5	12.5	9.0
24	---	---	9.5	4.0	6.0	3.5	7.0	5.0	11.0	7.5	13.5	9.5
25	---	---	8.5	7.5	3.5	2.0	7.0	5.0	10.0	8.0	13.5	10.0
26	---	---	8.5	6.5	3.0	1.5	7.0	5.0	11.0	8.0	14.0	10.5
27	---	---	7.5	6.0	3.0	1.5	8.0	5.5	11.0	9.0	12.5	10.5
28	16.5	13.5	7.0	5.0	5.5	2.5	7.5	6.0	11.0	9.0	11.5	9.5
29	15.5	13.5	7.0	5.5	5.0	3.5	7.5	6.0	10.0	8.0	12.0	8.5
30	15.0	13.0	8.5	5.5	5.0	3.5	8.0	5.5	---	---	12.0	8.5
31	---	---	---	---	4.5	2.5	8.0	5.5	---	---	11.0	8.0
MONTH	---	---	---	---	9.0	1.5	8.0	1.5	11.0	4.0	14.0	6.0

## TULARE LAKE BASIN

11218500 KINGS RIVER BELOW NORTH FORK, NEAR TRIMMER, Ca--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	12.0	8.0	10.5	7.5	15.0	12.5	17.5	12.5	15.5	14.5	---	---
2	12.0	8.5	11.5	8.0	17.0	13.0	19.0	13.5	15.5	14.5	---	---
3	12.5	9.5	13.5	9.0	16.5	14.0	22.0	16.0	15.5	14.5	---	---
4	14.0	10.5	13.5	10.5	15.5	14.5	22.0	18.5	15.0	14.5	---	---
5	13.5	11.0	11.5	8.5	15.0	13.0	20.0	13.5	15.0	14.5	---	---
6	13.0	11.0	9.5	7.5	13.0	11.5	15.0	13.5	15.0	14.5	---	---
7	12.5	11.0	10.0	8.5	13.5	11.0	19.0	13.0	15.0	14.0	---	---
8	12.0	10.5	13.0	9.0	14.5	10.5	20.0	13.0	15.0	14.0	---	---
9	13.0	10.0	13.5	9.5	16.0	12.0	22.0	14.5	16.5	14.0	---	---
10	13.0	11.0	14.5	10.5	16.0	13.0	22.5	15.0	15.0	14.0	---	---
11	13.0	11.0	14.5	13.0	17.5	13.5	22.0	14.5	14.5	14.0	---	---
12	12.0	11.0	15.5	13.0	17.5	14.5	20.5	13.5	14.5	14.0	---	---
13	11.5	10.5	14.5	13.0	16.5	13.5	14.5	13.0	14.5	14.0	---	---
14	10.5	9.0	14.0	12.5	17.0	13.5	14.5	13.0	15.0	14.0	---	---
15	9.0	8.0	14.5	12.5	18.0	13.0	14.5	13.0	15.0	15.0	---	---
16	10.0	8.0	14.5	12.5	17.5	13.5	15.0	13.5	15.0	15.0	---	---
17	11.5	9.0	13.0	11.5	17.0	12.5	15.0	13.5	15.0	15.0	---	---
18	13.5	10.0	13.5	11.0	19.0	13.5	15.0	14.0	15.0	15.0	---	---
19	11.0	9.0	13.5	12.0	19.0	16.5	14.5	14.0	15.0	15.0	---	---
20	9.0	8.0	13.5	12.5	18.5	15.0	17.5	13.5	15.0	15.0	---	---
21	10.0	7.0	14.5	13.0	18.0	14.5	15.0	14.0	15.5	15.0	---	---
22	9.0	7.5	14.5	13.0	17.0	14.5	14.5	14.0	15.5	15.5	---	---
23	9.5	7.5	15.0	12.5	18.0	13.5	15.0	14.0	16.5	15.5	---	---
24	12.0	8.0	15.0	13.5	18.5	13.0	15.5	14.0	16.0	16.0	---	---
25	12.0	9.0	16.0	14.0	19.0	17.5	16.0	14.5	16.5	16.0	---	---
26	13.0	9.5	15.0	14.0	20.0	16.5	21.0	14.5	16.5	16.0	---	---
27	13.5	10.0	15.5	13.5	18.5	14.0	16.0	15.0	16.0	17.5	---	---
28	11.5	10.5	15.0	13.5	18.5	14.5	16.0	14.5	---	---	---	---
29	13.5	10.5	14.5	11.0	16.5	13.5	15.5	14.5	---	---	---	---
30	12.0	9.0	11.5	9.0	17.5	13.0	16.0	14.5	---	---	---	---
31	---	---	13.5	10.5	---	---	15.5	14.5	---	---	---	---
MONTH	14.0	7.0	16.0	7.5	20.0	10.5	22.5	12.5	---	---	---	---

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (FT <sup>3</sup> /S)	TEMPER- ATURE (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV						
24...	1215	260	9.0	3	2.1	75
JAN						
15...	1200	476	6.5	2	2.6	96
MAR						
15...	1220	626	10.0	2	3.4	94
MAY						
17...	1210	3740	12.5	18	182	38
JUL						
21...	1145	415	23.5	2	2.2	68
SEP						
21...	1215	232	17.0	4	2.5	56

## TULARE LAKE BASIN

11221000 PINE FLAT LAKE NEAR PIEDRA, CA

LOCATION.--Lat 36°49'58", long 119°19'29", in SE 1/4 NE 1/4 sec.2, T.13 S., R.24 E., Fresno County, Hydrologic Unit 18030010, near center of Pine Flat Dam on Kings River, 1.9 mi upstream from Mill Creek, 3.5 mi northeast of Piedra, and 16 mi northeast of Sanger.

DRAINAGE AREA.--1,545 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1951 to current year. Prior to October 1970, published as "Pine Flat Reservoir."  
REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Apr. 8, 1952, nonrecording mercury gage on dam at same datum.

REMARKS.--Reservoir is formed by gravity-type concrete dam; regulation of discharge from reservoir began Dec. 4, 1951. Total capacity, 1,001,055 acre-ft between elevations 565.5 ft, bottom of lower tier of river outlets, and 951.5 ft, gross pool elevation. No dead storage. Reservoir is used for flood control and conservation storage. Water is released down Kings River for diversion by the Kings River Water Association. Records, including extremes, represent contents at 2400 hours. See schematic diagram of Kings River basin.

COOPERATION.--Records were provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,009,000 acre-ft, July 15, 1967, June 8, 9, 1974, elevation, 952.76 ft; minimum since gross pool elevation first obtained, 41,006 acre-ft, Aug. 24, 1988, elevation, 671.13 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 422,354 acre-ft, June 6, elevation, 830.77 ft; minimum, 41,006 acre-ft, Aug. 24, elevation, 671.13 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers)

670	39,773	740	154,021	820	383,196	920	823,775
680	51,373	760	201,186	840	457,481	950	992,146
700	74,248	780	255,055	860	538,559	960	1,052,445
720	113,424	800	315,716	890	673,065		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126301	148375	165873	194752	262091	282747	240398	297360	413273	293493	65283	50719
2	127371	149193	166879	195572	263662	282959	240177	300317	415266	285626	64055	52230
3	128345	150230	167290	196893	265295	282444	240204	303289	417819	276915	63087	53284
4	128704	151379	167864	198645	266554	281690	240287	305993	420047	267639	62264	54464
5	129664	152010	168415	211783	267492	281026	240981	308772	421795	259051	61936	55632
6	130829	152991	169082	215484	268669	279823	242317	311311	422354	250241	61391	56617
7	131393	153889	170976	217768	270231	278711	243879	313893	422131	240898	60229	57453
8	132262	154525	172416	219933	271175	277603	245084	316132	421572	232096	59052	58309
9	133154	155207	173722	221444	272063	276556	246178	318445	420604	223388	57283	58839
10	133398	155714	174517	223042	272983	275273	247867	321122	419935	214360	55503	58853
11	133499	156222	175643	224591	273963	273993	250015	325078	419007	206090	53790	58999
12	134090	156708	176537	226496	274945	272479	252201	330239	415784	198670	52268	59586
13	134621	157151	177127	228057	276198	270732	253797	335674	412389	192575	51076	60324
14	135276	157617	178214	229381	277153	268845	256230	341589	407983	186653	50155	60971
15	135953	158083	179543	230927	278561	266759	258157	348368	402292	180400	49388	61283
16	136446	158528	181068	232260	279793	264449	259541	355795	395813	173839	47480	61486
17	136755	159040	182264	235020	280726	262120	260612	360826	389318	167084	45856	61663
18	136920	159598	183224	237302	281780	259426	261917	365030	381496	160001	44559	61813
19	137435	160157	183898	239013	282565	256919	264274	369259	372884	152206	43328	61786
20	138180	160740	184404	240843	283200	254312	268345	373793	365860	144043	42561	61650
21	139217	161212	184935	242539	283564	251802	271768	377864	360311	135850	41902	61541
22	139967	161863	185999	244075	283533	249166	274855	382134	354296	127907	41447	61500
23	141138	162427	187309	245785	282989	246824	277842	386393	348233	120504	41039	61514
24	141473	162901	188185	247162	282596	245336	280364	389925	342023	113461	41006	61459
25	142103	163376	188625	248911	282444	244047	282414	393366	334946	107128	41547	61391
26	143050	163805	189039	251121	282565	243321	284685	396968	327686	100914	42550	61337
27	143937	164145	189430	252941	282113	243014	287148	400115	320701	94655	44009	61541
28	144786	164509	190484	254826	281599	242428	289438	402838	313701	88243	45553	61704
29	146297	164895	191909	256862	281961	241593	291646	406557	307002	81182	47113	62387
30	147430	165486	193217	258791	---	241064	294388	409266	300098	73798	47897	62744
31	147988	---	194083	260554	---	240676	---	411176	---	67789	49037	---
MAX	147988	165486	194083	260554	283564	282959	294388	411176	422354	293493	65283	62744
MIN	126301	148375	165873	194752	262091	240676	240177	297360	300098	67789	41006	50719
a	737.22	745.13	757.16	781.91	789.15	774.90	793.22	827.75	795.06	692.31	678.09	688.71
b	+22535	+17498	+28597	+66471	+21407	-41285	+53712	+116788	-111078	-232309	-18752	+13707
c	839	269	173	208	386	798	854	1595	2125	2025	978	927

CAL YR 1987 b -396312

WTR YR 1988 b -62709

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.



## TULARE LAKE BASIN

## 11221500 KINGS RIVER BELOW PINE FLAT DAM, CA

LOCATION.--Lat 36°49'50", long 119°20'07", in SW 1/4 NW 1/4 sec.2, T.13 S., R.24 E., Fresno County, Hydrologic Unit 18030012, on right bank 0.6 mi downstream from Pine Flat Dam and 2.9 mi northeast of Piedra.

DRAINAGE AREA.--1,545 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1953 to current year. Monthly and yearly discharges only and adjusted flow for some periods published in WSP 1735.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder and concrete control since Sept. 1, 1956. Datum of gage is 556.97 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1956, at site 0.2 mi downstream at datum 3.48 ft lower.

REMARKS.--Estimated daily discharges: Nov. 18 to Dec. 1. Records good. Flow regulated by Pine Flat Lake (station 11221000) 0.6 mi upstream and Wishon and Courtright Reservoirs (stations 11214550 and 11214800). See schematic diagram of Kings River basin.

AVERAGE DISCHARGE (adjusted for change in contents and evaporation).--35 years, 2,405 ft<sup>3</sup>/s, 1,742,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft<sup>3</sup>/s, June 3, 4, 8, 9, 1969, gage height, 10.73 ft; minimum daily, 1.1 ft<sup>3</sup>/s, Feb. 26, 27, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,520 ft<sup>3</sup>/s, July 8, gage height, 7.35 ft; minimum daily, 24 ft<sup>3</sup>/s, Jan. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	48	54	44	32	824	1460	219	1320	5220	2600	234
2	126	50	50	51	35	955	1470	194	1270	5370	1960	192
3	126	52	49	51	40	1200	1460	174	1500	5450	1780	193
4	126	51	49	53	40	1290	1450	189	1800	5620	1690	212
5	126	50	50	33	40	1320	1430	203	1810	5730	1430	234
6	126	52	49	27	40	1450	1420	200	1800	5930	1520	252
7	126	55	49	27	40	1450	1460	195	1800	6160	1780	272
8	126	55	49	26	40	1470	1550	179	1730	5800	1760	284
9	127	56	47	24	40	1470	1560	203	1860	5290	1990	268
10	128	52	47	26	39	1540	1540	205	1910	5410	2000	272
11	128	48	47	32	40	1480	1500	218	2000	5240	1930	197
12	123	52	47	34	41	1510	1480	522	3180	4820	1850	126
13	106	54	47	31	41	1550	1480	1160	3740	4350	1710	134
14	99	54	47	31	49	1620	1380	1160	4490	4210	1560	128
15	100	52	47	31	60	1730	1200	1190	5260	4360	1490	126
16	86	47	49	31	66	1790	1190	1200	5650	4490	1720	126
17	74	48	48	31	65	1830	1160	1250	5630	4560	1850	126
18	73	48	46	26	65	1970	1050	1350	5760	4680	1690	126
19	70	48	47	26	89	2000	666	1430	6100	5020	1650	202
20	69	53	47	25	192	2140	32	1530	6150	5140	1430	264
21	74	55	48	25	349	2240	31	1580	5940	5080	1390	264
22	74	49	53	25	536	2280	31	1580	5710	5000	1300	264
23	58	54	55	27	804	2220	30	1580	5470	4700	1260	264
24	47	51	55	27	746	2010	110	1590	5420	4580	1100	270
25	46	51	55	27	684	1920	627	1590	5580	4380	848	278
26	47	51	56	28	624	1950	742	1570	5580	4210	691	238
27	48	50	56	29	1010	2010	680	1540	5460	4230	744	123
28	49	48	57	34	1240	2030	654	1510	5460	4390	807	126
29	49	48	51	35	1010	1990	663	1440	5370	4740	771	126
30	48	52	32	32	---	1780	616	1370	5260	4840	571	125
31	48	---	35	32	---	1560	---	1380	---	4220	379	---
TOTAL	2757	1534	1518	981	8097	52579	30122	29701	120010	153220	45251	6046
MEAN	88.9	51.1	49.0	31.6	279	1696	1004	958	4000	4943	1460	202
MAX	128	56	57	53	1240	2280	1560	1590	6150	6160	2600	284
MIN	46	47	32	24	32	824	30	174	1270	4210	379	123
AC-FT	5470	3040	3010	1950	16060	104300	59750	58910	238000	303900	89760	11990
MEAN a	210	352	387	1001	691	1297	2552	3642	2174	495	366	296
AC-FT a	12910	20940	23800	61550	39750	79750	151900	223900	129400	30440	22500	17610

CAL YR 1987 TOTAL 574111 MEAN 1573 MAX 7640 MIN 32 AC-FT 1139000 MEAN a 1051 AC-FT a 760900  
WTR YR 1988 TOTAL 451816 MEAN 1234 MAX 6160 MIN 24 AC-FT 896200 MEAN a 1122 AC-FT a 814500

a Adjusted for change in contents in Wishon and Courtright Reservoirs, Pine Flat Lake, and evaporation from Pine Flat Lake. Records of evaporation were provided by U.S. Army Corps of Engineers; not reviewed by U.S. Geological Survey.

## TULARE LAKE BASIN

11221500 KINGS RIVER BELOW PINE FLAT DAM, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956-66, 1970 to current year.

CHEMICAL DATA: Water years 1956-66.

WATER TEMPERATURE: Water years 1970 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1969 to current year.

INSTRUMENTATION.--Temperature recorder since October 1969.

REMARKS.--Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from Pine Flat Dam.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 25.0 °C, Sept. 21, 1976, and Sept. 4, 5, 1985; minimum recorded, 6.5 °C, several days during January 1982 and Jan. 18, 1987.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.0 °C, several days in August and September; minimum recorded, 7.0 °C, Jan. 19, 20, Feb. 4, 19.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	18.5	18.0	16.5	13.5	11.0	8.5	12.0	7.5	9.0	8.5
2	---	---	18.5	17.0	16.5	12.5	11.0	9.0	13.0	8.0	9.0	8.5
3	---	---	21.0	16.5	17.0	12.5	11.5	10.0	13.0	7.5	9.5	8.5
4	---	---	19.0	16.5	14.5	13.0	12.0	10.5	13.0	7.0	9.5	8.5
5	---	---	20.0	16.5	15.0	12.5	11.5	9.5	13.0	7.5	9.5	8.5
6	---	---	20.0	16.0	14.0	12.5	13.5	8.5	13.0	7.5	9.0	8.5
7	---	---	20.0	16.0	16.0	12.5	11.5	9.0	13.5	8.0	9.0	9.0
8	---	---	20.0	16.0	13.0	12.0	12.5	9.5	13.5	8.0	9.5	8.5
9	---	---	20.0	16.0	16.0	12.0	13.0	9.5	13.5	8.5	9.5	8.5
10	22.0	18.5	19.5	16.0	15.5	11.5	13.0	9.0	13.5	8.5	9.5	8.5
11	22.0	18.5	18.5	16.0	13.0	12.5	13.0	9.5	14.0	8.5	9.5	9.0
12	22.0	18.5	19.5	15.5	12.5	10.5	12.5	8.5	14.5	8.5	9.5	9.0
13	22.0	18.5	17.5	16.0	13.5	10.0	12.5	8.0	14.0	8.5	9.5	9.0
14	22.0	18.5	17.0	15.5	13.0	10.0	12.0	8.0	14.0	8.5	9.5	9.0
15	22.0	18.0	19.0	15.0	11.5	10.0	11.0	9.0	14.0	8.0	9.5	9.0
16	22.5	18.0	19.0	15.0	12.5	10.5	10.0	9.0	13.5	8.0	9.5	9.0
17	22.5	18.0	17.5	15.5	14.0	11.5	11.0	9.0	13.5	8.0	9.5	9.0
18	22.0	18.0	19.5	15.0	14.5	11.0	11.0	8.5	13.5	8.0	9.5	9.0
19	22.0	17.5	19.0	15.0	13.5	12.0	12.0	7.0	13.5	7.0	9.5	9.0
20	21.5	17.5	17.0	14.5	14.5	11.0	12.5	7.0	12.0	9.0	9.5	9.0
21	21.5	18.0	17.5	14.5	14.5	10.5	12.0	7.5	11.5	9.0	9.5	9.0
22	21.0	18.0	16.5	15.0	12.0	11.0	13.0	7.5	10.0	8.5	9.5	9.5
23	22.5	18.5	17.5	15.0	12.5	10.0	13.0	8.0	9.5	8.5	9.5	9.5
24	22.0	18.0	17.5	14.0	12.5	9.5	13.0	8.0	9.5	8.5	9.5	9.0
25	22.5	18.0	15.0	13.5	13.0	9.5	13.5	8.0	9.5	8.5	10.0	9.5
26	22.0	18.0	17.0	13.5	13.5	9.0	13.0	8.0	9.5	8.5	9.5	9.5
27	20.5	18.0	16.5	13.0	12.0	9.0	13.0	8.5	9.0	8.5	10.0	9.5
28	22.0	18.5	16.0	13.0	10.5	9.5	12.0	9.0	9.0	8.5	10.0	9.5
29	21.5	17.0	16.0	13.0	11.0	9.5	13.0	9.0	9.0	8.5	10.0	9.5
30	21.5	17.5	15.0	13.0	13.0	9.0	13.5	8.5	---	---	10.0	9.5
31	19.0	17.5	---	---	11.5	8.0	12.5	8.0	---	---	10.0	10.0
MONTH	---	---	21.0	13.0	17.0	8.0	13.5	7.0	14.5	7.0	10.0	8.5

## TULARE LAKE BASIN

11221500 KINGS RIVER BELOW PINE FLAT DAM, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	10.0	9.5	15.0	12.0	12.5	12.0	15.5	15.0	22.5	22.0	23.0	20.0
2	10.0	10.0	15.5	12.0	12.5	12.0	15.5	15.0	22.5	22.5	23.0	20.0
3	10.0	10.0	15.5	12.5	12.5	12.0	15.5	15.0	23.0	22.5	23.0	19.0
4	10.0	10.0	15.5	12.5	12.5	12.0	16.0	15.5	23.0	22.5	22.5	19.5
5	10.5	10.0	14.0	12.0	12.5	12.0	16.0	15.5	22.5	22.5	22.5	18.5
6	10.5	10.0	15.0	12.5	12.5	12.0	16.0	16.0	22.5	22.5	22.5	20.5
7	10.5	10.0	14.5	12.5	12.5	12.0	16.5	16.0	22.5	22.5	22.5	20.0
8	10.5	10.0	15.5	13.0	12.5	12.0	17.0	16.5	22.5	22.0	22.5	20.5
9	10.5	10.0	15.5	12.5	12.5	12.0	17.0	16.5	22.5	22.0	22.5	20.0
10	10.5	10.0	16.0	13.0	12.5	12.0	17.0	16.5	22.5	22.0	22.0	20.0
11	10.5	10.5	16.0	13.0	12.5	12.5	17.5	17.0	22.5	22.0	23.0	20.5
12	10.5	10.5	15.5	11.0	13.0	12.5	17.5	17.0	22.0	22.0	22.5	20.0
13	10.5	10.5	11.5	11.0	13.0	12.0	17.5	17.5	22.0	22.0	22.5	20.0
14	11.0	10.0	11.5	11.0	13.5	11.5	18.0	17.5	22.0	22.0	23.0	19.5
15	11.0	10.5	11.5	11.0	13.0	12.5	18.0	18.0	22.0	21.0	23.0	20.0
16	11.0	10.5	11.5	11.0	13.0	13.0	18.5	18.0	21.0	21.0	22.5	20.0
17	11.0	10.5	11.5	11.0	13.5	13.0	18.5	18.5	21.5	21.0	22.5	19.5
18	11.0	10.5	12.0	11.5	13.5	13.0	19.0	18.5	21.5	21.0	22.5	19.5
19	11.5	10.5	12.0	11.5	13.5	13.0	19.0	19.0	21.0	21.0	22.0	19.5
20	16.0	11.0	12.0	11.5	14.0	13.0	19.5	19.0	21.0	21.0	22.0	20.0
21	18.5	11.5	12.0	11.5	14.0	13.5	19.5	19.5	21.5	21.0	21.5	20.0
22	16.0	12.0	12.0	11.5	14.0	13.5	20.0	19.5	21.5	21.0	22.0	20.0
23	14.5	12.0	12.0	11.5	14.0	14.0	21.5	20.0	21.5	21.0	22.0	20.0
24	17.5	11.0	12.0	11.5	17.0	14.0	21.0	20.0	21.5	21.0	22.0	20.0
25	12.0	11.0	12.0	11.5	14.5	14.0	21.5	21.0	21.5	21.0	21.5	20.0
26	11.5	11.0	12.5	11.5	14.5	14.5	22.0	20.0	22.0	21.0	21.5	20.0
27	11.5	11.0	12.5	12.0	15.0	14.5	21.0	16.5	21.5	21.0	22.0	19.5
28	11.5	11.0	12.5	12.0	15.0	14.5	19.5	17.5	21.5	21.0	22.5	19.5
29	12.0	11.0	12.5	11.5	15.0	14.5	21.0	19.5	22.0	21.0	22.5	19.0
30	11.5	10.5	12.5	12.0	15.0	15.0	21.5	21.0	22.0	21.0	22.5	19.5
31	---	---	12.5	12.0	---	---	22.0	21.5	22.5	21.0	---	---
MONTH	18.5	9.5	16.0	11.0	17.0	11.5	22.0	15.0	23.0	21.0	23.0	18.5

## TULARE LAKE BASIN

11221700 MILL CREEK NEAR PIEDRA, CA

LOCATION.--Lat 36°49'07", long 119°20'27", in NE 1/4 NE 1/4 sec.10, T.13 S., R.24 E., Fresno County, Hydrologic Unit 18030008, on left bank 150 ft upstream from road bridge, 0.7 mi upstream from mouth, and 2.3 mi east of Piedra.

DRAINAGE AREA.--127 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1957 to current year. November 1938 to September 1957 in reports of Kings River Water Association.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 550 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 14, 1958, at site 150 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records fair. Some small diversions above station for irrigation. See schematic diagram of Kings River basin.

AVERAGE DISCHARGE.--31 years, 45.9 ft<sup>3</sup>/s, 33,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft<sup>3</sup>/s, Dec. 6, 1966, gage height, 9.53 ft in gage well, 10.2 ft from floodmarks; maximum gage height, 9.65 ft in gage well (backwater from debris), Jan. 19, 1969; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	0700	*1,370	*4.63	Jan. 17	1800	346	3.56

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.0	.0	26	16	20	8.0	9.8	4.1	.0	.0	.0
2	.0	.0	.0	19	15	40	7.8	9.5	3.5	.0	.0	.0
3	.0	.0	.0	16	14	25	7.5	9.0	2.8	.0	.0	.0
4	.0	.0	.0	17	13	19	7.5	8.4	2.4	.0	.0	.0
5	.0	.0	.0	844	13	16	7.3	8.1	2.2	.0	.0	.0
6	.0	.0	1.7	197	13	14	7.0	9.0	2.0	.0	.0	.0
7	.0	.0	3.5	83	13	14	6.8	9.7	2.0	.0	.0	.0
8	.0	.0	4.5	57	13	13	6.4	9.9	2.0	.0	.0	.0
9	.0	.0	5.7	34	13	12	6.1	9.0	1.9	.0	.0	.0
10	.0	.0	5.8	27	13	12	5.9	8.4	1.7	.0	.0	.0
11	.0	.0	5.5	27	13	12	5.7	7.7	1.6	.0	.0	.0
12	.0	.0	5.5	22	13	11	5.3	6.7	1.3	.0	.0	.0
13	.0	.0	5.5	19	11	11	5.0	5.8	.97	.0	.0	.0
14	.0	.0	5.5	19	11	11	8.5	5.5	.82	.0	.0	.0
15	.0	.0	5.5	18	11	11	13	5.3	.51	.0	.0	.0
16	.0	.0	5.1	16	11	11	13	5.0	.0	.0	.0	.0
17	.0	.0	4.6	138	11	10	10	5.0	.0	.0	.0	.0
18	.0	.0	4.6	118	11	9.8	9.3	5.0	.0	.0	.0	.0
19	.0	.0	4.6	57	11	9.8	9.6	5.2	.0	.0	.0	.0
20	.0	.0	4.6	46	10	9.5	38	4.9	.0	.0	.0	.0
21	.0	.0	4.6	37	9.8	9.2	32	4.4	.0	.0	.0	.0
22	.0	.0	4.6	26	9.8	9.2	26	3.5	.0	.0	.0	.0
23	.0	.0	4.6	23	9.8	8.9	28	3.0	.0	.0	.0	.0
24	.0	.0	4.8	21	9.5	8.6	24	2.8	.0	.0	.0	.0
25	.0	.0	5.0	20	9.2	8.6	19	2.5	.0	.0	.0	.0
26	.0	.0	5.0	19	9.2	8.6	16	2.2	.0	.0	.0	.0
27	.0	.0	5.0	18	9.3	8.6	14	2.1	.0	.0	.0	.0
28	.0	.0	5.9	17	11	8.6	13	2.0	.0	.0	.0	.0
29	.0	.0	11	16	14	8.6	12	2.4	.0	.0	.0	.0
30	.0	.0	31	16	---	8.6	11	3.4	.0	.0	.0	.0
31	.0	---	29	16	---	8.3	---	4.5	---	.0	.0	---
TOTAL	0.0	0.0	182.7	2029	340.6	386.9	382.7	179.7	29.80	0.0	0.0	0.0
MEAN	.00	.00	5.89	65.5	11.7	12.5	12.8	5.80	.99	.00	.00	.00
MAX	.00	.00	31	844	16	40	38	9.9	4.1	.00	.00	.00
MIN	.00	.00	.00	16	9.2	8.3	5.0	2.0	.00	.00	.00	.00
AC-FT	.0	.0	362	4020	676	767	759	356	59	.0	.0	.0

CAL YR 1987 TOTAL 2707.19 MEAN 7.42 MAX 304 MIN .00 AC-FT 5370  
WTR YR 1988 TOTAL 3531.40 MEAN 9.65 MAX 844 MIN .00 AC-FT 7000

## TULARE LAKE BASIN

11224500 LOS GATOS CREEK ABOVE NUNEZ CANYON, NEAR COALINGA, CA

LOCATION.--Lat 36°12'53", long 120°28'11", in NW 1/4 SE 1/4 sec.5, T.20 S., R.14 E., Fresno County, Hydrologic Unit 18030012, on left bank 50 ft downstream from highway bridge, 1.1 mi upstream from Nunez Canyon, 3.0 mi downstream from White Creek, and 8.1 mi northwest of Coalinga.

DRAINAGE AREA.--95.8 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1949 monthly discharge only, published in WSP 1315-A.

REVISED RECORDS.--WSP 1215: 1950. WSP 1735: 1952(M), 1956(M). WSP 1930: Drainage area. WDR CA-72-2: 1971(P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,065.2 ft above National Geodetic Vertical Datum of 1929. Aug. 2, 1959, to Jan. 11, 1985, at site on right bank at datum 2.00 ft higher. Prior to Aug. 2, 1959, at site 100 ft downstream on right bank at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Mar. 23-28. Records good. Minor diversion for irrigation and stock ponds.

AVERAGE DISCHARGE.--43 years, 5.73 ft<sup>3</sup>/s, 4,150 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (SINCE 1950).--Maximum discharge, 4,360 ft<sup>3</sup>/s, Feb. 24, 1969, gage height, 12.34 ft, present datum, in gage well, 13.30 ft from floodmarks, from rating curve extended above 800 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 12.34 ft; maximum gage height, 12.65 ft in gage well, 13.95 ft from floodmarks, Jan. 16, 1978; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 17	1715	*30	*3.89				

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.01	0	0	.41	2.7	.06	.03	.01			
2	0	0	0	0	.39	.81	.06	.02	0			
3	0	0	0	0	.37	.47	.05	.02	0			
4	0	0	0	.02	.36	.29	.05	.02	0			
5	0	0	.75	1.6	.35	.22	.04	.02	0			
6	0	0	.38	.70	.34	.19	.04	.03	0			
7	0	0	.90	.43	.33	.17	.04	.02	0			
8	0	0	.28	.28	.32	.15	.04	.02	0			
9	0	0	.20	.19	.32	.12	.04	.01	0			
10	0	0	.13	.17	.31	.12	.04	0	0			
11	0	0	.01	.15	.30	.12	.03	.01	0			
12	0	0	.02	.15	.29	.11	.03	.01	0			
13	0	0	0	.15	.28	.11	.04	.01	0			
14	0	0	0	.14	.29	.12	.04	.01	0			
15	0	0	0	.16	.28	.11	.04	.01	0			
16	0	0	0	.16	.28	.10	.05	.01	0			
17	0	0	0	11	.26	.09	.05	.01	0			
18	0	0	0	6.4	.26	.08	.04	.01	0			
19	0	0	0	1.5	.24	.07	.05	.01	0			
20	0	0	0	1.0	.23	.07	.04	.01	0			
21	0	0	0	.82	.23	.06	.04	.01	0			
22	0	0	0	.70	.24	.06	.04	.01	0			
23	0	0	0	.59	.23	.06	.05	.01	0			
24	0	0	0	.53	.23	.06	.04	.01	0			
25	0	0	0	.48	.23	.06	.04	.01	0			
26	0	0	0	.45	.23	.06	.04	.01	0			
27	0	0	0	.44	.25	.06	.04	.01	0			
28	.05	0	.01	.39	.35	.06	.03	.01	0			
29	2.1	0	.02	.37	4.7	.06	.03	.01	0			
30	.94	0	0	.40	---	.07	.03	.01	0			
31	.23	---	0	.41	---	.07	---	.01	---			---
TOTAL	3.32	.01	2.70	29.78	12.90	6.90	1.25	.40	.01	0	0	0
MEAN	.11	.0003	.087	.96	.44	.22	.042	.013	.0003	0	0	0
MAX	2.1	.01	.90	11	4.7	2.7	.06	.03	.01	0	0	0
MIN	0	0	0	0	.23	.06	.03	0	0	0	0	0
AC-FT	6.6	.02	5.4	59	26	14	2.5	.8	.02	0	0	0

CAL YR 1987 TOTAL 154.48 MEAN .42 MAX 50 MIN 0 AC-FT 306  
WTR YR 1988 TOTAL 57.27 MEAN .16 MAX 11 MIN 0 AC-FT 114

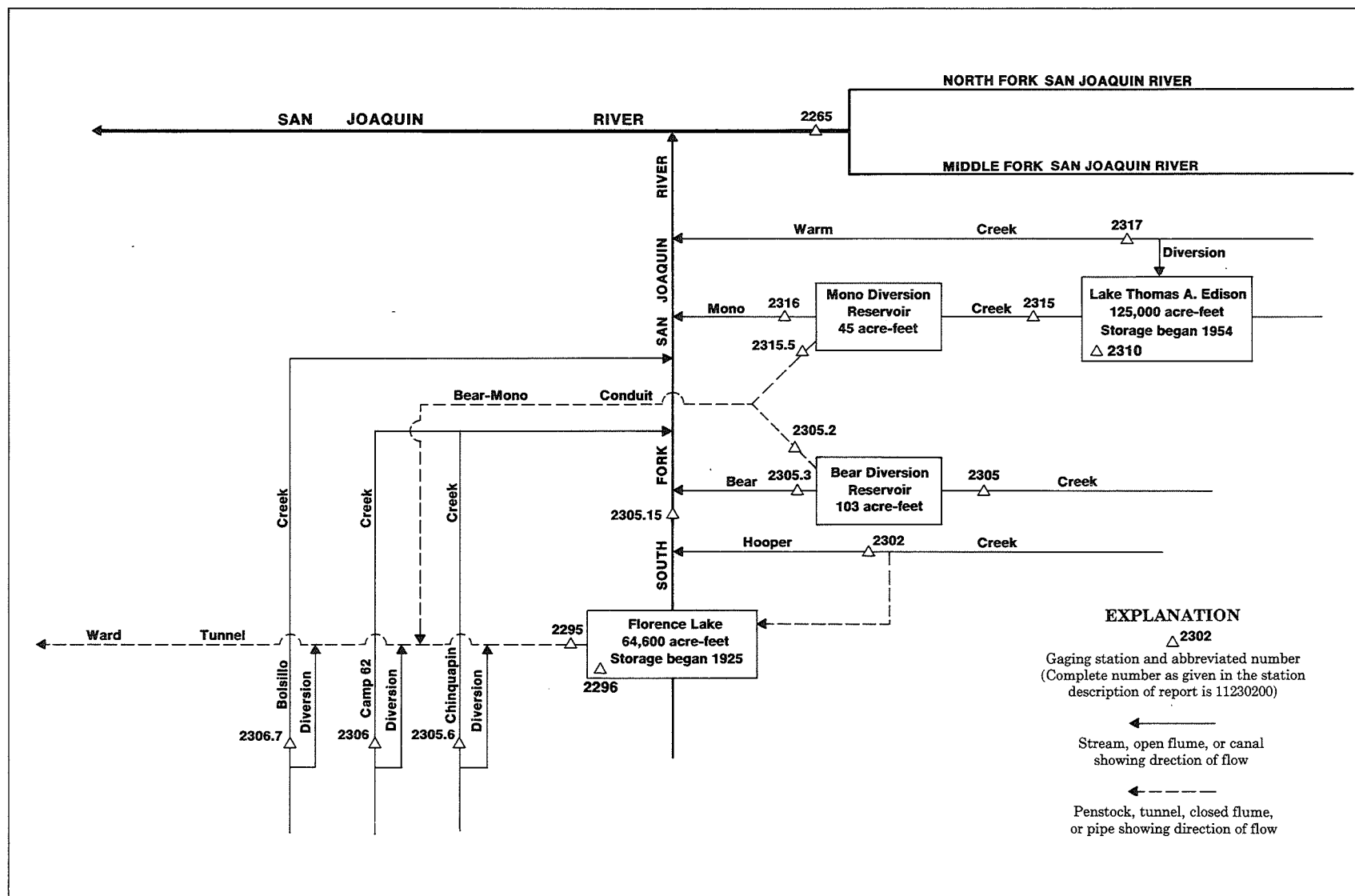


Figure 31.--Schematic diagram showing diversions and storage in upper San Joaquin River basin.

## SAN JOAQUIN RIVER BASIN

11226500 SAN JOAQUIN RIVER AT MILLER CROSSING, CA

LOCATION.--Lat 37°30'38", long 119°11'47", in SE 1/4 NE 1/4 sec.11, T.5 S., R.25 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank at Miller Crossing, 2.4 mi downstream from North Fork San Joaquin River, 4.6 mi east of Clover Meadow Ranger Station, and 23 mi northeast of town of Bass Lake.

DRAINAGE AREA.--249 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to September 1928, October 1951 to current year. Monthly discharges only for some periods, published in WSP 1315-A. Prior to October 1954, published as Middle Fork San Joaquin River at Miller Bridge.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,570 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Mar. 24, 1922, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Aug. 15 to Sept. 30. No regulation or diversion above station. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--44 years, 615 ft<sup>3</sup>/s, 445,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,600 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 21.28 ft, from rating curve extended above 5,200 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; minimum, 19 ft<sup>3</sup>/s, Nov. 17, 1961.

EXTREMES FOR CURRENT YEAR:--Maximum discharge, 2,340 ft<sup>3</sup>/s, May 15, gage height, 14.52 ft; minimum daily, 36 ft<sup>3</sup>/s, Oct. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	151	80	109	135	279	391	512	820	390	161	109
2	45	196	80	108	128	266	454	482	886	362	153	106
3	44	135	78	109	124	250	478	513	1090	340	142	102
4	43	116	81	120	122	262	480	509	1090	341	134	101
5	42	149	78	270	120	296	591	456	888	318	142	99
6	42	179	98	167	123	302	693	424	630	300	136	99
7	42	146	107	165	131	283	721	399	539	274	125	99
8	41	133	98	167	149	300	688	384	503	263	115	91
9	41	121	115	158	165	330	693	403	487	256	108	83
10	41	113	120	154	179	267	862	550	509	259	109	77
11	41	106	125	159	181	231	963	923	573	264	104	71
12	40	104	95	138	193	209	933	1300	603	237	100	65
13	42	116	85	131	194	201	800	1620	702	218	96	59
14	42	135	96	129	190	202	815	1650	810	221	92	56
15	40	122	98	131	209	210	684	1790	875	219	90	56
16	39	124	98	131	204	194	608	1650	908	206	90	54
17	38	153	98	134	176	197	584	1340	813	198	90	52
18	38	151	98	144	174	229	555	1260	731	185	90	49
19	37	148	96	140	154	280	511	1260	826	171	97	46
20	37	129	93	141	160	361	556	1330	985	159	104	51
21	36	122	94	138	169	396	507	1440	876	152	110	54
22	46	122	195	146	177	343	461	1410	761	148	105	60
23	66	105	127	164	195	424	436	1410	618	154	100	58
24	59	99	108	183	200	476	473	1420	573	346	100	56
25	54	91	108	188	225	553	572	1370	761	496	100	53
26	52	74	108	180	256	652	713	1280	781	291	111	50
27	52	84	108	172	279	665	732	1150	588	234	118	45
28	208	76	109	175	309	570	672	1120	519	198	124	40
29	215	72	109	164	279	498	683	1210	479	169	120	46
30	150	74	109	152	---	477	673	935	431	159	118	40
31	128	---	109	144	---	420	---	816	---	178	111	---
TOTAL	1887	3646	3201	4711	5300	10623	18982	32316	21655	7706	3495	2027
MEAN	60.9	122	103	152	183	343	633	1042	722	249	113	67.6
MAX	215	196	195	270	309	665	963	1790	1090	496	161	109
MIN	36	72	78	108	120	194	391	384	431	148	90	40
AC-FT	3740	7230	6350	9340	10510	21070	37650	64100	42950	15280	6930	4020

CAL YR 1987 TOTAL 106848 MEAN 293 MAX 1890 MIN 36 AC-FT 211900  
WTR YR 1988 TOTAL 115549 MEAN 316 MAX 1790 MIN 36 AC-FT 229200

LOCATION.--Lat 37°16'27", long 118°58'23", in NW 1/4 sec.1, T.8 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in gatehouse at entrance to tunnel.

REVISID RECORDS.--WSP 1515: 1931.

REMARKS.--No estimated daily discharges. Ward tunnel diverts from Florence Lake, a reservoir on South Fork San Joaquin River, to Huntington Lake via Portal powerplant. Water used again in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--63 years, 281 ft<sup>3</sup>/s, 203,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,990 ft<sup>3</sup>/s, Apr. 30, 1926; no flow at times.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	20	22	34	42	86	145	247	328	589	599	178
2	17	20	22	33	39	84	159	222	355	586	437	271
3	14	21	21	37	37	82	185	217	297	584	53	227
4	13	18	21	43	37	81	195	219	222	582	54	353
5	11	24	20	64	37	83	240	203	204	617	54	389
6	8.2	45	22	57	36	85	311	183	261	639	54	388
7	7.4	39	25	65	36	82	337	179	318	615	54	382
8	7.1	36	24	79	40	84	330	161	379	622	53	345
9	3.3	33	35	91	46	95	320	160	394	632	52	341
10	3.1	30	39	91	51	85	381	196	393	626	69	374
11	3.0	28	35	78	54	72	382	277	394	635	92	340
12	3.0	27	24	67	57	64	333	247	392	649	92	281
13	3.2	27	17	59	57	62	344	237	374	646	91	279
14	3.2	23	17	55	57	62	350	220	344	639	89	288
15	11	24	21	53	58	61	352	146	345	677	140	299
16	5.9	33	25	52	61	58	347	132	344	668	162	296
17	10	41	27	55	56	58	336	182	345	650	159	294
18	10	39	26	58	54	61	326	146	343	663	140	292
19	3.3	36	29	62	47	72	313	112	343	668	130	288
20	3.4	35	25	58	51	92	300	129	175	676	128	286
21	4.5	37	27	57	54	115	283	172	178	679	128	284
22	2.9	32	32	55	59	109	248	184	260	675	127	281
23	3.2	29	30	56	67	115	203	213	362	669	105	277
24	3.3	26	27	63	69	130	192	215	378	665	94	273
25	3.2	21	26	64	69	167	216	169	378	660	92	267
26	3.2	22	27	65	74	214	249	145	381	653	91	263
27	3.2	20	26	64	84	247	259	145	380	648	91	258
28	3.2	19	27	59	95	219	246	146	444	654	77	254
29	3.3	19	29	57	93	193	236	207	520	662	95	250
30	32	19	32	53	---	181	264	266	572	625	98	246
31	25	---	33	47	---	155	---	272	---	601	98	---
TOTAL	249.1	843	813	1831	1618	3354	8382	5949	10403	19854	3798	8844
MEAN	8.04	28.1	26.2	59.1	55.8	108	279	192	347	640	123	295
MAX	32	45	39	91	95	247	382	277	572	679	599	389
MIN	2.9	18	17	33	36	58	145	112	175	582	52	178
AC-FT	494	1670	1610	3630	3210	6650	16630	11800	20630	39380	7530	17540
CAL YR 1987	TOTAL	66365.3	MEAN	182	MAX	939	MIN	2.9	AC-FT	131600		
WTR YR 1988	TOTAL	65938.1	MEAN	180	MAX	679	MIN	2.9	AC-FT	130800		



## SAN JOAQUIN RIVER BASIN

11229600 FLORENCE LAKE NEAR BIG CREEK, CA

LOCATION.--Lat 37°16'26", long 118°58'23", in NW 1/4 sec.1, T.8 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in gatehouse of Ward tunnel intake near dam on South Fork San Joaquin River, 16 mi northeast of town of Big Creek.

DRAINAGE AREA.--171 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1925 to current year. Prior to October 1931, published in WSP 721. Maximum and minimum daily contents (water years 1926-39) summarized in WSP 881. Prior to 1960, maximum and minimum daily contents were published.

REVISED RECORDS.--WDR CA-78-3: 1977.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Lake is formed by multiple-arch concrete dam; storage began in April 1925. Usable capacity, 64,406 acre-ft between elevations 7,220.94 ft, throat of Venturi tube in Ward Tunnel intake, and 7,327.50 ft, top of spillway drum gates, NGVD. Additional storage of 168 acre-ft is not available for diversion. Water is diverted through Ward Tunnel to Huntington Lake via Portal powerplant and used for further power development in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 65,990 acre-ft, July 3, 1932, elevation, 7,329.14 ft; minimum occurred during period of no record, Oct. 2-4, 1926, or Nov. 30 to Dec. 2, 1927.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 51,709 acre-ft, June 28, 29, elevation, 7,313.87 ft; minimum, 1,045 acre-ft, Oct. 21, elevation, 7,231.02 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet) (Provided by Southern California Edison Co., from table dated Aug. 26, 1926)							
7,220.94	0	7,235	1,774	7,260	11,608	7,290	31,966
7,222	63	7,240	2,976	7,265	14,580	7,300	39,851
7,224	201	7,245	4,666	7,270	17,755	7,310	48,284
7,227	495	7,250	6,648	7,275	21,097	7,320	57,312
7,230	887	7,255	8,950	7,280	24,588	7,330	66,826

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1100	1090	1091	1107	1168	1200	1257	1352	34256	51047	23626	22131
2	1088	1095	1090	1108	1166	1195	1280	1323	34982	50602	23092	21743
3	1083	1088	1090	1110	1166	1190	1296	1327	36185	50095	23303	21461
4	1078	1083	1090	1125	1166	1188	1325	1327	37623	49557	23513	20893
5	1076	1112	1086	1171	1166	1193	1359	1312	38716	48923	23759	20222
6	1073	1141	1100	1171	1166	1187	1419	1300	39323	48180	23950	19562
7	1076	1124	1093	1173	1168	1188	1425	1289	39575	47440	24085	18881
8	1071	1117	1105	1173	1168	1207	1412	1271	39518	46680	24198	18253
9	1076	1113	1119	1173	1168	1207	1443	1278	39429	45864	24283	17645
10	1085	1108	1119	1173	1168	1187	1556	1370	39388	45054	24340	16979
11	1093	1103	1115	1173	1168	1168	1756	1750	39526	44198	24311	16338
12	1098	1100	1095	1173	1170	1164	2061	2753	39729	43281	24276	15823
13	1107	1103	1078	1173	1170	1158	2228	4325	40129	42346	24212	15288
14	1107	1096	1078	1173	1170	1154	2337	5788	40693	41426	24156	14741
15	1096	1090	1090	1173	1170	1153	2304	8008	41459	40423	23957	14190
16	1093	1098	1095	1175	1170	1151	2178	10055	42288	39429	23717	13615
17	1093	1125	1098	1175	1170	1147	1994	11408	42972	38393	23471	13046
18	1064	1122	1096	1171	1170	1158	1821	12903	43499	37423	23246	12460
19	1059	1117	1100	1170	1166	1178	1645	14519	44342	36367	23050	11901
20	1059	1113	1098	1171	1166	1207	1537	15943	46250	35264	22861	11341
21	1045	1110	1096	1171	1166	1216	1408	18148	47658	34139	22687	10807
22	1049	1117	1112	1173	1170	1216	1337	20067	48661	33025	22505	10295
23	1064	1105	1110	1173	1171	1232	1312	21909	49222	31951	22366	9813
24	1074	1105	1105	1173	1171	1257	1319	23809	49689	30994	22262	9303
25	1085	1096	1105	1173	1171	1300	1343	25735	50433	30037	22200	8799
26	1090	1091	1103	1173	1190	1343	1361	27515	51020	29073	22193	8244
27	1095	1091	1103	1173	1207	1348	1357	29029	51450	28198	22248	7740
28	1115	1086	1103	1173	1217	1319	1361	30647	51709	27259	22304	7255
29	1156	1081	1103	1173	1209	1300	1348	32089	51709	26212	22297	6752
30	1129	1083	1103	1173	---	1285	1393	32971	51450	25331	22283	6304
31	1095	---	1105	1171	---	1264	---	33666	---	24432	22262	---
MAX	1156	1141	1119	1175	1217	1348	2337	33666	51709	51047	24340	22131
MIN	1045	1081	1078	1107	1166	1147	1257	1271	34256	24432	22193	6304
a	7231.31	7231.24	7231.37	7231.76	7231.98	7232.29	7233.01	7292.21	7313.58	7279.78	7276.69	7249.18
b	-22	-12	+22	+66	+38	+55	+129	+32273	+17784	-27018	-2170	-15958

CAL YR 1987 b +71

WTR YR 1988 b +5187

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11230200 HOOPER CREEK AT DIVERSION DAM, NEAR FLORENCE LAKE, CA

LOCATION.--Lat 37°18'19", long 118°56'57", unsurveyed, T.7 S., R.28 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 80 ft downstream from diversion dam, 0.8 mi upstream from mouth, 2.5 mi north of Florence Lake, and 17.6 mi northeast of town of Big Creek.

DRAINAGE AREA.--7.22 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,440 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1 to Apr. 14, Apr. 21-23, June 29 to Aug. 16, and Sept. 1-30. Flow regulated by diversion dam 80 ft upstream and consists of fishery release and spill over diversion dam. Diversion to Florence Lake and Ward tunnel. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 12 ft<sup>3</sup>/s, Apr. 14, 1988; minimum daily, 1.6 ft<sup>3</sup>/s, June 16, 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	2.3	2.2	2.2	2.0	3.1	3.0	2.7	2.8	5.2	3.1	2.7
2	1.9	2.3	2.2	2.2	2.0	3.1	5.9	2.6	2.9	5.1	3.2	2.7
3	1.9	2.3	2.2	2.2	2.0	3.1	6.3	2.5	2.9	5.0	3.3	2.7
4	1.9	2.4	2.2	2.2	2.0	3.1	6.7	2.5	3.1	4.9	3.1	2.7
5	1.9	2.4	2.2	2.2	2.0	3.1	7.1	2.6	3.0	4.5	3.1	2.7
6	1.8	2.4	2.2	2.2	2.1	3.0	7.6	2.6	3.0	4.0	3.1	2.7
7	1.8	2.4	2.1	2.2	2.2	3.0	8.0	2.6	3.0	4.0	3.1	2.7
8	1.8	2.5	2.1	2.2	2.2	3.0	8.5	2.5	2.9	4.0	3.1	2.7
9	1.8	2.5	2.1	2.2	2.2	2.9	8.9	2.6	2.9	4.0	4.6	2.7
10	1.8	2.5	2.0	2.2	2.3	2.9	9.4	2.5	2.9	4.0	3.4	2.7
11	1.8	2.5	2.0	2.2	2.3	2.9	9.9	2.5	2.9	4.0	3.2	2.6
12	1.9	2.5	2.0	2.2	2.4	2.8	10	2.1	2.8	3.7	3.1	2.5
13	2.0	2.5	2.0	2.2	2.5	2.8	11	3.1	2.7	3.1	3.2	2.5
14	2.0	2.5	2.0	2.2	2.5	2.8	12	3.7	2.7	3.1	2.9	2.5
15	2.0	2.6	2.0	2.2	2.5	2.8	10	3.0	2.3	2.9	2.7	2.5
16	2.0	2.6	2.0	2.2	2.5	3.0	10	2.7	1.6	3.2	2.7	2.5
17	2.1	2.7	2.0	2.2	2.6	3.2	9.9	2.8	2.5	3.2	2.7	2.4
18	2.1	2.7	2.0	2.2	2.7	3.4	9.4	3.0	3.3	3.3	2.7	2.4
19	2.1	2.7	2.0	2.2	2.7	3.5	9.3	2.6	3.0	3.3	2.7	2.3
20	2.2	2.7	2.0	2.2	2.7	3.8	9.7	2.6	2.7	3.3	2.7	2.3
21	2.2	2.7	2.0	2.2	2.7	4.0	8.8	2.7	2.8	3.3	2.7	2.7
22	2.2	2.7	2.0	2.2	2.8	4.1	8.5	2.5	3.1	3.3	2.7	2.7
23	2.2	2.6	2.0	2.1	2.8	4.4	8.3	2.7	3.1	3.3	2.7	2.5
24	2.2	2.5	2.0	2.1	2.9	4.6	8.5	2.6	3.2	3.4	2.7	2.5
25	2.2	2.5	2.0	2.1	2.9	4.8	8.3	2.6	3.2	3.4	2.7	2.4
26	2.2	2.5	2.0	2.1	2.9	4.9	5.1	2.7	3.6	3.2	2.7	2.3
27	2.2	2.4	2.1	2.0	3.0	5.2	2.6	2.4	3.3	3.2	2.7	2.2
28	2.2	2.4	2.1	2.0	3.0	5.3	2.6	2.5	3.5	3.2	2.7	2.2
29	2.3	2.3	2.1	2.0	3.0	5.5	2.5	2.8	4.4	3.3	2.7	2.1
30	2.3	2.3	2.1	2.0	---	5.8	2.7	2.9	5.2	3.3	2.7	2.1
31	2.3	---	2.2	2.0	---	5.6	---	3.0	---	3.2	2.7	---
TOTAL	63.2	74.9	64.1	66.8	72.4	115.5	230.5	83.2	91.3	113.9	91.4	75.2
MEAN	2.04	2.50	2.07	2.15	2.50	3.73	7.68	2.68	3.04	3.67	2.95	2.51
MAX	2.3	2.7	2.2	2.2	3.0	5.8	12	3.7	5.2	5.2	4.6	2.7
MIN	1.8	2.3	2.0	2.0	2.0	2.8	2.5	2.1	1.6	2.9	2.7	2.1
AC-FT	125	149	127	132	144	229	457	165	181	226	181	149

CAL YR 1987 TOTAL 929.9 MEAN 2.55 MAX 5.5 MIN 1.8 AC-FT 1840  
WTR YR 1988 TOTAL 1142.4 MEAN 3.12 MAX 12 MIN 1.6 AC-FT 2270

## SAN JOAQUIN RIVER BASIN

11230215 SOUTH FORK SAN JOAQUIN RIVER BELOW HOOPER CREEK, NEAR FLORENCE LAKE, CA

LOCATION.--Lat 37°18'30", long 118°57'40", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 0.2 mi downstream from Hooper Creek, 3.2 mi downstream from spillway of Florence Lake Dam, and 17 mi northeast of town of Big Creek.

DRAINAGE AREA.--184 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1978 to current year. October 1946 to September 1978, operated as a low-flow station only, in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder, Parshall flume, and concrete control. Datum of gage is 6,949.41 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Estimated daily discharges: Periods of ice effect, Dec. 12-15, 17-20, 23-27, Dec. 30 to Jan. 1, Jan. 5, 6, 19, 20, Feb. 3, 4. Flow regulated by Florence Lake (station 11229600) 3.2 mi upstream, and Hooper Creek diversion dam (capacity less than 2 acre-ft) 0.7 mi upstream. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (combined flow of South Fork San Joaquin River and Ward Tunnel at Intake).--10 years, 413 ft<sup>3</sup>/s, 299,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,950 ft<sup>3</sup>/s, Sept. 26, 1982, gage height, 11.42 ft, from rating curve extended above 1,300 ft<sup>3</sup>/s on basis of spill flow at Florence Lake; minimum daily, 3.9 ft<sup>3</sup>/s, Oct. 24, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32 ft<sup>3</sup>/s, May 29, gage height, 3.59 ft; minimum daily, 13 ft<sup>3</sup>/s, several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	20	14	13	16	20	18	24	28	26	24	24
2	20	20	14	13	15	20	20	24	27	26	24	24
3	18	18	14	14	15	20	19	24	26	26	23	24
4	18	18	14	14	15	20	20	23	25	26	24	24
5	18	19	14	16	15	20	21	24	25	25	24	24
6	17	20	15	16	15	20	22	24	25	25	24	23
7	17	17	15	16	15	19	23	24	25	24	24	24
8	17	16	14	15	15	20	22	24	25	24	24	23
9	17	16	15	15	15	20	23	24	25	24	24	23
10	17	16	15	15	15	19	24	24	24	24	24	23
11	17	16	14	15	16	17	25	24	24	24	24	23
12	17	16	13	14	16	17	25	24	25	24	24	24
13	17	16	13	15	16	17	24	25	24	24	24	24
14	17	16	13	14	16	16	25	27	24	24	24	24
15	17	16	13	15	16	16	25	28	24	24	25	24
16	17	16	13	15	16	16	24	27	24	24	24	23
17	17	18	13	15	16	16	24	27	24	24	24	23
18	17	17	13	15	16	17	23	27	25	24	24	23
19	17	15	13	15	16	17	22	28	24	24	24	23
20	17	15	13	15	16	17	24	29	25	24	24	23
21	21	14	14	14	16	17	23	28	24	24	24	24
22	19	14	14	14	16	17	23	29	25	24	24	21
23	21	14	14	15	16	17	22	29	25	25	24	22
24	18	14	14	15	16	18	23	29	25	30	24	22
25	19	13	14	16	17	19	23	29	25	26	24	21
26	19	13	14	16	19	20	21	30	25	24	24	21
27	19	13	14	16	19	20	22	30	25	27	24	21
28	20	13	14	16	22	19	21	31	25	26	24	22
29	21	13	14	16	22	19	22	32	26	24	24	23
30	20	13	14	16	---	17	24	32	27	24	24	23
31	20	---	13	16	---	18	---	31	---	24	24	---
TOTAL	568	475	428	465	474	565	677	835	750	768	744	690
MEAN	18.3	15.8	13.8	15.0	16.3	18.2	22.6	26.9	25.0	24.8	24.0	23.0
MAX	22	20	15	16	22	20	25	32	28	30	25	24
MIN	17	13	13	13	15	16	18	23	24	24	23	21
AC-FT	1130	942	849	922	940	1120	1340	1660	1490	1520	1480	1370

CAL YR 1987 TOTAL 7071 MEAN 19.4 MAX 39 MIN 13 AC-FT 14030  
WTR YR 1988 TOTAL 7439 MEAN 20.3 MAX 32 MIN 13 AC-FT 14760

## SAN JOAQUIN RIVER BASIN

11230500 BEAR CREEK NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°20'18", long 118°58'23", unsurveyed, in SW 1/4 sec.12, T.7 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 0.2 mi upstream from diversion dam, 1.7 mi upstream from mouth, 2.1 mi south of Lake Thomas A. Edison, and 2.4 mi northeast of Mono Hot Springs.

DRAINAGE AREA.--52.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1954, published as "near Vermilion Valley."

REVISED RECORDS.--WSP 611: 1922(M). WSP 1345: 1931-35. WSP 1515: 1922-30. WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7,366.94 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Estimated daily discharges: Period of ice effect, Dec. 13 to Feb. 14. No storage or diversion above station. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--67 years, 93.1 ft<sup>3</sup>/s, 67,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,660 ft<sup>3</sup>/s, Sept. 26, 1982, gage height, 8.35 ft, from rating curve extended above 570 ft<sup>3</sup>/s; minimum daily, 1.2 ft<sup>3</sup>/s, Sept. 29 to Oct. 5, 1924.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 480 ft<sup>3</sup>/s, May 15, gage height, 5.14 ft; minimum daily, 4.6 ft<sup>3</sup>/s, Oct. 4, 6-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	15	18	21	20	29	53	70	178	109	40	27
2	4.9	21	18	21	21	30	64	63	194	99	37	27
3	4.8	15	16	21	21	30	71	67	263	92	34	26
4	4.6	14	14	22	20	32	76	66	285	90	34	23
5	4.7	22	13	23	18	34	99	59	231	84	54	21
6	4.6	26	14	23	17	35	118	59	166	78	47	20
7	4.6	25	14	22	18	32	117	58	127	72	41	20
8	4.6	25	18	22	20	37	106	56	102	68	35	17
9	4.6	24	20	22	20	40	115	58	96	65	32	16
10	4.6	23	20	22	21	32	149	83	105	64	30	15
11	4.6	22	19	22	22	28	162	148	134	62	28	14
12	4.6	20	17	21	23	27	159	210	150	57	28	13
13	6.3	20	15	21	24	26	132	258	178	53	25	12
14	6.3	19	15	20	27	25	120	294	193	52	23	11
15	5.5	19	17	17	29	25	106	358	215	50	20	11
16	5.2	20	21	18	27	23	91	335	237	48	19	10
17	5.0	21	22	20	25	24	83	249	217	45	18	9.7
18	4.9	25	16	21	23	27	81	255	190	42	17	9.3
19	4.9	26	17	22	22	34	70	252	232	39	16	8.9
20	4.8	22	20	22	22	43	72	268	352	36	16	9.3
21	4.8	23	17	21	25	47	69	313	282	34	21	11
22	6.0	25	15	21	25	38	62	317	235	33	19	12
23	7.9	22	13	22	27	47	57	309	183	41	19	11
24	7.6	21	12	23	25	57	58	326	172	46	18	10
25	6.5	18	14	23	28	71	66	326	223	48	22	9.7
26	6.0	20	16	23	31	86	74	311	193	49	29	9.0
27	6.0	18	17	22	33	84	77	280	172	49	34	8.7
28	9.5	18	18	21	31	72	72	269	160	53	35	8.2
29	13	17	20	20	30	67	74	264	142	47	31	7.8
30	12	18	20	20	---	63	86	210	122	43	30	7.1
31	11	---	20	20	---	54	---	181	---	42	30	---
TOTAL	189.3	624	526	659	695	1299	2739	6372	5729	1790	882	414.7
MEAN	6.11	20.8	17.0	21.3	24.0	41.9	91.3	206	191	57.7	28.5	13.8
MAX	13	26	22	23	33	86	162	358	352	109	54	27
MIN	4.6	14	12	17	17	23	53	56	96	33	16	7.1
AC-FT	375	1240	1040	1310	1380	2580	5430	12640	11360	3550	1750	823

CAL YR 1987 TOTAL 19903.2 MEAN 54.5 MAX 419 MIN 4.3 AC-FT 39480  
WTR YR 1988 TOTAL 21919.0 MEAN 59.9 MAX 358 MIN 4.6 AC-FT 43480

## SAN JOAQUIN RIVER BASIN

11230520 BEAR CREEK CONDUIT NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°20'06", long 118°58'24", unsurveyed, T.7 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank at diversion dam, 2.2 mi northeast of Mono Hot Springs, and 2.3 mi south of Lake Thomas A. Edison.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Discharge computed as difference between flows at Bear Creek near Lake Thomas A. Edison (station 11230500) and Bear Creek at diversion dam (station 11230530). Datum of conduit invert, 7,340 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Diversion to Mono-Bear conduit, thence to Ward tunnel and Huntington Lake via Portal Powerplant and used for further power development in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 396 ft<sup>3</sup>/s, May 16, 1987; minimum daily, 2.1 ft<sup>3</sup>/s, Feb. 24, 26, 1987.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	13	16	19	18	27	51	67	175	106	37	24
2	2.9	20	16	19	19	28	62	60	191	96	34	24
3	3.4	14	14	19	20	28	69	64	260	89	31	23
4	3.3	13	13	20	19	31	74	63	282	87	31	20
5	3.4	21	12	21	17	33	97	56	228	81	51	18
6	3.4	24	13	21	16	34	116	56	163	75	44	17
7	3.4	23	13	20	17	30	115	55	124	69	38	17
8	3.4	24	17	20	19	35	104	53	99	65	32	14
9	3.4	23	19	20	19	38	113	55	93	62	29	13
10	3.5	22	19	20	20	30	147	80	102	61	27	12
11	3.5	20	18	20	21	26	160	145	131	59	25	11
12	3.5	18	16	19	22	25	157	207	147	54	25	10
13	5.3	18	14	19	23	24	130	256	175	50	22	9.1
14	5.3	17	14	18	26	23	118	288	190	49	20	8.1
15	4.6	17	15	15	27	23	104	340	212	47	17	8.1
16	4.2	18	19	16	25	21	89	324	234	45	16	7.1
17	3.8	19	20	18	23	22	81	247	214	42	15	6.8
18	3.7	23	14	19	21	25	79	253	187	39	14	6.4
19	3.7	24	15	20	20	32	68	250	229	36	13	6.0
20	3.6	20	18	20	20	41	70	266	349	33	13	6.4
21	3.5	21	15	19	23	45	67	311	279	31	18	8.1
22	4.7	23	13	19	23	36	60	314	232	30	16	9.1
23	6.6	20	11	20	25	45	55	306	180	38	16	8.1
24	6.3	19	11	21	23	55	56	323	169	43	15	7.1
25	5.2	16	13	21	26	69	64	323	220	45	19	6.8
26	4.7	18	15	21	29	85	72	308	190	46	27	6.1
27	4.4	16	16	20	31	83	75	277	169	46	31	5.8
28	7.9	16	17	19	29	71	70	266	157	50	32	5.3
29	12	15	19	18	28	66	71	261	139	44	28	4.9
30	10	16	18	18	---	62	83	207	119	40	27	4.2
31	9.2	---	18	18	---	52	---	178	---	39	27	---
TOTAL	148.1	571	481	597	649	1245	2677	6259	5639	1697	790	326.5
MEAN	4.78	19.0	15.5	19.3	22.4	40.2	89.2	202	188	54.7	25.5	10.9
MAX	12	24	20	21	31	85	160	340	349	106	51	24
MIN	2.3	13	11	15	16	21	51	53	93	30	13	4.2
AC-FT	294	1130	954	1180	1290	2470	5310	12410	11180	3370	1570	648

CAL YR 1987 TOTAL 19035.6 MEAN 52.2 MAX 396 MIN 2.1 AC-FT 37760  
WTR YR 1988 TOTAL 21079.6 MEAN 57.6 MAX 349 MIN 2.3 AC-FT 41810

## SAN JOAQUIN RIVER BASIN

11230530 BEAR CREEK AT DIVERSION DAM, NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°20'05", long 118°58'26", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 450 ft downstream from diversion dam, 2.5 mi south of Lake Thomas A. Edison, and 18.3 mi east of town of Big Creek.

DRAINAGE AREA.--52.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 7,338.30 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Estimated daily discharges: Oct. 1-28, Jan. 7-21. Flow consists of fishery release and spill over diversion dam. Diversion through Bear conduit at diversion dam to Ward tunnel. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 26 ft<sup>3</sup>/s, May 15, 1987; minimum daily, 0.94 ft<sup>3</sup>/s, Oct. 15, 1987.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	1.5	1.5	1.5	1.6	1.5	1.6	2.5	2.9	2.7	2.7	2.8
2	2.0	1.3	1.5	1.5	1.5	1.6	1.5	2.5	2.9	2.6	2.9	2.8
3	1.4	1.3	1.5	1.5	1.4	1.5	1.5	2.6	2.9	2.8	2.9	2.8
4	1.3	1.3	1.4	1.5	1.4	1.4	1.5	2.6	2.9	2.8	2.8	2.8
5	1.3	1.4	1.3	1.6	1.4	1.4	1.5	2.5	2.9	2.9	2.8	2.8
6	1.2	1.5	1.3	1.6	1.4	1.4	1.5	2.5	2.9	2.9	2.8	2.8
7	1.2	1.5	1.4	1.6	1.4	1.5	1.5	2.5	2.9	2.9	2.9	2.8
8	1.2	1.4	1.4	1.6	1.4	1.5	1.6	2.5	2.9	2.8	2.9	2.8
9	1.2	1.4	1.4	1.6	1.4	1.5	1.6	2.5	2.9	2.8	2.8	2.8
10	1.1	1.4	1.4	1.6	1.4	1.5	1.5	2.5	2.9	2.8	2.8	2.9
11	1.1	1.5	1.4	1.6	1.4	1.5	1.5	2.5	3.0	2.7	2.8	2.9
12	1.1	1.5	1.4	1.6	1.4	1.5	1.6	2.5	2.9	2.8	2.8	2.9
13	1.0	1.5	1.4	1.6	1.4	1.5	1.6	2.4	2.9	2.8	2.8	2.9
14	.98	1.5	1.4	1.6	1.4	1.5	1.6	5.7	2.9	2.8	2.7	2.9
15	.94	1.5	1.5	1.5	1.5	1.5	1.5	18	2.9	2.7	2.7	2.9
16	.99	1.5	1.5	1.5	1.5	1.5	1.5	11	2.7	2.7	2.7	2.9
17	1.2	1.5	1.5	1.5	1.5	1.6	1.5	2.2	2.8	2.7	2.7	2.9
18	1.2	1.5	1.5	1.6	1.5	1.6	1.5	2.3	2.8	2.7	2.7	2.9
19	1.2	1.5	1.5	1.6	1.5	1.6	1.5	2.3	2.8	2.7	2.8	2.9
20	1.2	1.5	1.5	1.6	1.5	1.5	1.5	2.3	2.9	2.7	2.8	2.9
21	1.3	1.5	1.5	1.6	1.5	1.5	1.5	2.3	2.9	2.7	2.8	2.9
22	1.3	1.5	1.5	1.5	1.5	1.5	1.5	2.7	2.9	2.7	2.8	2.9
23	1.3	1.5	1.5	1.5	1.5	1.5	1.5	2.9	2.8	2.7	2.8	2.9
24	1.3	1.5	1.4	1.5	1.5	1.5	1.5	2.9	2.8	2.7	2.9	2.9
25	1.3	1.5	1.3	1.5	1.5	1.5	1.5	2.9	2.9	2.7	2.8	2.9
26	1.3	1.5	1.3	1.5	1.5	1.4	1.5	2.9	2.9	2.8	2.4	2.9
27	1.6	1.5	1.4	1.5	1.5	1.3	2.2	2.9	2.9	2.7	2.5	2.9
28	1.6	1.5	1.4	1.6	1.5	1.3	2.4	2.9	2.8	2.7	2.5	2.9
29	1.4	1.5	1.4	1.6	1.5	1.3	2.5	3.0	2.7	2.7	2.7	2.9
30	1.6	1.5	1.5	1.6	---	1.4	2.5	2.8	2.8	2.7	2.6	2.9
31	1.8	---	1.5	1.6	---	1.6	---	2.9	---	2.7	2.8	---
TOTAL	41.21	44.0	44.4	48.3	42.4	45.9	49.2	107.5	86.0	85.1	85.4	86.1
MEAN	1.33	1.47	1.43	1.56	1.46	1.48	1.64	3.47	2.87	2.75	2.75	2.87
MAX	2.6	1.5	1.5	1.6	1.6	1.6	2.5	18	3.0	2.9	2.9	2.9
MIN	.94	1.3	1.3	1.5	1.4	1.3	1.5	2.2	2.7	2.6	2.4	2.8
AC-FT	82	87	88	96	84	91	98	213	171	169	169	171

CAL YR 1987 TOTAL 855.31 MEAN 2.34 MAX 26 MIN .94 AC-FT 1700  
WTR YR 1988 TOTAL 765.51 MEAN 2.09 MAX 18 MIN .94 AC-FT 1520

## SAN JOAQUIN RIVER BASIN

11230560 CHINQUAPIN CREEK AT DIVERSION DAM, NEAR BIG CREEK, CA

LOCATION.--Lat 37°18'11", long 119°01'08", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, at diversion dam to Ward tunnel 0.7 mi upstream from mouth, 1.7 mi south of Mono Hot Springs, and 14.0 mi northeast of town of Big Creek.

DRAINAGE AREA.--1.65 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage is 7,260 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records of fishery release normally computed only during periods of diversion to Ward tunnel. During the current year diversion occurred from April 27 to June 27. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	1.1	1.4	---	---	---
2	---	---	---	---	---	---	---	1.4	1.4	---	---	---
3	---	---	---	---	---	---	---	1.3	1.4	---	---	---
4	---	---	---	---	---	---	---	1.3	1.4	---	---	---
5	---	---	---	---	---	---	---	1.3	1.4	---	---	---
6	---	---	---	---	---	---	---	1.1	1.3	---	---	---
7	---	---	---	---	---	---	---	1.3	1.4	---	---	---
8	---	---	---	---	---	---	---	1.3	1.4	---	---	---
9	---	---	---	---	---	---	---	1.3	1.4	---	---	---
10	---	---	---	---	---	---	---	1.3	1.4	---	---	---
11	---	---	---	---	---	---	---	2.0	1.4	---	---	---
12	---	---	---	---	---	---	---	4.0	1.5	---	---	---
13	---	---	---	---	---	---	---	2.1	1.4	---	---	---
14	---	---	---	---	---	---	---	1.3	1.4	---	---	---
15	---	---	---	---	---	---	---	1.5	1.4	---	---	---
16	---	---	---	---	---	---	---	1.2	1.4	---	---	---
17	---	---	---	---	---	---	---	1.2	1.4	---	---	---
18	---	---	---	---	---	---	---	1.2	1.4	---	---	---
19	---	---	---	---	---	---	---	1.3	1.4	---	---	---
20	---	---	---	---	---	---	---	1.2	1.4	---	---	---
21	---	---	---	---	---	---	---	1.3	1.3	---	---	---
22	---	---	---	---	---	---	---	1.5	1.3	---	---	---
23	---	---	---	---	---	---	---	1.5	1.3	---	---	---
24	---	---	---	---	---	---	---	1.4	1.3	---	---	---
25	---	---	---	---	---	---	---	1.4	1.3	---	---	---
26	---	---	---	---	---	---	---	1.4	1.2	---	---	---
27	---	---	---	---	---	---	1.7	1.4	.95	---	---	---
28	---	---	---	---	---	---	1.3	1.4	---	---	---	---
29	---	---	---	---	---	---	1.4	1.4	---	---	---	---
30	---	---	---	---	---	---	1.4	1.4	---	---	---	---
31	---	---	---	---	---	---	---	1.4	---	---	---	---
TOTAL	---	---	---	---	---	---	---	45.2	---	---	---	---
MEAN	---	---	---	---	---	---	---	1.46	---	---	---	---
MAX	---	---	---	---	---	---	---	4.0	---	---	---	---
MIN	---	---	---	---	---	---	---	1.1	---	---	---	---
AC-FT	---	---	---	---	---	---	---	90	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11230600 CAMP 62 CREEK AT DIVERSION DAM, NEAR BIG CREEK, CA

LOCATION.--Lat 37°18'13", long 119°01'46", unsurveyed, T.8 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 30 ft downstream from diversion dam, 0.7 mi upstream from mouth, 1.7 mi southwest of Mono Hot Springs, and 14.2 mi east of town of Big Creek.

DRAINAGE AREA.--1.97 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage, 7,760 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records of fishery release normally computed only during periods of diversion to Ward tunnel. Diversion during water year 1988 occurred Apr. 27 to July 1. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.44	.56	.73	---	---
2	---	---	---	---	---	---	---	.44	.57	---	---	---
3	---	---	---	---	---	---	---	.44	.59	---	---	---
4	---	---	---	---	---	---	---	.44	.59	---	---	---
5	---	---	---	---	---	---	---	.44	.56	---	---	---
6	---	---	---	---	---	---	---	.44	.56	---	---	---
7	---	---	---	---	---	---	---	.44	.56	---	---	---
8	---	---	---	---	---	---	---	.44	.54	---	---	---
9	---	---	---	---	---	---	---	.44	.54	---	---	---
10	---	---	---	---	---	---	---	.44	.54	---	---	---
11	---	---	---	---	---	---	---	3.4	.55	---	---	---
12	---	---	---	---	---	---	---	10	.56	---	---	---
13	---	---	---	---	---	---	---	8.0	.56	---	---	---
14	---	---	---	---	---	---	---	5.3	.56	---	---	---
15	---	---	---	---	---	---	---	4.6	.56	---	---	---
16	---	---	---	---	---	---	---	2.1	.56	---	---	---
17	---	---	---	---	---	---	---	.46	.56	---	---	---
18	---	---	---	---	---	---	---	.54	.56	---	---	---
19	---	---	---	---	---	---	---	.52	.56	---	---	---
20	---	---	---	---	---	---	---	.54	.56	---	---	---
21	---	---	---	---	---	---	---	.49	.56	---	---	---
22	---	---	---	---	---	---	---	.48	.59	---	---	---
23	---	---	---	---	---	---	---	.56	.59	---	---	---
24	---	---	---	---	---	---	---	.56	.59	---	---	---
25	---	---	---	---	---	---	---	.56	.59	---	---	---
26	---	---	---	---	---	---	---	.56	.56	---	---	---
27	---	---	---	---	---	---	2.2	.56	.56	---	---	---
28	---	---	---	---	---	---	.46	.56	.56	---	---	---
29	---	---	---	---	---	---	.46	.56	.59	---	---	---
30	---	---	---	---	---	---	.46	.59	.59	---	---	---
31	---	---	---	---	---	---	---	.56	---	---	---	---
TOTAL	---	---	---	---	---	---	---	45.90	16.98	---	---	---
MEAN	---	---	---	---	---	---	---	1.48	.57	---	---	---
MAX	---	---	---	---	---	---	---	10	.59	---	---	---
MIN	---	---	---	---	---	---	---	.44	.54	---	---	---
AC-FT	---	---	---	---	---	---	---	91	34	---	---	---



## SAN JOAQUIN RIVER BASIN

11230670 BOLSILLO CREEK BELOW DIVERSION DAM, NEAR BIG CREEK, CA

LOCATION.--Lat 37°18'40", long 119°02'22", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, 50 ft downstream from diversion dam, 1.5 mi upstream from mouth, 1.7 mi southwest of Mono Hot Springs, and 13.3 mi northeast of town of Big Creek.

DRAINAGE AREA.--1.40 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage is 7,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records of fishery release normally computed only during periods of diversion to Ward tunnel. Diversion during water year 1988 occurred Apr. 13 to May 12, May 13 to June 29, and July 24-26. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.51	.54	---	---	---
2	---	---	---	---	---	---	---	.51	.54	---	---	---
3	---	---	---	---	---	---	---	.51	.54	---	---	---
4	---	---	---	---	---	---	---	.51	.54	---	---	---
5	---	---	---	---	---	---	---	.51	.54	---	---	---
6	---	---	---	---	---	---	---	.51	.54	---	---	---
7	---	---	---	---	---	---	---	.51	.54	---	---	---
8	---	---	---	---	---	---	---	.51	.51	---	---	---
9	---	---	---	---	---	---	---	.51	.51	---	---	---
10	---	---	---	---	---	---	---	.51	.54	---	---	---
11	---	---	---	---	---	---	---	.50	.54	---	---	---
12	---	---	---	---	---	---	---	3.1	.54	---	---	---
13	---	---	---	---	---	---	.54	4.6	.56	---	---	---
14	---	---	---	---	---	---	.54	.57	.56	---	---	---
15	---	---	---	---	---	---	.54	.57	.54	---	---	---
16	---	---	---	---	---	---	.54	.57	.54	---	---	---
17	---	---	---	---	---	---	.54	.56	.51	---	---	---
18	---	---	---	---	---	---	.54	.56	.51	---	---	---
19	---	---	---	---	---	---	.54	.56	.54	---	---	---
20	---	---	---	---	---	---	.51	.56	.54	---	---	---
21	---	---	---	---	---	---	.51	.56	.54	---	---	---
22	---	---	---	---	---	---	.51	.56	.54	---	---	---
23	---	---	---	---	---	---	.51	.56	.54	---	---	---
24	---	---	---	---	---	---	.51	.56	.54	.54	---	---
25	---	---	---	---	---	---	.51	.56	.54	.54	---	---
26	---	---	---	---	---	---	.51	.56	.54	.52	---	---
27	---	---	---	---	---	---	.51	.54	.51	---	---	---
28	---	---	---	---	---	---	.51	.55	.51	---	---	---
29	---	---	---	---	---	---	.51	.54	.44	---	---	---
30	---	---	---	---	---	---	.51	.54	---	---	---	---
31	---	---	---	---	---	---	---	.54	---	---	---	---
TOTAL	---	---	---	---	---	---	---	23.32	---	---	---	---
MEAN	---	---	---	---	---	---	---	.75	---	---	---	---
MAX	---	---	---	---	---	---	---	4.6	---	---	---	---
MIN	---	---	---	---	---	---	---	.50	---	---	---	---
AC-FT	---	---	---	---	---	---	---	46	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11231000 LAKE THOMAS A. EDISON NEAR BIG CREEK, CA

LOCATION.--Lat 37°22'13", long 118°59'13", in sec.26, T.6 S., R.27 E., unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in outlet works of dam on Mono Creek at lower end of Vermilion Valley, 18.1 mi northeast of town of Big Creek.

DRAINAGE AREA.--90.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1954 to current year. Prior to 1960, maximum and minimum daily contents were published.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Lake is formed by earthfill dam; dam completed and storage began Oct. 12, 1954. Usable capacity, 125,035 acre-ft between elevations 7,508.9 ft, invert of outlet works, and 7,642.50 ft, top of gates in service spillway, NGVD. Dead storage negligible. Water is released for diversion to Ward tunnel via Mono Creek diversion works. See schematic diagram of upper San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 125,983 acre-ft, Sept. 26, 1982, elevation, 7,643.55 ft; minimum since appreciable storage was attained, 4,553 acre-ft, Dec. 27, 1987, elevation, 7,552.07 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 26,971 acre-ft, Aug. 1, elevation, 7,578.60 ft; minimum, 4,553 acre-ft, Dec. 27, elevation, 7,552.07 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated July 22, 1955)

7,508.9	0	7,535	513	7,560	9,521	7,610	68,616
7,515	18	7,540	928	7,570	18,137	7,620	85,006
7,520	64	7,545	1,833	7,580	28,515	7,630	102,367
7,525	156	7,550	3,567	7,590	40,454	7,640	120,424
7,530	297	7,555	6,147	7,600	53,769	7,644	127,820

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17599	11207	6078	4563	5005	5607	6468	5573	15713	23282	26971	8225
2	17345	11022	5912	4563	5005	5648	6456	5530	15968	23492	26676	8161
3	17138	10815	5757	4589	5010	5694	6456	5513	16351	23691	25971	8090
4	16916	10625	5596	4610	5010	5734	6450	5427	16861	23870	25206	8035
5	16703	10466	5438	4656	5010	5780	6450	5372	17288	24069	24483	8022
6	16490	10348	5302	4656	5010	5826	6432	5253	17666	24280	23754	8015
7	16268	10176	5150	4681	5010	5871	6389	5237	17788	24440	22970	8001
8	16031	9999	5016	4728	5010	5912	6329	5199	17788	24610	22185	7988
9	15813	9814	4882	4774	5010	5958	6159	5194	17798	24749	21411	7981
10	15604	9614	4779	4805	5010	5998	6159	5188	17835	24898	20108	7961
11	15385	9417	4759	4825	5026	6044	6395	5383	17901	25036	19853	7947
12	15197	9224	4738	4841	5042	6090	6577	5688	17996	25164	19088	7914
13	14956	9076	4687	4846	5064	6130	6632	6090	18195	25270	18310	7886
14	14769	8905	4620	4856	5031	6177	6668	6408	18445	25378	17505	7866
15	14536	8708	4610	4872	5107	6220	6668	6849	18771	25486	16861	7846
16	14299	8538	4610	4882	5129	6268	6559	7454	19069	25594	16305	7839
17	14089	8424	4610	4928	5139	6299	6371	7954	19421	25669	15740	7812
18	13897	8261	4599	4938	5167	6323	6171	8495	19627	25734	15179	7805
19	13897	8090	4584	4949	5183	6371	5981	9002	19892	25799	14644	7799
20	13897	7934	4584	4969	5204	6450	5975	9484	20577	25842	14159	7799
21	13757	7778	4579	4969	5210	6541	5935	10076	20856	25917	13600	7799
22	13198	7603	4579	4969	5237	6614	5889	10681	21086	25982	13069	7704
23	12993	7407	4579	4969	5264	6680	5820	11158	21300	26079	12602	7697
24	12779	7239	4579	4969	5286	6711	5745	11558	21482	26197	12126	7690
25	12544	7054	4579	4969	5318	6753	5688	12402	21858	26294	11656	7670
26	12318	6887	4574	4974	5356	6817	5636	12627	22133	26371	11224	7636
27	12142	6723	4553	4980	5410	6849	5602	13198	22319	26600	10752	7643
28	11950	6565	4563	4990	5475	6868	5557	13523	22505	26786	10261	7630
29	11778	6383	4563	5000	5557	6779	5524	14203	22732	26884	9706	7603
30	11607	6238	4563	5005	---	6692	5524	14831	23073	26960	9150	7589
31	11444	---	4563	5005	---	6541	---	15242	---	26949	8616	---
MAX	17599	11207	6078	5005	5557	6868	6668	15242	23073	26960	26971	8225
MIN	11444	6238	4553	4563	5005	5607	5524	5188	15713	23282	8616	7589
a	7562.44	7555.15	7552.09	7552.95	7553.97	7555.65	7553.91	7566.87	7574.95	7578.58	7558.77	7557.29
b	-6467	-5206	-1675	+442	+552	+984	-1017	+9718	+7831	+3876	-18333	-1027

CAL YR 1987 b -71060

WTR YR 1988 b -10322

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11231500 MONO CREEK BELOW LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°21'40", long 118°59'26", unsurveyed, SW 1/4 sec.35, T.6 S., R.27 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 0.6 mi upstream from diversion dam, 1 mi downstream from Lake Thomas A. Edison Dam, and 1.9 mi northeast of Mono Hot Springs.

DRAINAGE AREA.--92.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1921 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1954, published as "near Vermilion Valley."

REVISED RECORDS.--WSP 1011: 1943. WSP 1515: 1956.

GAGE.--Water-stage recorder. Elevation of gage is 7,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Beginning Oct. 12, 1954, flow regulated by Lake Thomas A. Edison (station 11231000) 1 mi upstream. No diversion above station. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE (adjusted for storage).--67 years, 161 ft<sup>3</sup>/s, 116,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,160 ft<sup>3</sup>/s, Sept. 26, 1982, gage height, 8.87 ft; minimum daily, 0.3 ft<sup>3</sup>/s, Nov. 11, 12, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 440 ft<sup>3</sup>/s, Aug. 3, gage height, 6.47 ft; minimum daily, 12 ft<sup>3</sup>/s, Oct. 19, 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	173	133	119	33	32	33	150	154	121	35	81	229
2	147	133	118	33	32	33	128	154	149	36	224	85
3	142	133	117	32	32	33	128	154	146	35	417	83
4	142	133	117	32	33	32	128	154	115	36	435	69
5	142	133	117	32	33	32	128	154	115	33	432	43
6	118	133	116	32	33	32	197	154	139	24	432	39
7	140	133	115	32	33	33	195	153	175	24	428	36
8	137	133	115	32	33	33	207	151	175	25	428	36
9	137	130	117	32	33	33	251	152	175	25	426	36
10	137	130	89	32	33	32	171	152	175	25	424	36
11	135	130	44	32	32	32	92	150	175	25	423	35
12	135	130	44	32	32	32	155	149	165	25	420	34
13	133	130	55	32	32	32	188	149	132	24	420	34
14	118	130	136	32	32	33	191	147	124	24	411	33
15	133	130	33	32	32	33	202	131	135	24	320	34
16	133	130	33	32	32	33	232	120	130	24	304	31
17	133	130	33	32	32	33	250	121	109	24	304	25
18	109	128	33	32	32	33	250	121	149	24	304	25
19	12	128	33	32	32	33	239	121	161	24	302	24
20	12	128	33	32	32	34	154	121	77	24	300	24
21	108	128	33	32	32	33	154	122	207	24	300	24
22	319	126	33	32	32	33	152	124	177	24	300	24
23	135	126	33	32	32	65	152	124	136	24	271	24
24	133	126	32	32	32	83	152	119	152	24	262	24
25	133	121	32	33	33	87	152	117	104	24	288	24
26	133	121	32	33	33	110	152	117	108	24	316	24
27	133	121	32	33	33	125	152	119	133	24	315	24
28	130	121	33	32	33	161	152	119	98	24	300	24
29	130	119	33	32	33	177	153	121	50	24	323	24
30	133	119	33	32	---	177	154	121	35	57	334	24
31	133	---	33	32	---	177	---	121	---	81	331	---
TOTAL	4088	3846	1976	997	940	1882	5161	4186	4042	894	10575	1231
MEAN	132	128	63.7	32.2	32.4	60.7	172	135	135	28.8	341	41.0
MAX	319	133	136	33	33	177	251	154	207	81	435	229
MIN	12	119	32	32	32	32	92	117	35	24	81	24
AC-FT	8110	7630	3920	1980	1860	3730	10240	8300	8020	1770	20980	2440

CAL YR 1987 TOTAL 65752 MEAN 180 MAX 444 MIN 12 AC-FT 130400

WTR YR 1988 TOTAL 39818 MEAN 109 MAX 435 MIN 12 AC-FT 78980

LOCATION.--Lat 37°21'36", long 118°59'54", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank at diversion dam, 1.0 mi southwest of Lake Thomas A. Edison, and 1.9 mi northeast of Mono Hot Springs.

GAGE.--Discharge computed as difference between flow at Mono Creek below Lake Thomas A. Edison (station 11231500) and Mono Creek at diversion dam (station 11231600). Datum of conduit invert is 7,338 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	126	113	27	26	27	144	143	110	23	71	219
2	140	126	112	27	26	27	122	143	138	25	214	74
3	135	127	111	26	26	27	122	143	135	25	407	72
4	135	127	111	26	27	26	122	143	104	26	425	58
5	135	127	111	26	27	26	122	143	104	23	421	32
6	111	127	110	26	27	26	191	143	128	14	421	29
7	133	127	108	26	27	27	189	142	164	14	417	26
8	130	126	108	26	27	27	201	140	164	15	418	26
9	130	123	110	26	27	27	245	141	164	15	416	26
10	130	123	82	26	27	26	165	141	164	15	414	26
11	128	123	37	26	26	26	86	139	164	15	413	25
12	128	123	37	26	26	26	149	138	154	15	410	24
13	126	123	48	26	26	26	182	138	121	14	410	24
14	111	124	129	26	26	27	185	136	113	14	401	23
15	126	124	26	26	26	27	196	120	124	14	310	24
16	126	124	26	26	26	27	226	109	119	14	294	21
17	126	124	26	26	26	27	244	110	98	14	294	14
18	102	122	26	26	26	27	244	110	138	14	294	14
19	5,3	122	26	26	26	27	233	110	150	14	292	13
20	5,3	122	26	26	26	28	148	111	67	14	290	13
21	101	122	26	26	26	27	148	112	196	14	290	13
22	312	120	26	26	26	27	146	114	166	14	290	13
23	128	120	26	26	26	59	146	114	125	14	261	13
24	126	120	25	26	26	77	146	109	141	14	252	13
25	126	115	26	27	27	81	146	107	93	14	278	13
26	126	115	26	27	27	104	146	107	98	14	306	13
27	126	115	26	27	27	119	146	109	123	14	305	13
28	123	115	27	26	27	155	144	109	87	14	290	13
29	123	113	27	26	27	171	142	111	39	14	313	13
30	126	113	27	26	---	171	143	110	23	47	324	13
31	126	---	27	26	---	171	---	110	---	71	321	---
TOTAL	3869,6	3658	1772	811	766	1696	4969	3855	3714	581	10262	913
MEAN	125	122	57,2	26,2	26,4	54,7	166	124	124	18,7	331	30,4
MAX	312	127	129	27	27	171	245	143	196	71	425	219
MIN	5,3	113	25	26	26	26	86	107	23	14	71	13
AC-FT	7680	7260	3510	1610	1520	3360	9860	7650	7370	1150	20350	1810
CAL YR 1987	TOTAL 62206,9	MEAN 170	MAX 430	MIN ,00	AC-FT 123400							
WTR YR 1988	TOTAL 36866,6	MEAN 101	MAX 425	MIN 5,3	AC-FT 73120							

## SAN JOAQUIN RIVER BASIN

11231600 MONO CREEK AT DIVERSION DAM, NEAR MONO HOT SPRINGS, CA

LOCATION.--Lat 37°21'37", long 118°59'50", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank at diversion dam, 1.0 mi southwest of Lake Thomas A. Edison, and 1.9 mi northeast of Mono Hot Springs.

DRAINAGE AREA.--92.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,350 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow consists of fishery release and spill over diversion dam. Diversion to Mono-Bear conduit, thence to Ward tunnel and Huntington Lake via Portal Powerplant for further power development in Big Creek powerplants. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 27 ft<sup>3</sup>/s, June 2, 1987; minimum daily, 5.9 ft<sup>3</sup>/s, several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	7.3	6.3	6.3	6.0	5.9	6.4	11	11	12	10	10
2	6.7	6.8	6.3	6.2	6.0	5.9	6.4	11	11	11	9.9	11
3	6.7	6.3	6.3	6.2	6.0	5.9	6.4	11	11	10	10	11
4	6.7	6.2	6.4	6.2	6.0	5.9	6.4	11	11	10	10	11
5	6.7	6.2	6.4	6.2	6.0	5.9	6.4	11	11	9.9	11	11
6	6.7	6.3	6.4	6.1	6.0	5.9	6.3	11	11	10	11	10
7	6.7	6.4	6.5	6.1	6.0	5.9	6.3	11	11	10	11	10
8	6.8	6.5	6.5	6.1	6.0	5.9	6.3	11	11	10	10	10
9	6.9	6.5	6.5	6.1	6.0	5.9	6.3	11	11	10	10	10
10	7.0	6.5	6.6	6.1	6.0	5.9	6.3	11	11	10	10	10
11	7.1	6.5	6.6	6.1	6.1	5.9	6.3	11	11	10	10	10
12	7.2	6.5	6.6	6.1	6.1	5.9	6.3	11	11	9.9	10	10
13	7.2	6.5	6.7	6.1	6.1	5.9	6.3	11	11	9.8	10	10
14	7.2	6.4	6.7	6.0	6.1	5.9	6.4	11	11	9.8	10	10
15	7.2	6.4	6.7	6.0	6.1	5.9	6.4	11	11	9.9	10	10
16	7.3	6.4	6.7	6.0	6.1	5.9	6.4	11	11	9.9	10	10
17	7.1	6.4	6.6	6.0	6.1	5.9	6.4	11	11	9.9	10	11
18	6.9	6.4	6.6	6.0	6.1	5.9	6.3	11	11	9.8	10	11
19	6.7	6.4	6.6	6.0	6.1	6.0	6.3	11	11	9.8	10	11
20	6.7	6.4	6.6	6.0	6.1	6.0	6.3	10	10	9.8	10	11
21	7.3	6.4	6.5	6.0	6.1	6.0	6.3	10	11	9.8	10	11
22	7.3	6.4	6.5	6.0	6.1	6.1	6.2	10	11	9.8	10	11
23	7.3	6.4	6.5	6.0	6.1	6.1	6.2	10	11	10	10	11
24	7.4	6.4	6.5	6.0	6.0	6.2	6.2	10	11	10	10	11
25	7.4	6.3	6.4	6.0	6.0	6.2	6.2	10	11	10	10	11
26	7.4	6.3	6.4	6.0	6.0	6.2	6.1	10	10	9.9	10	11
27	7.4	6.3	6.4	6.0	6.0	6.3	6.1	10	10	10	10	11
28	7.3	6.3	6.4	6.0	6.0	6.3	6.3	10	11	9.9	10	11
29	7.3	6.3	6.3	6.0	5.9	6.4	11	10	11	9.9	10	11
30	7.3	6.3	6.3	6.0	---	6.4	11	11	12	10	10	11
31	7.3	---	6.3	6.0	---	6.4	---	11	---	10	10	---
TOTAL	221.1	192.7	201.1	187.9	175.2	186.8	200.5	331	328	310.8	312.9	318
MEAN	7.13	6.42	6.49	6.06	6.04	6.03	6.68	10.7	10.9	10.0	10.1	10.6
MAX	8.9	7.3	6.7	6.3	6.1	6.4	11	11	12	12	11	11
MIN	6.7	6.2	6.3	6.0	5.9	5.9	6.1	10	10	9.8	9.9	10
AC-FT	439	382	399	373	348	371	398	657	651	616	621	631

CAL YR 1987 TOTAL 3550.3 MEAN 9.73 MAX 27 MIN 6.2 AC-FT 7040  
WTR YR 1988 TOTAL 2966.0 MEAN 8.10 MAX 12 MIN 5.9 AC-FT 5880

## SAN JOAQUIN RIVER BASIN

11231700 WARM CREEK AT DIVERSION DAM, NEAR LAKE THOMAS A. EDISON, CA

LOCATION.--Lat 37°23'03", long 119°01'33", unsurveyed, Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank, 40 ft downstream from diversion dam, 3.8 mi north of Mono Hot Springs, and 17 mi northeast of town of Big Creek.

DRAINAGE AREA.--1.76 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch weir control. Elevation of gage is 7,800 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records of fishery release normally computed only during periods of diversion to Lake Thomas A. Edison. During the current year, diversion occurred Apr. 15 to July 1. See schematic diagram of upper San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.34	.43	.38	---	---
2	---	---	---	---	---	---	---	.34	.44	---	---	---
3	---	---	---	---	---	---	---	.32	.44	---	---	---
4	---	---	---	---	---	---	---	.32	.44	---	---	---
5	---	---	---	---	---	---	---	.30	.44	---	---	---
6	---	---	---	---	---	---	---	.34	.44	---	---	---
7	---	---	---	---	---	---	---	.32	.46	---	---	---
8	---	---	---	---	---	---	---	.32	.46	---	---	---
9	---	---	---	---	---	---	---	.32	.46	---	---	---
10	---	---	---	---	---	---	---	.32	.46	---	---	---
11	---	---	---	---	---	---	---	.30	.44	---	---	---
12	---	---	---	---	---	---	---	.35	.44	---	---	---
13	---	---	---	---	---	---	---	.49	.44	---	---	---
14	---	---	---	---	---	---	---	.49	.44	---	---	---
15	---	---	---	---	---	---	1.6	.49	.44	---	---	---
16	---	---	---	---	---	---	1.6	.49	.44	---	---	---
17	---	---	---	---	---	---	1.1	.49	.44	---	---	---
18	---	---	---	---	---	---	1.1	.46	.44	---	---	---
19	---	---	---	---	---	---	1.1	.46	.44	---	---	---
20	---	---	---	---	---	---	1.1	.46	.44	---	---	---
21	---	---	---	---	---	---	1.1	.46	.44	---	---	---
22	---	---	---	---	---	---	1.1	.46	.44	---	---	---
23	---	---	---	---	---	---	1.1	.46	.44	---	---	---
24	---	---	---	---	---	---	1.1	.46	.44	---	---	---
25	---	---	---	---	---	---	1.1	.46	.44	---	---	---
26	---	---	---	---	---	---	1.1	.46	.46	---	---	---
27	---	---	---	---	---	---	1.1	.46	.46	---	---	---
28	---	---	---	---	---	---	.95	.49	.42	---	---	---
29	---	---	---	---	---	---	.34	.49	.32	---	---	---
30	---	---	---	---	---	---	.34	.49	.32	---	---	---
31	---	---	---	---	---	---	---	.46	---	---	---	---
TOTAL	---	---	---	---	---	---	---	12.87	13.05	---	---	---
MEAN	---	---	---	---	---	---	---	.42	.43	---	---	---
MAX	---	---	---	---	---	---	---	.49	.46	---	---	---
MIN	---	---	---	---	---	---	---	.30	.32	---	---	---
AC-FT	---	---	---	---	---	---	---	26	26	---	---	---

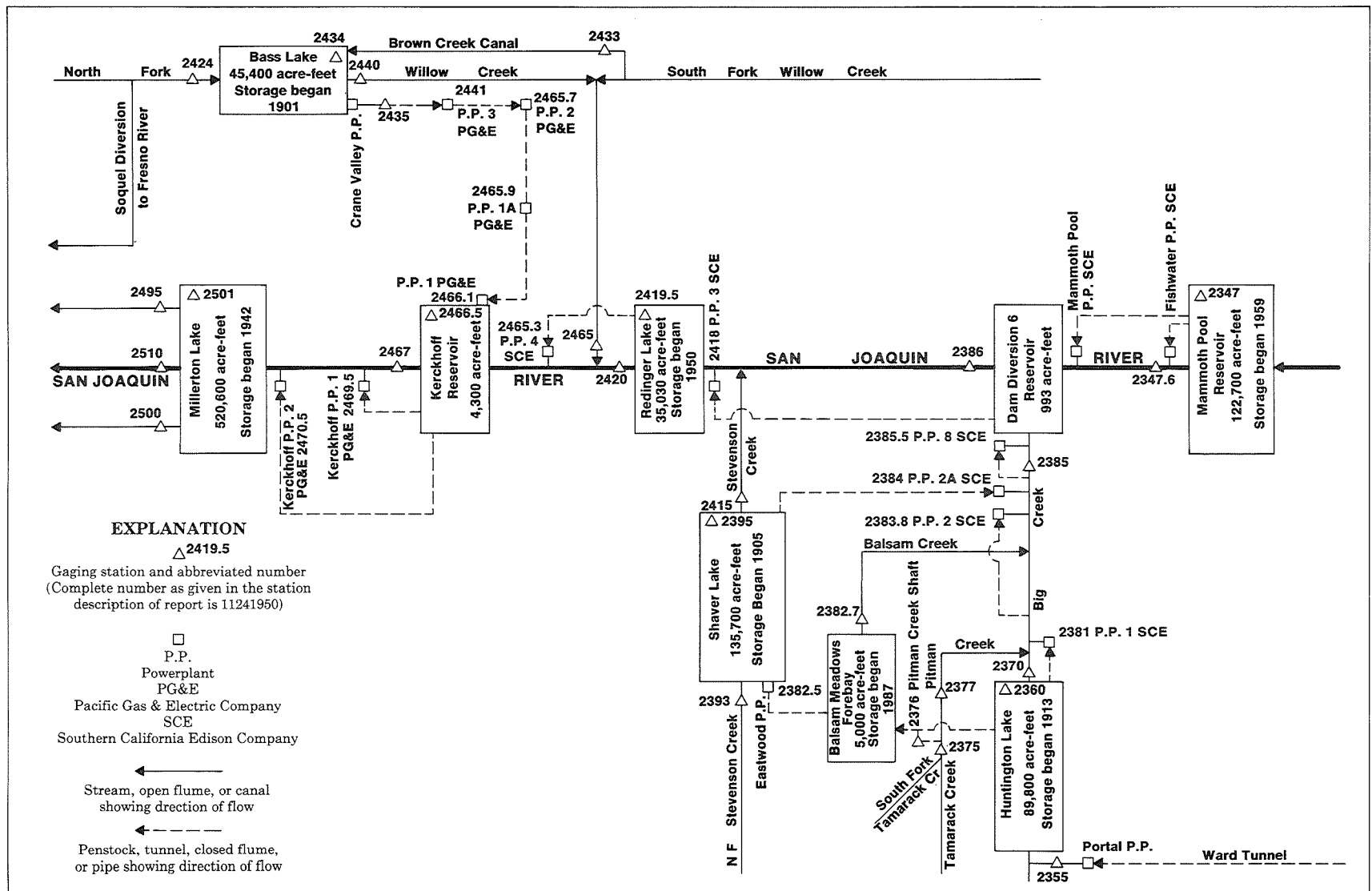


Figure 32. - Schematic diagram showing diversions and storage in lower San Joaquin River basin.

## SAN JOAQUIN RIVER BASIN

11234700 MAMMOTH POOL RESERVOIR NEAR BIG CREEK, CA

LOCATION.--Lat 37°19'45", long 119°19'40", in SW 1/4 sec.10, T.7 S., R.24 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, in gatehouse of power tunnel intake near dam on San Joaquin River, 10 mi northwest of town of Big Creek.

DRAINAGE AREA.--995 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Reservoir is formed by an earthfill dam; storage began Oct. 8, 1959. Usable capacity, 119,940 acre-ft between elevations 3,100.00 ft, invert of power tunnel, and 3,330.00 ft, crest of spillway, NGVD. Additional storage of 2,780 acre-ft is not available for release. Water is diverted through tunnel for power development; water is returned to river 8.5 mi downstream from dam. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 126,503 acre-ft, June 2, 3, 1969; maximum elevation, 3,335.86 ft, June 3, 1969; minimum contents since appreciable storage was attained, 2,956 acre-ft, Feb. 6, 1982, elevation, 3,128.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 97,582 acre-ft, June 22, elevation, 3,308.25 ft; minimum, 8,778 acre-ft, Mar. 24, elevation, 3,160.66 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated Nov. 6, 1959)

3,100	0	3,130	3,114	3,180	14,060	3,260	56,381
3,105	417	3,140	4,605	3,190	17,414	3,280	72,109
3,110	861	3,150	6,402	3,200	21,400	3,300	89,781
3,115	1,355	3,160	8,618	3,220	31,109	3,320	109,336
3,120	1,900	3,170	11,165	3,240	42,787	3,336	126,661

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20390	16636	18801	22950	24564	19660	10243	41510	93835	93023	70926	50079
2	20063	17280	19144	23201	24157	18954	10303	42097	94243	92759	70255	49269
3	19861	17030	19473	23586	23817	18253	10650	42724	94907	92345	69587	48318
4	19517	16786	19792	24212	23414	17437	10577	43480	96259	92157	68866	47791
5	19247	17005	19461	27227	23053	17138	11376	43773	96824	91574	68123	47209
6	19001	17283	19533	27537	23124	16995	12570	44157	96183	90797	67399	46568
7	18743	17138	19994	27532	23595	16392	13710	44582	95448	90154	66686	46151
8	18431	16977	20177	27055	23387	15703	14824	44969	94651	89735	66008	45747
9	18222	16657	20325	27030	23305	15549	15636	44775	94556	89067	65318	45124
10	18031	16657	20497	26854	23563	15064	16987	45279	94765	88504	64391	44717
11	17678	16574	20584	27015	23491	14328	18614	47085	94442	88043	63679	44138
12	17349	16643	20755	27050	23441	13525	20116	49653	94679	87629	62945	43633
13	17171	16747	20759	26894	23690	13372	21116	53493	94395	87124	63170	43155
14	16730	16871	20809	26683	23676	12518	22576	57238	94869	86530	63413	42680
15	16557	16892	20888	26568	23699	11855	23622	61268	95601	85727	62179	42140
16	16519	16931	21090	26473	23717	11250	25056	65054	96498	84810	60918	41610
17	16629	17185	21239	25613	23735	10446	26035	67691	96460	83942	59563	41300
18	16758	17508	21379	25170	23636	9761	26518	69843	96565	82807	58227	40769
19	16443	17331	21513	24765	22883	9688	27435	72462	96613	81713	57401	40432
20	16337	17478	21617	24454	22460	9595	29165	74925	97054	80618	57572	40072
21	16464	17455	21746	24134	22043	9490	29900	77367	97293	79449	57787	39645
22	16615	17334	21681	23971	21699	8853	30584	79755	97582	78576	56979	39093
23	16664	17320	21973	24153	21400	8836	31018	81901	97226	78160	56009	38167
24	16927	17414	22034	24262	21158	8778	31678	84455	96594	77660	54987	38340
25	16850	17214	22017	23826	20984	9093	32302	86968	96364	77927	54127	38478
26	16550	17185	22196	23880	20972	9746	33579	87473	96613	77513	53338	37760
27	16419	17523	22345	23917	20938	10616	35435	88070	96040	76491	53685	37385
28	16660	17848	22425	24057	20655	10979	37136	88984	95325	75378	53778	36500
29	16723	18164	22531	24098	20210	11006	38574	92044	94622	74033	52999	36158
30	16643	18478	22709	24751	---	10946	40781	93438	93494	72698	52160	35893
31	16643	---	22798	24886	---	10485	---	93532	---	71567	50986	---
MAX	20390	18478	22798	27537	24564	19660	40781	93532	97582	93023	70926	50079
MIN	16337	16574	18801	22950	20210	8778	10243	41510	93494	71567	50986	35893
a	3187.84	3192.79	3203.19	3207.78	3197.15	3167.45	3236.78	3304.00	3303.96	3279.35	3252.42	3228.61
b	-3995	+1835	+4320	+2088	-4676	-9725	+30296	+52751	-38	-21927	-20581	-15093

CAL YR 1987 b -7845

WTR YR 1988 b +15255

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.



## SAN JOAQUIN RIVER BASIN

11234760 SAN JOAQUIN RIVER ABOVE SHAKEFLAT CREEK, NEAR BIG CREEK, CA

LOCATION.--Lat 37°19'00", long 119°19'37", in NW 1/4 SW 1/4 sec.14, T.7 S., R.24 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,500 ft upstream from Shakeflat Creek, 4,900 ft downstream from Mammoth Pool Dam, and 10 mi northwest of town of Big Creek.

DRAINAGE AREA.--1,003 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,865.50 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Estimated daily discharges: Sept. 6-9. Flow regulated by Mammoth Pool Reservoir (station 11234700) 4,900 ft upstream. Flow partly regulated by Florence Lake (station 11229600), Lake Thomas A. Edison (station 11231000) and diversions through Ward tunnel (station 11229500), and through Mono-Bear conduit to Ward tunnel. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft<sup>3</sup>/s, June 3, 1969, gage height, 18.38 ft; minimum daily, 0.3 ft<sup>3</sup>/s, Oct. 14, Dec. 5, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24 ft<sup>3</sup>/s, May 11, gage height, 0.79 ft; minimum daily, 11 ft<sup>3</sup>/s, on many days from November through January.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	15	12	11	13	13	14	15	15	14	14	14
2	15	13	12	12	13	13	14	16	15	14	14	14
3	15	11	12	12	13	13	14	16	15	14	14	14
4	15	11	12	12	13	13	13	19	15	14	14	14
5	15	11	12	12	13	13	13	21	15	14	14	14
6	15	11	12	12	13	13	13	18	15	14	14	17
7	15	11	13	13	13	13	13	14	15	14	14	17
8	15	11	13	13	13	13	13	14	15	14	14	15
9	15	11	13	13	13	13	13	14	14	14	14	15
10	15	11	13	13	13	13	13	14	15	14	14	14
11	15	11	13	13	13	13	13	14	14	14	14	14
12	15	11	13	13	13	13	13	14	14	14	14	14
13	15	11	12	13	13	13	14	14	14	14	14	14
14	15	11	12	13	13	13	14	14	14	14	14	14
15	15	11	12	13	13	13	15	14	14	14	14	14
16	15	11	12	13	13	13	15	14	14	14	14	14
17	15	11	12	13	13	13	15	14	14	13	14	14
18	15	12	12	13	13	13	19	15	14	13	14	14
19	15	12	11	13	13	13	17	15	14	13	14	14
20	15	12	11	13	13	13	15	14	14	13	14	14
21	15	12	11	13	13	13	15	14	14	13	14	14
22	15	12	11	13	13	13	15	14	14	13	14	14
23	15	12	11	13	13	13	15	14	14	14	14	14
24	15	12	11	13	13	13	15	14	14	15	14	14
25	15	12	11	13	13	13	16	14	14	14	14	14
26	15	12	11	13	13	13	16	15	14	14	14	14
27	15	12	11	13	13	13	15	15	14	14	14	14
28	15	12	11	13	13	13	14	15	14	14	14	14
29	15	12	11	13	13	13	14	15	14	14	14	14
30	15	12	11	13	---	13	15	15	14	14	14	14
31	15	---	11	13	---	13	---	15	---	14	14	---
TOTAL	465	349	365	396	377	403	433	463	429	429	434	428
MEAN	15.0	11.6	11.8	12.8	13.0	13.0	14.4	14.9	14.3	13.8	14.0	14.3
MAX	15	15	13	13	13	13	19	21	15	15	14	17
MIN	15	11	11	11	13	13	13	14	14	13	14	14
AC-FT	922	692	724	785	748	799	859	918	851	851	861	849

CAL YR 1987 TOTAL 5056 MEAN 13.9 MAX 16 MIN 11 AC-FT 10030  
WTR YR 1988 TOTAL 4971 MEAN 13.6 MAX 21 MIN 11 AC-FT 9860

## SAN JOAQUIN RIVER BASIN

## 11235500 WARD TUNNEL OUTLET AT HUNTINGTON LAKE, CA

LOCATION.--Lat 37°15'25", long 119°09'38", in SE 1/4 SW 1/4 sec.5, T.8 S., R.26 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, at tunnel outlet at east end of Huntington Lake, 0.9 mi east of Lakeshore Post Office, and 6 mi northeast of Big Creek.

PERIOD OF RECORD.--October 1927 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1960, published as Ward tunnel at outlet.

GAGE.--Pressure-differential recorder to record discharge through penstock. November 1927 to May 23, 1956, water-stage recorder at datum 6,999.00 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.). May 24, 1956, to Sept. 30, 1968, no recorder, see REMARKS below.

REMARKS.--Daily discharge for the period May 24, 1956, to Sept. 30, 1968, computed as the sum of Ward tunnel at intake, Mono-Bear conduit, Camp Creek conduit, and corrected for change in contents of Portal Forebay. Tunnel diverts from Florence Lake to Huntington Lake via Portal Powerplant, receives diversions from Bear and Mono Creeks and at times from several other small tributaries of South Fork San Joaquin River. See record for station 11229500 Ward tunnel intake at Florence Lake. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--61 years, 496 ft<sup>3</sup>/s, 359,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,080 ft<sup>3</sup>/s, June 21, 1935; no flow at times many years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	186	125	89	89	139	392	539	646	684	662	447
2	171	183	136	64	64	114	367	456	672	692	664	505
3	147	189	145	81	81	150	393	457	683	696	487	235
4	137	150	137	78	78	153	445	496	701	689	529	435
5	87	199	137	86	86	156	528	435	640	705	555	435
6	73	200	135	64	64	147	656	420	609	710	554	455
7	162	179	145	83	83	133	681	400	611	710	526	404
8	175	192	148	89	89	161	696	388	650	689	520	432
9	.0	181	164	97	97	161	696	399	689	686	505	387
10	175	176	147	106	106	161	697	410	674	680	513	403
11	171	164	80	114	114	117	685	643	709	688	511	389
12	24	167	64	113	113	128	687	649	708	668	546	309
13	125	173	58	122	122	114	687	680	708	676	552	290
14	35	186	90	122	122	106	661	699	712	665	519	303
15	125	157	76	111	111	111	673	698	709	676	525	338
16	86	177	82	113	113	103	682	641	704	682	488	249
17	187	173	.0	117	117	117	668	593	700	689	479	407
18	140	195	105	94	94	97	662	607	686	670	485	318
19	191	174	.0	72	72	136	677	527	690	687	495	288
20	.0	183	124	103	133	156	509	562	690	683	473	288
21	.0	211	.0	97	103	234	515	647	653	690	473	312
22	233	189	124	106	114	181	491	635	675	687	451	331
23	131	153	19	89	125	214	398	688	673	695	420	305
24	210	172	136	114	124	281	427	687	680	716	422	288
25	118	150	.0	122	114	311	434	667	689	694	400	290
26	118	134	28	114	139	409	511	618	688	722	475	287
27	125	151	64	131	153	514	531	588	677	734	450	263
28	153	134	91	67	158	533	514	573	666	717	409	262
29	148	136	78	147	144	447	520	613	674	708	436	240
30	96	133	58	75	---	475	547	628	664	709	463	261
31	228	---	133	92	---	459	---	585	---	692	475	---
TOTAL	3936.0	5147	2829.0	3072	3122	6718	17030	17628	20330	21489	15462	10156
MEAN	127	172	91.3	99.1	108	217	568	569	678	693	499	339
MAX	233	211	164	147	158	533	697	699	712	734	664	505
MIN	.00	133	.00	64	64	97	367	388	609	665	400	235
AC-FT	7810	10210	5610	6090	6190	13330	33780	34970	40320	42620	30670	20140

CAL YR 1987 TOTAL 146005.0 MEAN 400 MAX 1360 MIN .00 AC-FT 289600  
WTR YR 1988 TOTAL 126919.0 MEAN 347 MAX 734 MIN .00 AC-FT 251700

## SAN JOAQUIN RIVER BASIN

## 11236000 HUNTINGTON LAKE NEAR BIG CREEK, CA

LOCATION.--Lat 37°14'03", long 119°12'41", in SW 1/4 sec.14, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, in gate tower of dam 1 on Big Creek, 2 mi northeast of town of Big Creek.  
DRAINAGE AREA.--80.5 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1913 to current year. Prior to October 1926, monthly contents only, published in WSP 1315-A; 1926-31, published in WSP 721. Maximum and minimum daily contents (water years 1913-39) were summarized in WSP 881. Prior to 1960, maximum and minimum daily contents were published.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.). Prior to June 19, 1920, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by four dams; storage began Apr. 11, 1913. Dams were raised in 1914 and again in 1917. Usable capacity, 89,166 acre-ft between elevations 6,819.90 ft, invert of outlet tunnel No. 1, and 6,950.00 ft, spillway crest at dam 1, NGVD. Additional storage of 600 acre-ft is not available for release. Huntington-Shaver conduit (station 11239000) has diverted water from Huntington Lake to Shaver Lake since Apr. 21, 1928. Water is used for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Records not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,491 acre-ft, May 31, 1926, elevation, 6,950.92 ft; minimum, 2,103 acre-ft, Nov. 6, 1937, elevation, 6,838.53 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 87,679 acre-ft, Aug. 10, 11, elevation, 6,948.96 ft; minimum, 34,307 acre-ft, Mar. 24, elevation, 6,903.85 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)									
(Provided by Southern California Edison Co., from table dated Sept. 24, 1964)									
6,819.90	0	6,835	1,552	6,870	11,293	6,920	50,812		
6,820	8	6,840	2,354	6,880	16,370	6,930	62,555		
6,822	142	6,845	3,324	6,890	22,882	6,940	75,344		
6,825	382	6,850	4,480	6,900	30,861	6,950	89,166		
6,830	899	6,860	7,427	6,910	40,216	6,951	90,606		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84196	79996	66638	56782	48566	40246	36699	52243	68235	81215	86275	87027
2	83972	79832	66612	56994	48163	40017	36757	52379	68566	81532	86757	87112
3	83763	79586	66600	56947	47717	39808	36891	52527	68885	81931	86870	86658
4	83525	79259	66688	56219	47294	39391	37091	52640	69335	82263	86970	86658
5	83206	79110	66676	55319	46885	39183	37525	52799	69707	82540	87154	86856
6	82818	79015	66726	55030	46594	39065	38437	52879	69989	83012	87367	86729
7	82637	79001	66600	55145	46561	38898	39421	52788	70338	83261	87552	86714
8	82485	79056	66486	54810	46594	38741	40387	52708	70506	83442	87580	86629
9	81959	79110	66360	54717	46091	38575	41436	52708	70778	83469	87622	86558
10	81876	79069	66234	55169	45071	38427	42549	52845	71179	83581	87679	86643
11	81794	79056	65883	54219	44681	38183	43687	53657	71608	83539	87679	86544
12	81298	79015	65482	55145	44312	37863	44744	54555	72143	83567	87622	86317
13	81256	78479	65031	54300	44197	37428	45526	55821	72521	83721	87622	86162
14	80871	74496	64559	54578	43916	37187	46443	57042	72901	83833	87651	85965
15	80802	72352	64124	54242	43656	37235	47338	58226	73335	83944	87637	85768
16	80624	71451	63628	54323	43395	37225	48033	59374	73782	84238	87580	85388
17	80679	70454	63061	54219	43116	36489	48447	60240	74297	84448	87466	85331
18	80761	70105	62567	54127	42879	35751	48775	61150	74854	84490	87339	85078
19	80843	70105	62017	53726	42456	35412	49833	61956	75397	84546	87197	84797
20	80501	69039	61552	53290	42036	35142	50156	62740	76078	84615	87112	84504
21	80201	69091	60895	52777	41741	34956	50478	63875	76612	84657	87055	84280
22	80406	68273	60519	52413	41660	34602	50679	64807	77096	84657	86984	84098
23	80406	67181	59831	51993	41782	34389	50634	65432	77567	84965	86970	83833
24	80337	67168	59542	51610	41812	34307	50667	66071	78025	85177	86927	83483
25	80337	67092	58917	51104	41263	34398	50756	66903	78622	85345	86970	83095
26	80283	67054	58393	50790	40850	34649	51037	67105	79123	85416	87083	82679
27	80242	67080	57917	50334	40699	35067	51228	67332	79668	85444	87027	82263
28	80214	67029	57667	49900	40578	35525	51430	67294	80023	85472	86998	81766
29	80255	66966	57360	49623	40407	35704	51655	67636	80665	85557	87097	81518
30	80037	66827	56983	49392	---	35704	52027	67802	80954	85683	87027	81243
31	80091	---	56900	48918	---	36508	---	68146	---	85838	86956	---
MAX	84196	79996	66726	56994	48566	40246	52027	68146	80954	85838	87679	87112
MIN	80037	66827	56900	48918	40407	34307	36699	52243	68235	81215	86275	81243
a	6943.52	6933.43	6925.30	6918.29	6910.19	6906.20	6921.08	6934.47	6944.15	6947.66	6948.45	6944.36
b	-4371	-13264	-9927	-7982	-8511	-3899	+15519	+16119	+12808	+4884	+1118	-5713

CAL YR 1987 b -30226

WTR YR 1988 b -3219

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11237000 BIG CREEK BELOW HUNTINGTON LAKE, CA

LOCATION.--Lat 37°13'19", long 119°12'43", in SW 1/4 NW 1/4 sec. 23, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 500 ft upstream from Grouse Creek, 0.8 mi south of main dam of Huntington Lake, and 2.1 mi northeast of town of Big Creek.

DRAINAGE AREA.--81.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder with Parshall flume control. Elevation of gage is 6,600 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 8 to Feb. 27, Feb. 29 to Apr. 11. Flow regulated by Huntington Lake with releases for fishery maintenance. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8.7 ft<sup>3</sup>/s, Sept. 27, 1988, gage height, 2.70 ft; minimum daily, 1.9 ft<sup>3</sup>/s, Mar. 12-21, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8.7 ft<sup>3</sup>/s, Sept. 27, gage height, 2.70 ft; minimum daily, 1.9 ft<sup>3</sup>/s, Mar. 12-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	3.1	2.6	2.5	2.1	2.1	2.1	3.9	2.9	2.7	3.0	3.0
2	2.7	3.3	2.6	2.5	2.1	2.1	2.1	3.9	2.9	2.7	2.9	2.9
3	2.7	2.9	2.6	2.5	2.1	2.1	2.1	3.9	2.9	2.8	2.9	2.9
4	2.7	2.8	2.6	2.6	2.1	2.1	2.1	3.9	2.9	2.8	2.9	2.9
5	2.7	2.8	2.6	3.7	2.1	2.1	2.1	3.9	2.9	2.9	2.9	2.9
6	2.6	3.0	3.1	2.9	2.1	2.1	2.1	3.5	2.9	3.0	2.9	2.9
7	2.6	2.8	2.9	2.7	2.1	2.1	2.1	3.0	2.9	3.0	2.9	2.9
8	2.6	2.8	2.7	2.7	2.1	2.0	2.1	3.0	2.9	2.9	2.9	2.9
9	2.7	2.8	2.7	2.6	2.1	2.0	2.1	2.9	2.8	3.0	2.9	2.9
10	2.7	2.7	2.7	2.6	2.1	2.0	2.2	2.9	2.8	2.9	2.9	3.0
11	2.6	2.7	2.7	2.6	2.0	2.0	2.2	2.8	2.8	2.9	2.9	3.0
12	2.6	2.6	2.6	2.5	2.0	1.9	2.8	2.8	2.8	2.9	2.9	2.9
13	2.6	2.7	2.6	2.5	2.0	1.9	3.6	2.8	2.8	2.9	3.0	2.9
14	2.6	2.7	2.6	2.4	2.0	1.9	4.0	2.8	2.8	2.9	2.9	2.9
15	2.6	2.6	2.6	2.4	2.0	1.9	3.9	2.8	2.7	2.9	2.9	2.9
16	2.6	2.6	2.6	2.4	2.0	1.9	3.8	2.8	2.6	2.9	3.0	2.9
17	2.6	2.8	2.6	2.3	2.0	1.9	3.8	2.8	2.5	2.9	3.0	2.9
18	2.6	2.6	2.6	2.3	2.0	1.9	3.8	2.8	2.6	3.0	3.0	2.9
19	2.6	2.6	2.6	2.3	2.0	1.9	3.8	2.8	2.6	3.0	3.0	2.8
20	2.6	2.6	2.6	2.3	2.0	1.9	3.8	2.7	2.7	3.0	3.0	5.2
21	2.6	2.6	2.6	2.3	2.0	1.9	3.9	2.7	2.6	3.0	3.0	7.6
22	2.8	2.6	2.7	2.3	2.0	2.0	3.8	2.7	2.6	2.9	2.9	7.2
23	2.7	2.6	2.6	2.2	2.1	2.0	3.8	2.7	2.6	3.1	2.9	5.3
24	2.7	2.6	2.6	2.2	2.1	2.0	3.8	2.7	2.6	3.1	2.9	3.1
25	2.7	2.6	2.5	2.2	2.1	2.0	3.9	2.8	2.7	3.0	2.9	3.0
26	2.7	2.6	2.4	2.2	2.1	2.1	4.1	2.8	2.7	3.0	2.9	5.9
27	2.8	2.6	2.5	2.2	2.1	2.1	4.1	2.8	2.7	3.0	2.9	8.5
28	2.9	2.6	2.5	2.2	2.5	2.1	4.0	3.0	2.6	3.0	2.9	8.3
29	3.1	2.6	2.5	2.2	2.1	2.1	3.9	3.2	2.6	3.0	2.9	6.4
30	2.8	2.6	2.5	2.1	---	2.1	3.9	3.0	2.6	3.0	2.9	2.9
31	2.8	---	2.5	2.1	---	2.1	---	2.9	---	2.9	2.9	---
TOTAL	83.3	81.5	81.1	75.5	60.1	62.3	95.8	94.0	82.0	91.0	90.7	118.7
MEAN	2.69	2.72	2.62	2.44	2.07	2.01	3.19	3.03	2.73	2.94	2.93	3.96
MAX	3.1	3.3	3.1	3.7	2.5	2.1	4.1	3.9	2.9	3.1	3.0	8.5
MIN	2.6	2.6	2.4	2.1	2.0	1.9	2.1	2.7	2.5	2.7	2.9	2.8
AC-FT	165	162	161	150	119	124	190	186	163	180	180	235

CAL YR 1987 TOTAL 982.7 MEAN 2.69 MAX 4.0 MIN 2.3 AC-FT 1950  
WTR YR 1988 TOTAL 1016.0 MEAN 2.78 MAX 8.5 MIN 1.9 AC-FT 2020

## SAN JOAQUIN RIVER BASIN

11237500 PITMAN CREEK BELOW TAMARACK CREEK, CA

LOCATION.--Lat 37°11'54", long 119°12'48", in NW 1/4 NW 1/4 sec.35, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 250 ft upstream from Huntington-Shaver conduit tunnel, 0.8 mi downstream from confluence of Tamarack and South Fork Tamarack Creeks, 1.4 mi upstream from mouth, and 1.9 mi east of town of Big Creek.

DRAINAGE AREA.--22.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1927 to current year. Records for water year 1928 incomplete, yearly estimate published in WSP 1315-A.

REVISED RECORDS.--WSP 931: 1940. WSP 1315-A: 1944. WSP 1395: 1928-29, 1938. WSP 1515: 1929.

GAGE.--Water-stage recorder, Parshall flume, and concrete control. Elevation of gage is 7,005 ft above National Geodetic Vertical Datum of 1929, from Southern California Edison Co. contour map. Prior to Sept. 29, 1940, at site 10 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 14-20, Sept. 1-14, and periods of ice effect, Dec. 22-25, 30, 31, Jan. 5-7, 18-21, Jan. 30 to Feb. 7, Mar. 11-14. No diversion above station; practically all flow is diverted below station to Huntington-Shaver conduit. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--61 years, 41.7 ft<sup>3</sup>/s, 30,210 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,670 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.20 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 10.77 ft; no flow Oct. 15-18, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 143 ft<sup>3</sup>/s, May 13, gage height, 4.84 ft; minimum daily, 0.10 ft<sup>3</sup>/s, Oct. 3-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	5.3	2.4	3.4	6.0	20	57	80	40	7.3	.91	.39
2	.11	7.1	2.4	3.4	6.3	20	61	74	33	6.8	.84	.35
3	.10	3.8	2.3	4.1	5.7	21	65	80	30	6.6	.76	.31
4	.10	2.5	2.4	5.2	6.5	22	79	79	28	6.4	.72	.29
5	.10	2.4	2.5	4.8	7.1	23	90	71	27	6.1	.69	.26
6	.10	3.8	4.4	4.7	7.5	24	95	65	27	5.7	.68	.22
7	.12	4.0	8.7	6.5	7.8	24	96	59	27	4.8	.71	.19
8	.13	3.3	8.0	8.5	7.9	27	91	59	24	4.3	.63	.15
9	.14	3.0	5.9	8.1	8.2	29	91	65	22	3.9	.54	.13
10	.15	2.9	6.2	7.8	8.8	28	98	79	21	3.6	.48	.12
11	.15	2.7	5.6	7.6	10	26	97	103	20	3.2	.46	.15
12	.15	2.6	4.3	7.2	10	22	90	116	19	3.0	.41	.16
13	.16	2.8	3.2	6.8	12	18	83	123	18	2.8	.43	.14
14	.16	3.0	2.3	6.8	12	20	90	116	16	2.6	.43	.12
15	.15	2.5	2.0	6.8	12	21	74	111	15	2.5	.39	.13
16	.15	2.3	2.7	6.8	13	20	67	100	14	2.4	.37	.12
17	.15	4.6	3.3	7.3	13	21	75	81	14	2.2	.34	.12
18	.15	5.5	3.3	5.3	12	24	75	72	13	1.8	.30	.15
19	.15	3.8	3.2	5.1	12	28	66	71	13	1.6	.27	.15
20	.15	3.9	3.1	6.0	12	34	56	69	19	1.6	.24	.16
21	.15	3.7	3.0	6.6	14	36	63	64	16	1.3	.24	.19
22	.35	3.4	2.8	6.8	14	37	53	59	12	1.3	.23	.22
23	.38	2.9	2.6	7.1	16	45	48	52	11	2.7	.21	.21
24	.36	2.7	2.8	7.6	15	53	54	48	10	6.6	.19	.18
25	.34	2.5	3.0	7.9	16	67	76	44	11	2.9	.21	.19
26	.32	2.2	3.1	8.2	17	78	93	40	12	1.9	.29	.18
27	.30	2.1	3.0	8.2	20	77	101	35	9.7	1.6	.89	.16
28	1.3	1.9	2.9	8.2	22	69	106	33	8.5	1.3	.59	.16
29	4.9	1.9	3.3	8.2	22	66	107	66	8.5	1.2	.46	.15
30	2.1	1.9	2.8	7.0	---	63	102	47	7.9	1.1	.38	.14
31	1.6	---	3.0	5.6	---	57	---	43	---	.99	.35	---
TOTAL	14.78	97.0	110.5	203.6	345.8	1120	2399	2204	546.6	102.08	14.64	5.58
MEAN	.48	3.23	3.56	6.57	11.9	36.1	80.0	71.1	18.2	3.29	.47	.19
MAX	4.9	7.1	8.7	8.5	22	78	107	123	40	7.3	.91	.39
MIN	.10	1.9	2.0	3.4	5.7	18	48	33	7.9	.99	.19	.12
AC-FT	29	192	219	404	686	2220	4760	4370	1080	202	29	11

CAL YR 1987 TOTAL 5388.41 MEAN 14.8 MAX 130 MIN .10 AC-FT 10690  
WTR YR 1988 TOTAL 7163.60 MEAN 19.6 MAX 123 MIN .10 AC-FT 14210

## SAN JOAQUIN RIVER BASIN

## 11237600 PITMAN CREEK SHAFT BELOW TAMARACK CREEK, CA

LOCATION.--Lat 37°11'48", long 119°12'42", in NW 1/4 NW 1/4 sec.35, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on left bank at Huntington-Shaver conduit tunnel, 0.8 mi downstream from confluence of Tamarack and South Fork Tamarack Creeks, 1.3 mi north of Tamarack Mountain, and 1.9 mi east of town of Big Creek.

DRAINAGE AREA.--23.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Discharge computed as difference between Pitman Creek below Tamarack Creek (station 11237500) and Pitman Creek near Tamarack Mountain (station 11237700). Elevation of gage is 6,980 ft above National Geodetic Vertical Datum, from topographic map.

REMARKS.--Flow consists of diversion into Huntington-Shaver conduit for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 128 ft<sup>3</sup>/s, Apr. 25, 26, 1987; no flow for many days each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	5.0	2.0	1.7	4.3	18	55	78	39	6.4	.00	.00
2	.00	6.8	2.1	1.7	4.6	18	60	72	32	5.9	.00	.00
3	.00	3.6	2.0	2.4	4.0	19	64	78	29	5.7	.00	.00
4	.00	2.1	2.1	3.5	4.8	20	78	77	27	5.5	.00	.00
5	.00	1.8	2.2	3.0	5.5	21	89	69	26	5.2	.00	.00
6	.00	3.2	4.0	2.9	5.8	22	94	63	26	4.8	.00	.00
7	.00	3.4	8.4	4.7	6.1	22	95	57	26	3.9	.00	.00
8	.00	2.7	7.7	6.7	6.2	25	90	57	23	3.4	.00	.00
9	.00	2.4	5.2	6.3	6.5	27	90	63	21	3.0	.00	.00
10	.00	2.3	4.3	6.0	7.1	26	97	77	20	2.7	.00	.00
11	.00	2.1	3.8	5.8	8.3	24	96	100	19	2.3	.00	.00
12	.00	2.0	2.7	5.4	8.3	20	89	113	18	2.1	.00	.00
13	.00	2.2	1.7	5.0	10	16	82	120	17	1.9	.00	.00
14	.00	2.4	1.0	5.0	10	18	89	113	15	1.7	.00	.00
15	.00	1.9	.50	5.0	10	19	73	108	14	1.6	.00	.00
16	.00	1.7	.90	5.0	11	18	66	97	13	1.5	.00	.00
17	.00	4.1	1.6	5.5	11	19	74	79	13	1.3	.00	.00
18	.00	5.1	1.6	3.5	10	22	74	70	12	.50	.00	.00
19	.00	3.4	1.4	3.3	10	26	65	69	12	.00	.00	.00
20	.00	3.5	1.3	4.2	10	32	55	67	18	.10	.00	.00
21	.00	3.3	.90	4.8	12	34	62	62	15	.00	.00	.00
22	.00	3.0	1.0	5.0	12	35	52	57	11	.00	.00	.00
23	.00	2.5	.90	5.3	14	43	46	50	10	1.0	.00	.00
24	.00	2.3	1.1	5.8	13	51	51	46	9.1	3.7	.00	.00
25	.00	2.1	1.3	6.1	14	65	74	42	10	.40	.00	.00
26	.00	1.8	1.4	6.4	14	76	91	38	11	.00	.00	.00
27	.00	1.7	1.3	6.4	17	75	98	33	8.7	.00	.00	.00
28	.99	1.5	1.2	6.4	19	67	103	32	7.5	.00	.00	.00
29	4.6	1.5	1.6	6.4	20	64	104	65	7.6	.00	.00	.00
30	1.8	1.5	1.1	5.2	---	61	100	46	7.0	.00	.00	.00
31	1.3	---	1.3	3.8	---	55	---	42	---	.00	.00	---
TOTAL	8.69	82.9	69.60	148.2	288.5	1058	2356	2140	516.9	64.60	0.00	0.00
MEAN	.28	2.76	2.25	4.78	9.95	34.1	78.5	69.0	17.2	2.08	.00	.00
MAX	4.6	6.8	8.4	6.7	20	76	104	120	39	6.4	.00	.00
MIN	.00	1.5	.50	1.7	4.0	16	46	32	7.0	.00	.00	.00
AC-FT	17	164	138	294	572	2100	4670	4240	1030	128	.0	.0

CAL YR 1987 TOTAL 5043.08 MEAN 13.8 MAX 128 MIN .00 AC-FT 10000  
WTR YR 1988 TOTAL 6733.39 MEAN 18.4 MAX 120 MIN .00 AC-FT 13360

## SAN JOAQUIN RIVER BASIN

11237700 PITMAN CREEK NEAR TAMARACK MOUNTAIN, CA

LOCATION.--Lat 37°12'00", long 119°12'55", in NW 1/4 NW 1/4 sec.35, T.8 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 100 ft downstream from Huntington-Shaver conduit tunnel, 0.9 mi downstream from confluence of Tamarack and South Fork Tamarack Creeks, 1.3 mi upstream from mouth, and 1.8 mi east of town of Big Creek.

DRAINAGE AREA.--23.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and 90° V-notch control. Elevation of gage is 6,970 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: July 23-25 and periods of ice effect, Dec. 10-14, Mar. 4-31. Entire flow except for fishery maintenance is diverted above station at Pitman Creek Shaft below Tamarack Creek (station 11237600) to Huntington-Shaver conduit. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 3.2 ft<sup>3</sup>/s, Feb. 26, 1988; minimum daily, 0.05 ft<sup>3</sup>/s, July 28, 1987.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.34	.36	1.7	1.7	2.2	1.8	2.1	1.2	.93	.91	.39
2	.11	.31	.34	1.7	1.7	2.1	1.3	2.4	1.2	.93	.84	.35
3	.10	.24	.34	1.7	1.7	1.9	1.3	2.4	1.2	.93	.76	.31
4	.10	.38	.34	1.7	1.7	1.9	1.4	2.4	1.2	.92	.72	.29
5	.10	.59	.34	1.8	1.6	1.9	1.0	2.4	1.2	.92	.69	.26
6	.10	.60	.38	1.8	1.7	1.9	.89	2.3	1.1	.92	.68	.22
7	.12	.59	.34	1.8	1.7	1.9	.75	2.3	1.1	.91	.71	.19
8	.13	.59	.30	1.8	1.7	1.9	.70	2.3	1.1	.88	.63	.15
9	.14	.59	.73	1.8	1.7	1.9	.64	2.4	1.1	.88	.54	.13
10	.15	.56	1.9	1.8	1.7	2.0	.58	2.4	1.1	.88	.48	.12
11	.15	.56	1.8	1.8	1.7	2.0	.73	2.5	1.1	.88	.46	.15
12	.15	.56	1.6	1.8	1.7	2.0	.83	2.6	1.1	.88	.41	.16
13	.16	.57	1.5	1.8	1.7	2.0	.84	2.6	1.1	.88	.43	.14
14	.16	.56	1.3	1.8	1.8	2.0	.85	2.6	1.0	.88	.43	.12
15	.15	.56	1.5	1.8	1.8	2.0	.75	2.5	1.0	.88	.39	.13
16	.15	.63	1.8	1.8	1.8	2.0	.59	2.5	1.0	.88	.37	.12
17	.15	.53	1.7	1.8	1.8	2.0	.59	2.4	1.0	.88	.34	.12
18	.15	.40	1.7	1.8	1.8	2.0	.56	2.4	.99	1.3	.30	.15
19	.15	.38	1.8	1.8	1.8	2.0	.76	2.4	.95	1.6	.27	.15
20	.15	.37	1.8	1.8	1.8	2.0	.59	2.3	.99	1.5	.24	.16
21	.15	.37	2.1	1.8	1.8	2.0	1.2	2.3	.99	1.3	.24	.19
22	.35	.35	1.8	1.8	1.8	2.0	1.2	2.3	.95	1.3	.23	.22
23	.38	.35	1.7	1.8	1.8	2.0	2.2	2.2	.95	1.7	.21	.21
24	.36	.36	1.7	1.8	1.8	2.0	2.6	2.2	.92	2.9	.19	.18
25	.34	.35	1.7	1.8	2.3	2.1	2.3	2.2	.95	2.5	.21	.19
26	.32	.39	1.7	1.8	3.2	2.1	2.4	2.2	.92	1.9	.29	.18
27	.30	.37	1.7	1.8	3.0	2.1	2.5	1.7	.95	1.6	.89	.16
28	.31	.36	1.7	1.8	2.7	2.1	2.5	1.3	.95	1.3	.59	.16
29	.31	.36	1.7	1.8	2.4	2.1	2.5	1.3	.92	1.2	.46	.15
30	.25	.37	1.7	1.8	---	2.1	2.5	1.2	.92	1.1	.38	.14
31	.25	---	1.7	1.8	---	2.1	---	1.2	---	.99	.35	---
TOTAL	6.00	13.54	41.07	55.4	55.4	62.3	39.35	68.3	31.15	37.45	14.64	5.59
MEAN	.19	.45	1.32	1.79	1.91	2.01	1.31	2.20	1.04	1.21	.47	.19
MAX	.38	.63	2.1	1.8	3.2	2.2	2.6	2.6	1.2	2.9	.91	.39
MIN	.10	.24	.30	1.7	1.6	1.9	.56	1.2	.92	.88	.19	.12
AC-FT	12	27	81	110	110	124	78	135	62	74	29	11

CAL YR 1987 TOTAL 345.24 MEAN 0.95 MAX 2.1 MIN .05 AC-FT 685  
WTR YR 1988 TOTAL 430.19 MEAN 1.18 MAX 3.2 MIN .10 AC-FT 853

## SAN JOAQUIN RIVER BASIN

11238250 EASTWOOD POWERPLANT ABOVE SHAVER LAKE, NEAR BIG CREEK, CA

LOCATION.--Lat 37°07'55", long 119°15'39", in NE 1/4 SW 1/4 sec.20, T.9 S., R.25 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, 0.25 mi upstream from Shaver Lake and 5.0 mi south of Big Creek.

PERIOD OF RECORD.--October 1987 to September 1988.

GAGE.--Acoustic flow meter in powerplant penstock. Elevation of gage is 5,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharge. Flow is diverted from Huntington Lake (station 11236000) to Balsam Meadows Forebay, thence through a tunnel to the powerplant. Water is returned to Shaver Lake 0.25 mi downstream for further power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,360 ft<sup>3</sup>/s, May 29, 1988; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	2	381	468	432	444	577	1050	542	447	457
2	0	0	0	247	453	436	458	570	793	427	484	449
3	0	0	90	0	412	459	448	652	900	463	423	500
4	0	0	347	643	395	452	589	647	570	292	466	473
5	0	0	267	528	399	462	593	428	420	396	556	473
6	0	0	380	583	387	438	437	655	630	430	0	230
7	0	0	284	272	399	416	457	567	517	385	769	353
8	0	0	312	310	341	457	581	599	844	447	682	309
9	0	0	280	294	0	480	589	489	639	856	477	476
10	0	0	363	0	584	407	773	738	597	610	453	577
11	0	0	284	407	431	320	613	690	691	519	443	480
12	0	0	398	259	442	429	404	680	676	426	438	514
13	0	0	378	280	464	352	556	691	809	441	114	510
14	0	0	401	251	373	455	633	672	512	362	625	481
15	0	0	433	265	400	426	502	663	660	410	646	477
16	0	0	365	281	458	644	507	611	608	407	475	517
17	0	0	737	867	475	299	602	563	657	500	502	456
18	0	0	458	360	427	735	606	698	675	568	481	505
19	0	0	572	275	454	527	602	644	313	509	491	536
20	0	0	458	368	367	598	696	376	394	421	459	597
21	0	0	544	452	419	642	168	698	483	558	458	465
22	0	0	408	313	475	255	866	785	511	509	470	460
23	0	0	557	306	411	539	455	666	507	525	472	512
24	0	0	414	553	341	417	565	533	565	756	510	501
25	0	0	429	426	200	566	611	668	510	518	457	502
26	0	0	500	476	455	444	612	583	479	547	470	510
27	0	0	498	344	435	424	610	654	485	544	0	495
28	0	0	397	377	485	437	649	890	395	539	0	598
29	0	0	361	534	428	424	628	1360	450	554	378	478
30	0	0	484	582	---	638	649	932	477	518	537	431
31	0	---	233	467	---	422	---	974	---	446	453	---
TOTAL	0	0	11634	11701	11778	14432	16903	20953	17817	15425	13636	14322
MEAN	.00	.00	375	377	406	466	563	676	594	498	440	477
MAX	0	0	737	867	584	735	866	1360	1050	856	769	598
MIN	0	0	0	0	0	255	168	376	313	292	0	230
AC-FT	.0	.0	23080	23210	23360	28630	33530	41560	35340	30600	27050	28410

WTR YR 1988 TOTAL 148601 MEAN 406 MAX 1360 MIN 0 AC-FT 294800



## SAN JOAQUIN RIVER BASIN

11238500 BIG CREEK NEAR MOUTH, NEAR BIG CREEK, CA

LOCATION.--Lat 37°12'28", long 119°19'13", in SE 1/4 NW 1/4 sec.26, T.8 S., R.24 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 0.6 mi upstream from mouth and 3.9 mi west of town of Big Creek.

DRAINAGE AREA.--131 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,640 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Huntington Lake (station 11236000) and diversions for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35 ft<sup>3</sup>/s, Jan. 5, 1988, gage height, 1.83 ft; minimum daily, 1.3 ft<sup>3</sup>/s, Nov. 17, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35 ft<sup>3</sup>/s, Jan. 5, gage height, 1.83 ft; minimum daily, 1.3 ft<sup>3</sup>/s, Nov. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	2.3	1.5	1.6	1.7	3.1	2.5	2.7	2.8	2.4	2.4	2.2
2	2.4	2.8	1.5	1.8	1.7	2.6	2.5	2.7	2.9	2.5	2.4	2.2
3	2.4	2.3	1.5	2.3	1.6	2.1	2.5	2.7	2.9	2.5	2.5	2.2
4	2.4	2.1	1.7	3.0	1.6	1.9	2.5	2.7	2.9	2.5	2.5	2.2
5	2.4	2.4	1.6	2.1	1.6	1.8	2.5	2.7	2.8	2.5	2.5	2.2
6	2.4	2.5	2.1	3.9	1.6	1.8	2.5	2.8	2.8	2.5	2.5	2.2
7	2.4	2.1	2.0	2.5	1.6	1.8	2.5	2.9	2.8	2.4	2.5	2.2
8	2.4	2.0	1.7	2.2	1.7	1.8	2.6	2.9	2.7	2.5	2.3	2.3
9	2.4	2.0	1.6	1.9	1.7	1.7	2.6	2.7	2.7	2.4	2.3	2.3
10	2.4	2.0	1.5	1.8	1.6	1.7	2.6	2.6	6.2	2.4	2.3	2.4
11	2.4	2.6	1.5	1.9	1.6	1.8	2.6	2.7	2.6	2.4	2.4	2.4
12	2.4	2.5	1.5	1.8	1.7	1.7	2.6	2.6	2.5	2.4	2.4	2.4
13	2.4	2.5	1.5	1.8	1.7	1.7	2.6	2.7	2.6	2.4	2.4	2.4
14	2.4	2.5	1.5	1.7	1.7	1.7	3.1	2.7	2.6	2.4	2.3	2.4
15	2.4	2.5	1.5	1.8	1.7	1.7	2.7	2.7	2.6	2.4	2.3	2.4
16	2.4	1.8	1.7	1.8	1.7	1.8	2.7	2.8	2.5	2.5	2.1	2.4
17	2.4	1.3	1.6	3.7	1.6	1.7	2.8	2.8	2.6	2.5	2.1	2.4
18	2.4	1.5	1.5	2.5	1.6	1.7	2.7	2.8	2.6	2.5	2.1	2.4
19	2.3	1.6	1.6	2.1	1.6	1.7	3.5	2.8	2.7	2.5	2.1	2.4
20	2.4	1.8	1.5	1.9	1.5	1.7	4.4	2.8	2.6	2.5	2.1	2.5
21	2.4	1.7	1.5	1.8	1.5	7.3	3.3	2.8	2.6	2.5	2.1	2.4
22	2.7	1.7	1.8	1.8	1.6	2.1	3.1	2.8	2.6	2.5	2.1	2.4
23	2.4	1.6	1.7	1.8	1.6	2.1	3.1	2.8	2.6	2.6	2.1	2.4
24	2.3	1.6	1.6	1.8	1.6	2.3	3.0	2.8	2.6	2.6	2.1	2.4
25	2.4	1.6	1.6	1.8	1.6	2.3	2.9	2.8	2.6	2.6	2.2	2.4
26	2.4	1.6	1.5	1.8	1.6	2.5	2.9	2.8	2.7	2.5	2.2	2.4
27	2.4	1.6	1.5	1.8	1.6	2.4	2.7	2.8	2.7	2.5	2.1	2.4
28	3.1	1.6	1.7	1.8	2.6	2.4	2.8	2.9	2.6	2.5	2.3	2.4
29	3.0	1.5	1.8	1.8	2.6	2.5	2.8	3.1	2.5	2.4	2.2	2.4
30	2.4	1.5	1.7	1.8	---	2.5	2.8	2.9	2.4	2.4	2.2	2.3
31	2.4	---	1.6	1.7	---	2.5	---	2.9	---	2.4	2.2	---
TOTAL	75.7	59.1	50.1	82.7	49.1	68.4	84.4	86.2	83.3	76.6	70.3	70.4
MEAN	2.44	1.97	1.62	2.67	1.69	2.21	2.81	2.78	2.78	2.47	2.27	2.35
MAX	3.1	2.8	2.1	2.1	2.6	7.3	4.4	3.1	6.2	2.6	2.5	2.5
MIN	2.3	1.3	1.5	1.6	1.5	1.7	2.5	2.6	2.4	2.4	2.1	2.2
AC-FT	150	117	99	164	97	136	167	171	165	152	139	140

CAL YR 1987 TOTAL 874.1 MEAN 2.39 MAX 9.7 MIN 1.3 AC-FT 1730  
WTR YR 1988 TOTAL 856.3 MEAN 2.34 MAX 21 MIN 1.3 AC-FT 1700

## SAN JOAQUIN RIVER BASIN

11239500 SHAVER LAKE NEAR BIG CREEK, CA

LOCATION.--Lat 37°08'40", long 119°18'08", in SE 1/4 sec.13, T.9 S., R.24 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, near center of dam on Stevenson Creek, 6 mi southwest of town of Big Creek.  
DRAINAGE AREA.--29.1 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1909 to current year. Prior to January 1927, monthly contents only, published in WSP 1315-A; January 1927 to September 1931, published in WSP 721. Maximum and minimum daily contents (water years 1928-39) summarized in WSP 881. Prior to 1960, maximum and minimum daily contents were published.

REVISED RECORDS.--WSP 1565: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.). Prior to Jan. 11, 1927, gage on rockfilled dam a short distance upstream at different datum.

REMARKS.--Storage began prior to 1905. Original lake formed by rockfilled dam, usable capacity, 5,500 acre-ft. Water diverted by Fresno Flume and Lumber Co.'s flumes Nos. 1 and 2 beginning prior to 1907 and discontinued July 7, 1920. Present lake formed by concrete-arch dam; dam completed Nov. 18, 1927. Usable capacity of present lake, 135,568 acre-ft between elevations 5,225 ft, trash-rack foundation, and 5,370.13 ft, crest of spillway, NGVD. Additional storage of 92 acre-ft is not available for release. Water is received from Pitman Creek (since Feb. 22, 1928) and Huntington Lake (since Apr. 21, 1928) through Huntington-Shaver conduit (station 11239000) and released for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 135,897 acre-ft, July 5, 1946, Aug. 4, 1978; maximum elevation, 5,370.28 ft, Aug. 4, 1978; minimum contents, 652 acre-ft, Mar. 7, 1942, elevation, 5,249.38 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 37,004 acre-ft, June 8, elevation, 5,312.19 ft; minimum, 7,993 acre-ft, Nov. 12, elevation, 5,277.68 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated Oct. 1, 1967)

5,225	0	5,250	700	5,280	9,189	5,330	60,942
5,230	42	5,255	1,254	5,290	15,598	5,340	76,741
5,235	97	5,260	2,070	5,300	24,004	5,350	94,568
5,240	191	5,265	3,206	5,310	34,455	5,360	114,220
5,245	379	5,270	4,748	5,320	46,797	5,371	137,476

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19296	11765	13512	12239	12148	15212	22661	28868	34421	34490	29477	23389
2	20053	11293	13120	12174	12246	15445	22825	29003	34674	34229	29119	23072
3	19799	10664	12858	11626	12272	15703	22981	29151	35031	34104	28651	22889
4	19561	10040	12603	11733	12298	16256	23230	29393	35203	33754	28258	22707
5	19329	9880	12454	12622	12311	16562	23482	29256	35548	33392	27938	22533
6	19097	10148	12337	12892	12330	16839	23585	29404	35969	33079	27338	22034
7	18882	9688	12022	12811	12408	17054	23687	29488	36415	32755	27389	21649
8	18716	9321	11714	12772	12376	17298	23818	29593	37004	32499	27206	21239
9	18409	9009	11348	12557	11846	17575	24147	29572	36814	32644	26842	21221
10	18231	8636	11360	12123	12098	17749	24566	29825	36567	32967	26433	21310
11	18028	8299	11287	12123	12142	17836	24824	29952	36579	33146	26033	21292
12	17646	7993	11275	11934	12200	18045	24862	30079	36766	33213	25699	21328
13	17448	10682	11189	11765	12233	18247	25474	30219	36861	33279	24871	21337
14	17266	12155	11110	11526	12265	18457	25933	30402	36614	33179	24671	21363
15	16977	13776	11079	11336	12311	18667	26073	30542	36532	33112	24871	21363
16	16654	14856	11000	11177	12408	19031	26073	30628	36391	33056	25006	21345
17	16354	14799	11299	11409	12531	19047	26293	30649	36438	33112	25113	21337
18	16047	15897	11324	11336	12609	19503	26532	30778	36462	32923	25191	21337
19	15695	15474	11576	11226	12932	19799	26752	30875	36133	32644	25289	21337
20	15350	15081	11727	11085	13026	20172	27054	30682	35840	32154	25299	21435
21	14965	14664	11997	11000	13167	20576	26752	30832	35618	31595	25347	21399
22	14656	15103	12161	10902	13362	20576	27176	31397	35376	31551	25367	21372
23	14258	15972	12428	10801	13512	20873	27176	31474	35123	31386	25396	21381
24	14019	15554	12343	11201	13491	21082	27298	31408	35134	31386	25465	21372
25	13734	15161	12311	11305	13416	21301	27592	31507	35088	31222	25484	21435
26	13403	15030	12369	11415	13630	21489	27897	31485	35100	31167	25543	21435
27	13100	14770	12415	11476	13887	21676	28320	31518	35031	31015	25162	21435
28	12872	14486	12408	11391	14421	21846	28517	31847	34869	30778	24766	21372
29	12622	14194	12369	11551	14792	21998	28651	32900	34766	30509	24338	21310
30	12278	13852	12421	11815	---	22360	28837	33471	34743	30208	24080	21363
31	12016	---	12220	12079	---	22488	---	33867	---	29836	23743	---
MAX	20053	15972	13512	12892	14792	22488	28837	33867	37004	34490	29477	23389
MIN	12016	7993	11000	10801	11846	15212	22661	28868	34421	29836	23743	21221
a	5284.80	5287.56	5285.12	5284.90	5288.89	5298.36	5304.86	5309.48	5310.25	5305.81	5299.72	5297.11
b	-7006	+1836	-1632	-141	+2713	+7696	+6349	+5030	+876	-4907	-6093	-2380

CAL YR 1987 b -53324

WTR YR 1988 b +2341

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11241500 STEVENSON CREEK AT SHAVER LAKE, CA

LOCATION.--Lat 37°08'41", long 119°18'27", in NE 1/4 SW 1/4 sec.13, T.9 S., R.24 E., Fresno County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,600 ft downstream from Shaver Lake dam, 2.6 mi north of town of Shaver Lake, and 5.1 mi southwest of town of Big Creek.

DRAINAGE AREA.--29.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 5,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow regulated by Shaver Lake (station 11239500), capacity 135,568 acre-ft. Practically all flow is diverted for power development in Big Creek powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 590 ft<sup>3</sup>/s, Nov. 10, 1987, gage height, 5.51 ft; minimum daily, 2.2 ft<sup>3</sup>/s, Dec. 3, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 590 ft<sup>3</sup>/s, Nov. 10, gage height, 5.51 ft; minimum daily, 2.2 ft<sup>3</sup>/s, Dec. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	3.8	2.5	2.8	2.9	3.5	3.5	3.8	3.7	3.6	3.3	3.3
2	3.4	4.0	2.3	2.8	2.9	3.3	3.5	3.8	3.7	3.6	3.3	3.4
3	3.4	3.8	2.2	2.9	2.9	3.2	3.5	3.7	3.7	3.6	3.3	3.3
4	3.4	3.7	2.3	3.2	2.9	3.1	3.5	3.7	3.7	3.5	3.3	3.3
5	3.4	3.8	2.3	5.0	2.9	3.2	3.5	3.8	3.7	3.5	3.3	3.4
6	3.4	4.0	2.5	3.4	2.9	3.1	3.5	3.8	3.7	3.5	3.3	3.4
7	3.5	3.7	2.4	3.1	2.9	3.2	3.5	3.8	3.7	3.5	3.3	3.3
8	3.5	3.7	3.2	3.0	2.9	3.1	3.5	3.8	3.7	3.5	3.3	3.3
9	3.5	3.7	3.8	3.0	2.9	3.1	3.5	3.8	3.7	3.5	3.3	3.3
10	3.5	11	3.0	2.9	2.9	3.1	3.5	3.8	3.7	3.5	3.3	3.3
11	3.5	4.0	2.4	3.0	2.9	3.1	3.5	3.7	3.7	3.6	3.3	3.3
12	3.5	4.0	2.4	2.9	2.9	3.1	3.5	3.6	3.7	3.6	3.3	3.3
13	3.5	3.9	2.4	2.9	2.9	3.1	3.6	3.6	3.7	3.6	3.3	3.4
14	3.5	3.6	2.4	2.9	2.9	3.1	3.9	3.6	3.7	3.5	3.3	3.3
15	3.5	3.6	2.5	2.9	2.9	3.1	3.7	3.6	3.7	3.5	3.3	3.3
16	3.5	3.7	2.7	2.9	2.9	3.1	3.7	3.6	3.6	3.5	3.3	3.3
17	3.5	3.8	2.9	2.9	2.9	3.0	3.7	3.6	3.6	3.5	3.2	3.3
18	3.5	3.7	2.7	2.9	2.9	3.0	3.8	3.6	3.6	3.5	3.2	3.3
19	3.5	3.7	2.7	2.9	2.9	3.0	4.0	3.6	3.6	3.5	3.2	3.4
20	3.5	3.8	2.7	2.9	2.9	3.1	4.2	3.6	3.6	3.5	3.2	3.5
21	3.6	3.8	2.8	2.8	2.9	3.1	4.1	3.6	3.6	3.4	3.2	3.6
22	3.8	3.8	2.9	2.8	2.9	3.1	4.0	3.6	3.6	3.4	3.2	3.6
23	3.7	3.8	2.8	2.8	2.9	3.1	4.0	3.6	3.6	3.6	3.2	3.6
24	3.6	3.7	2.8	2.8	2.9	3.3	3.9	3.6	3.6	3.5	3.2	3.6
25	3.6	3.4	2.8	2.8	2.9	3.5	3.9	3.6	3.6	3.4	3.2	3.6
26	3.6	2.8	2.8	2.8	2.9	3.5	3.8	3.6	3.6	3.4	3.2	3.6
27	3.7	2.8	2.8	2.8	3.0	3.5	3.9	3.6	3.6	3.4	3.2	3.6
28	3.9	2.7	2.8	2.8	3.7	3.5	3.8	3.7	3.6	3.4	3.3	3.6
29	4.1	2.7	2.8	2.8	3.7	3.5	3.7	3.9	3.6	3.4	3.3	3.6
30	3.7	2.7	2.8	2.9	---	3.5	3.8	3.7	3.7	3.4	3.2	3.6
31	3.7	---	2.8	2.9	---	3.5	---	3.7	---	3.3	3.2	---
TOTAL	110.4	115.2	83.2	92.2	85.8	99.7	111.5	114.1	109.6	108.2	101.0	102.7
MEAN	3.56	3.84	2.68	2.97	2.96	3.22	3.72	3.68	3.65	3.49	3.26	3.42
MAX	4.1	11	3.8	5.0	3.7	3.5	4.2	3.9	3.7	3.6	3.3	3.6
MIN	3.4	2.7	2.2	2.8	2.9	3.0	3.5	3.6	3.6	3.3	3.2	3.3
AC-FT	219	228	165	183	170	198	221	226	217	215	200	204

CAL YR 1987 TOTAL 1191.6 MEAN 3.26 MAX 11 MIN 2.2 AC-FT 2360  
WTR YR 1988 TOTAL 1233.6 MEAN 3.37 MAX 11 MIN 2.2 AC-FT 2450

## SAN JOAQUIN RIVER BASIN

11241950 REDINGER LAKE NEAR AUBERRY, CA

LOCATION.--Lat 37°08'42", long 119°26'58", in SW 1/4 sec.15, T.9 S., R.23 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on upstream face of dam No. 7 on San Joaquin River, 4.2 mi northeast of Auberry.

DRAINAGE AREA.--1,295 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1950 to current year. Prior to October 1965, monthend contents only, published in WSP 1930.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--Lake is formed by a concrete dam; storage began Nov. 19, 1950. Usable capacity, 26,120 acre-ft between elevations 1,320.00 ft, invert of tunnel, and 1,403.00 ft, top of radial gates, NGVD. Additional storage of 8,914 acre-ft not available for release. Water is used for power development in Big Creek powerplant No. 4. See schematic diagram of lower San Joaquin River basin. Records, including extremes, represent contents at 2400 hours.

COOPERATION.--Records were provided by Southern California Edison Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 26,586 acre-ft, Aug. 5, 1978, elevation, 1,404.00 ft; minimum since appreciable storage was attained, 5,985 acre-ft, Nov. 22, 1981, elevation, 1,346.85 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 25,492 acre-ft, Jan. 5, elevation, 1,401.64 ft; minimum, 21,915 acre-ft, Oct. 1, elevation, 1,393.53 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Southern California Edison Co., from table dated Oct. 27, 1950)

1,320	0	1,330	2,014	1,355	8,196	1,380	16,455
1,322	384	1,335	3,116	1,360	9,651	1,385	18,396
1,324	778	1,340	4,282	1,365	11,203	1,390	20,427
1,326	1,180	1,345	5,515	1,370	12,858	1,400	24,748
1,328	1,592	1,350	6,809	1,375	14,610	1,405	27,058

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21915	24466	25200	25024	24038	24829	24888	24100	24358	24372	24291	24834
2	22176	24416	25296	24929	24367	25227	24992	24309	24408	24488	24225	24627
3	22219	24493	25096	25046	24676	24866	24888	24331	24291	24658	24074	24649
4	22430	24452	24838	24802	24947	24942	25223	24421	23772	24569	24216	24663
5	22563	24403	25323	25492	24829	24884	24807	24658	23355	24793	24457	24399
6	22615	24385	25438	24866	25028	24614	24627	24771	23794	24775	24636	24676
7	22659	24300	25392	24096	24636	24591	24681	24757	23781	24793	24443	24992
8	22750	24448	25401	24118	24663	24735	24614	24546	24158	24793	24403	24992
9	22819	24542	25287	23869	25105	24744	24618	24726	24739	24888	24408	24933
10	22862	24627	25132	24007	24802	24829	24582	24614	24082	24537	24627	24744
11	22931	24708	25351	23742	24852	24640	24681	24421	24658	24640	24771	24762
12	22927	24649	25159	23698	24811	24811	24681	24667	24425	24735	24838	24578
13	22884	24627	25128	23737	24528	24717	24663	24537	24703	24681	24838	24569
14	23097	24425	25227	23786	24475	24712	24753	24425	24766	24658	24502	24596
15	23080	24354	25442	23667	24484	24735	24717	24185	24852	24475	24569	24582
16	22827	24537	25415	23601	24506	24632	24623	24600	24511	24520	24645	24784
17	22486	24376	25186	23914	24322	24685	24551	24564	24784	24658	24753	24771
18	22914	24645	25296	24421	24358	24766	24879	24685	24828	25042	24658	24816
19	23027	24829	25278	24434	24703	24649	24771	24376	24861	25173	24672	24893
20	22966	24825	25296	24461	24807	24632	24520	24238	24884	25374	24551	24920
21	22823	24825	25186	24421	24793	24047	24560	24385	24798	25447	24408	25301
22	22927	24969	25273	24336	24807	24251	24520	24109	24555	25177	24484	25037
23	23241	25024	25186	24336	24762	24229	24403	24291	24623	24856	24717	25141
24	23106	25033	25438	24416	25001	24136	24233	24122	24766	24766	24960	24811
25	23359	25110	25237	24452	25069	24331	24515	24256	24466	24748	24408	24780
26	23491	25186	25051	24466	24748	24282	24739	25101	24171	24421	24448	24780
27	23680	25046	24951	24439	24569	24309	24542	25451	24291	24376	24056	24793
28	23430	25024	25028	24264	24694	24591	24475	25360	24220	24434	24091	24906
29	24109	25042	25010	24278	24834	24942	24511	24390	24105	24322	24605	24911
30	24421	25114	25092	23596	---	24843	24056	24264	24198	24140	24439	24911
31	24198	---	24979	23645	---	25037	---	24676	---	24367	24780	---
MAX	24421	25186	25442	25492	25105	25227	25223	25451	24884	25447	24960	25301
MIN	21915	24300	24838	23596	24038	24047	24056	24100	23355	24140	24056	24399
a	1398.77	1400.81	1400.51	1397.52	1400.19	1400.64	1398.45	1399.84	1398.77	1399.15	1400.07	1400.36
b	+2351	+916	-135	-1334	+1189	+203	-981	+620	-478	+169	+413	+131

CAL YR 1987 b +249

WTR YR 1988 b +3064

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11242000 SAN JOAQUIN RIVER ABOVE WILLOW CREEK, NEAR AUBERRY, CA

LOCATION.--Lat 37°08'40", long 119°27'13", in SW 1/4 SW 1/4 sec.15, T.9 S., R.23 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,000 ft downstream from Redinger Lake Dam, 0.4 mi upstream from Willow Creek, and 4.2 mi northeast of Auberry.

DRAINAGE AREA.--1,295 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,175.54 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--No estimated daily discharges. Flow regulated by nine powerplants and six reservoirs with combined capacity of about 559,900 acre-ft. Conduit to powerplant No. 4 diverts 1,000 ft above station. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--37 years, 480 ft<sup>3</sup>/s, 347,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,200 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 54.2 ft, from floodmarks, from rating curve extended above 7,000 ft<sup>3</sup>/s on basis of computed flow over dam; no flow Sept. 25, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40 ft<sup>3</sup>/s, July 20, gage height, 4.27 ft; maximum gage height, 4.34 ft, Feb. 17; minimum daily, 4.1 ft<sup>3</sup>/s, Mar. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	21	21	18	12	5.2	17	4.9	18	22	27	28
2	24	18	21	18	14	5.1	17	6.2	18	22	27	28
3	24	11	21	17	14	5.1	17	8.0	18	23	27	24
4	24	17	21	14	16	5.1	17	7.9	18	24	27	22
5	24	19	21	21	16	5.1	17	8.0	19	24	27	22
6	24	18	21	7.4	16	6.0	17	8.0	18	24	27	22
7	24	15	16	7.4	16	5.4	17	8.0	18	24	27	22
8	25	17	19	7.3	16	4.1	17	7.9	18	24	26	22
9	24	18	22	7.4	16	5.1	17	8.1	19	26	26	22
10	24	19	19	9.6	16	5.5	17	10	19	26	26	21
11	24	20	19	9.1	17	5.0	17	10	21	26	27	21
12	24	19	19	8.6	18	7.7	17	12	21	26	26	21
13	24	19	19	9.6	18	8.1	17	14	21	27	26	21
14	24	19	23	11	17	9.6	17	15	21	26	26	21
15	24	20	23	11	17	9.9	15	15	21	25	26	21
16	24	21	20	10	16	11	14	16	21	24	27	21
17	24	21	20	9.7	14	14	15	15	21	24	27	21
18	24	20	20	8.9	15	14	15	15	22	25	27	21
19	24	18	21	8.9	17	14	16	16	22	25	27	21
20	23	19	21	9.0	17	13	7.0	16	21	27	26	21
21	23	20	21	9.9	17	13	6.5	16	22	26	26	23
22	23	20	21	10	17	14	6.7	16	22	24	27	23
23	23	20	18	10	17	14	6.8	17	22	27	27	23
24	23	21	20	10	17	14	6.7	17	22	27	27	23
25	23	21	20	11	16	14	6.5	17	22	27	26	23
26	23	21	20	11	16	14	6.7	17	22	27	26	23
27	23	21	20	11	16	14	6.6	18	22	27	26	23
28	21	21	20	11	9.2	14	5.5	18	23	26	27	24
29	6.8	21	18	11	5.1	14	4.9	19	23	26	27	23
30	13	21	16	12	---	15	4.9	19	23	26	27	23
31	20	---	15	12	---	16	---	19	---	26	27	---
TOTAL	701.8	576	616	341.8	448.3	314.0	381.8	414.0	618	783	825	674
MEAN	22.6	19.2	19.9	11.0	15.5	10.1	12.7	13.4	20.6	25.3	26.6	22.5
MAX	25	21	23	21	18	16	17	19	23	27	27	28
MIN	6.8	11	15	7.3	5.1	4.1	4.9	4.9	18	22	26	21
AC-FT	1390	1140	1220	678	889	623	757	821	1230	1550	1640	1340

CAL YR 1987 TOTAL 6921.9 MEAN 19.0 MAX 27 MIN 4.8 AC-FT 13730  
WTR YR 1988 TOTAL 6693.7 MEAN 18.3 MAX 28 MIN 4.1 AC-FT 13280

## SAN JOAQUIN RIVER BASIN

11242400 NORTH FORK WILLOW CREEK NEAR SUGAR PINE, CA

LOCATION.--Lat 37°23'52", long 119°33'55", in SW 1/4 NE 1/4 sec.21, T.6 S., R.22 E., Madera County, Hydrologic Unit 18040006, on right bank at road bridge 0.6 mi downstream from Sequel Campground, 3.0 mi upstream from Chilkoot Creek, and 4.7 mi southeast of Sugar Pine.

DRAINAGE AREA.--16.9 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1965 to current year.

REVISED RECORDS.--WDR CA-67-2: 1966(M). WDR CA-72-2: 1970, 1971. WDR CA-85-3: 1983, 1984(P).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 5,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No storage above station. See schematic diagram of lower San Joaquin River basin.

AVERAGE DISCHARGE.--23 years, 27.0 ft<sup>3</sup>/s, 19,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,750 ft<sup>3</sup>/s, Jan. 13, 1980, gage height, 7.41 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of a step-backwater survey; minimum daily, 0.27 ft<sup>3</sup>/s, Oct. 4, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1100	*238	*4.07				

Minimum daily, 0.27 ft<sup>3</sup>/s, Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.85	5.0	3.4	5.9	7.4	25	25	33	20	5.3	1.9	1.3
2	.84	11	3.3	5.5	7.4	22	25	33	19	4.8	1.8	1.2
3	.60	5.2	3.3	5.4	7.0	21	25	34	18	2.4	1.8	1.1
4	.27	3.7	3.5	7.1	7.3	19	26	33	18	2.4	1.8	1.1
5	.28	3.6	3.9	90	7.4	19	28	31	18	2.6	1.9	.96
6	.28	5.3	12	67	7.1	19	29	30	17	2.8	2.7	.96
7	.30	3.9	15	16	7.1	19	28	29	18	3.8	3.4	.96
8	.33	3.4	7.5	13	7.7	19	28	29	18	3.7	3.1	.94
9	.35	3.0	6.9	11	8.1	18	28	29	16	3.6	2.8	.94
10	.36	2.8	7.1	11	8.6	16	29	32	15	3.4	2.7	1.0
11	.34	2.8	6.3	12	9.1	15	29	36	15	3.5	2.6	1.1
12	.34	2.5	4.9	10	9.6	14	28	41	14	3.9	2.6	1.1
13	.38	3.9	4.2	8.7	9.2	14	26	42	13	3.9	2.7	1.1
14	.40	6.7	4.2	8.2	9.1	14	39	42	12	3.8	2.7	1.2
15	.36	3.5	4.3	8.4	9.8	14	29	42	11	3.7	2.5	1.2
16	.37	3.3	4.5	7.6	10	13	25	40	11	3.6	2.6	1.2
17	.37	5.8	4.2	8.2	9.1	13	25	36	10	3.4	2.4	1.2
18	.58	4.9	4.2	9.1	8.3	14	24	34	9.7	3.2	2.3	1.2
19	.87	3.9	4.3	7.6	8.5	14	36	32	9.3	3.0	2.2	1.3
20	.90	3.8	4.2	7.5	8.6	15	35	31	9.7	3.0	1.9	1.3
21	.91	4.2	4.2	6.7	9.0	16	29	30	9.4	2.9	1.8	1.8
22	2.3	3.9	9.2	7.2	9.8	16	27	28	8.3	2.8	1.7	1.9
23	5.7	3.6	6.0	8.1	10	18	27	26	8.0	2.8	1.6	1.8
24	2.8	3.5	4.7	8.8	10	20	32	24	7.7	4.0	1.6	1.7
25	2.0	3.3	4.9	8.9	11	23	39	23	7.9	4.7	1.6	1.6
26	1.7	3.1	4.8	9.3	11	27	42	22	7.8	3.0	1.6	1.6
27	1.7	3.1	4.6	9.3	13	30	42	21	6.9	2.7	1.5	1.6
28	16	2.9	5.0	9.9	35	29	40	21	6.2	2.4	1.5	1.6
29	14	2.9	6.0	9.6	31	28	40	39	6.3	2.2	1.5	1.4
30	4.4	2.9	6.6	8.3	---	27	40	24	5.9	2.0	1.5	1.2
31	4.0	---	6.2	8.0	---	25	---	21	---	1.9	1.4	---
TOTAL	64.88	121.4	173.4	413.3	306.2	596	925	968	366.1	101.2	65.7	38.56
MEAN	2.09	4.05	5.59	13.3	10.6	19.2	30.8	31.2	12.2	3.26	2.12	1.29
MAX	16	11	15	90	35	30	42	42	20	5.3	3.4	1.9
MIN	.27	2.5	3.3	5.4	7.0	13	24	21	5.9	1.9	1.4	.94
AC-FT	129	241	344	820	607	1180	1830	1920	726	201	130	76

CAL YR 1987 TOTAL 3791.03 MEAN 10.4 MAX 167 MIN .27 AC-FT 7520  
WTR YR 1988 TOTAL 4139.74 MEAN 11.3 MAX 90 MIN .27 AC-FT 8210

## SAN JOAQUIN RIVER BASIN

11243300 BROWNS CREEK CANAL AT BASS LAKE, CA

LOCATION.--Lat 37°17'19", long 119°31'09", in SE 1/4 SW 1/4 sec.25, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 900 ft upstream from Bass Lake, and 3.0 mi southeast of town of Bass Lake.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and concrete canal. Elevation of gage is 3,440 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Canal diverts from South Fork Willow Creek at diversion dam 1.5 mi upstream from gage, in NW 1/4 NE 1/4 sec.30, T.7 S., R.23 E. Flow enters Bass Lake for power development in San Joaquin River powerplants. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 76 ft<sup>3</sup>/s, Mar. 6, 1987; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	8.3	3.0	6.7	17	57	21	45	16	3.5	2.0	
2	0	28	3.1	7.1	16	52	19	40	14	3.3	0	
3	0	12	3.1	15	15	49	19	40	13	2.9	0	
4	0	7.0	3.3	18	15	47	19	38	13	2.6	0	
5	0	5.3	5.4	60	15	48	19	36	14	2.7	0	
6	0	8.9	19	48	15	45	18	37	13	2.5	0	
7	0	5.7	46	35	16	42	18	34	14	2.4	0	
8	0	4.3	17	28	19	40	18	33	13	2.2	0	
9	0	3.5	14	22	21	37	17	33	12	2.1	0	
10	0	3.0	14	21	23	33	17	31	11	1.9	0	
11	0	2.7	14	27	24	30	16	30	11	1.6	0	
12	0	3.1	21	19	25	27	16	29	9.4	1.5	0	
13	0	3.1	12	16	24	26	15	28	8.3	1.5	0	
14	0	7.1	7.6	15	23	24	35	27	8.8	1.4	0	
15	0	5.0	6.7	15	24	23	28	25	8.6	1.4	0	
16	0	4.0	7.2	14	23	22	23	25	8.0	1.3	0	
17	0	5.5	6.8	15	20	21	22	24	7.5	1.2	0	
18	0	7.5	6.5	15	19	20	21	23	7.2	.92	0	
19	0	5.0	6.7	13	17	20	39	21	6.5	.59	0	
20	0	4.5	6.5	15	17	21	46	18	5.4	.02	0	
21	0	6.0	6.4	17	18	22	36	17	4.2	0	0	
22	.28	5.6	15	19	19	23	34	16	4.6	0	0	
23	2.5	4.7	12	22	19	24	35	15	4.9	0	0	
24	1.5	4.1	11	25	19	25	39	14	5.2	0	0	
25	.95	3.7	16	28	19	26	54	14	5.1	0	0	
26	.56	3.4	6.7	28	21	25	64	13	5.6	0	0	
27	.45	3.2	6.4	26	25	27	67	13	4.9	0	0	
28	14	3.0	6.6	26	70	26	61	13	4.3	0	0	
29	30	2.9	6.9	24	64	25	54	45	4.0	0	0	
30	8.8	3.0	6.8	21	---	24	53	23	3.7	0	0	
31	6.0	---	9.5	19	---	22	---	18	---	.06	0	---
TOTAL	65.04	173.1	326.2	679.8	662	953	943	818	260.2	37.59	2.0	0
MEAN	2.10	5.77	10.5	21.9	22.8	30.7	31.4	26.4	8.67	1.21	.065	0
MAX	30	28	46	60	70	57	67	45	16	3.5	2.0	0
MIN	0	2.7	3.0	6.7	15	20	15	13	3.7	0	0	0

CAL YR 1987 TOTAL 4013.14 MEAN 11.0 MAX 76 MIN 0 AC-FT 7960  
WTR YR 1988 TOTAL 4919.93 MEAN 13.4 MAX 70 MIN 0 AC-FT 9760

## SAN JOAQUIN RIVER BASIN

11243400 BASS LAKE NEAR BASS LAKE, CA

LOCATION.--Lat 37°17'33", long 119°31'43", in SE 1/4 NE 1/4 sec.26, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, at outlet tower at dam on North Fork Willow Creek, 2.2 mi southeast of town of Bass Lake, and 5 mi north of North Fork.

DRAINAGE AREA.--50.4 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1911 to September 1982 (monthend contents only), October 1982 to current year. Bass Lake was formerly called Crane Valley Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir formed by earthfill and rockfill dam; completed in 1901 and raised in 1910. Since 1910 usable contents 45,100 acre-ft between elevations 3,280.22 ft, invert of outlet conduit No. 3, and 3,376.40 ft, top of spillway gates. Additional storage of 300 acre-ft not available for release. Water is released through Crane Valley powerplant below dam for use in three small powerplants before being discharged into Kerckhoff Reservoir at Wishon powerplant. Water is diverted from South Fork Willow Creek via Browns Creek ditch into Bass Lake near left end of dam. Madera Irrigation District has water rights to divert up to 50 ft<sup>3</sup>/s from North Fork Willow Creek through Soquel ditch into Nelder Creek (Fresno River basin) from October through July each year. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 45,960 acre-ft, June 17, 1923, elevation, 3,376.8 ft; minimum, 35 acre-ft, Nov. 19, 1953, elevation, 3,270.2 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 39,929 acre-ft, June 30 to July 4, elevation, 3,371.57 ft; minimum, 22,753 acre-ft, Jan. 27, elevation, 3,353.91 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated March 1937)

3,280	290	3,310	3,404	3,340	13,227	3,370	38,218
3,290	890	3,320	5,584	3,350	19,663	3,376.4	45,410
3,300	1,896	3,330	8,717	3,360	28,121		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31650	32063	32670	26005	23182	26257	29768	34693	38632	39929	31807	30379
2	31630	32162	32450	25756	23224	26455	29863	34860	38709	39929	31503	30341
3	31611	32211	32191	25587	23241	26662	29968	35018	38763	39929	31209	30341
4	31601	32241	31964	25471	23417	26824	30053	35196	38818	39929	30918	30312
5	31581	32271	31709	26050	23484	26996	30149	35344	38872	39700	30792	30293
6	31571	32330	31581	26068	23552	27160	30254	35503	38927	39395	30782	30129
7	31552	32350	31454	25952	23612	27315	30350	35652	39003	39112	30763	29828
8	31532	32380	31248	25836	23663	27453	30456	35802	39079	38839	30763	29531
9	31522	32390	31025	25649	23731	27591	30552	35952	39155	38567	30753	29370
10	31503	32400	30802	25480	23858	27721	30648	36113	39232	38283	30725	29352
11	31493	32410	30581	25374	23952	27843	30744	36264	39308	37989	30705	29342
12	31473	32410	30389	25189	24011	27935	30841	36415	39373	37673	30686	29314
13	31464	32440	30283	25010	24131	28028	30909	36556	39428	37390	30677	29286
14	31464	32470	30063	24787	24200	28130	31229	36707	39482	37106	30657	29314
15	31454	32480	29835	24630	24278	28223	31356	36847	39537	36815	30638	29305
16	31444	32500	29645	24484	24312	28307	31464	36977	39581	36534	30629	29286
17	31424	32540	29399	24458	24321	28391	31581	37096	39624	36242	30619	29267
18	31415	32580	29164	24286	24424	28474	31679	37237	39668	35941	30609	29248
19	31395	32600	28902	24088	24424	28558	32063	37379	39700	35631	30581	29230
20	31385	32650	28651	23901	24544	28651	32370	37488	39722	35344	30571	29220
21	31385	32650	28409	23697	24579	28744	32530	37575	39755	35028	30552	29220
22	31434	32660	28261	23501	24613	28837	32760	37684	39777	34734	30542	29192
23	31473	32670	28037	23299	24648	28800	32981	37749	39809	34413	30533	29183
24	31522	32690	27777	23131	24709	28912	33173	37826	39831	34124	30523	29173
25	31542	32710	27545	22963	24744	29023	33397	37902	39842	33846	30504	29164
26	31542	32700	27296	22787	25074	29136	33632	37967	39864	33560	30504	29136
27	31542	32710	27050	22753	25233	29258	33887	38022	39875	33254	30485	29126
28	31767	32710	26878	22829	25507	29371	34114	38218	39897	32960	30475	29126
29	31895	32720	26716	22896	25881	29474	34320	38392	39918	32660	30465	29117
30	31934	32730	26500	22913	---	29588	34537	38480	39929	32380	30446	29107
31	32013	---	26248	23039	---	29683	---	38567	---	32083	30427	---
MAX	32013	32730	32670	26068	25881	29683	34537	38567	39929	39929	31807	30379
MIN	31385	32063	26248	22753	23182	26257	29768	34693	38632	32083	30427	29107
a	3364.08	3364.80	3357.95	3354.25	3357.54	3361.67	3366.57	3370.32	3371.57	3364.15	3362.45	3361.06
b	+344	+717	-6482	-3209	+2842	+3802	+4854	+4030	+1362	-7846	-1656	-1320

CAL YR 1987 b +4645

WTR YR 1988 b -2562

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.



## SAN JOAQUIN RIVER BASIN

11243500 PACIFIC GAS &amp; ELECTRIC CO. CONDUIT NO. 3 NEAR BASS LAKE, CA

LOCATION.--Lat 37°17'21", long 119°31'44", in NE 1/4 SE 1/4 sec.26, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 1,000 ft downstream from Crane Valley powerplant and dam and 2.5 mi southeast of town of Bass Lake.

PERIOD OF RECORD.--October 1940 to current year. Prior to October 1954, published as "near Crane Valley Reservoir."

GAGE.--Water-stage recorder and concrete flume. Elevation of gage is 3,300 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1 to Nov. 2, May 17 to June 21, June 25 to July 4, Aug. 13-30. Conduit diverts from Bass Lake in sec.26, T.7 S., R.22 E. Water passes through Crane Valley powerplant, then to powerplant No. 3, and is stored temporarily at Manzanita Lake on North Fork Willow Creek; flow then diverts to powerplants No. 2 and 1A before it enters San Joaquin River at Kerckhoff Reservoir through San Joaquin powerplant No. 1. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--48 years, 70.8 ft<sup>3</sup>/s, 51,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 167 ft<sup>3</sup>/s, June 23, 24, 1965; no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	70	153	.06	1.8	1.5	.61	0	0	154	13
2		0	134	154	.05	1.9	1.5	.61	0	0	151	16
3		.22	149	154	.03	2.0	1.4	.39	0	0	155	.03
4		.49	150	154	.03	2.0	1.3	.06	0	0	155	.03
5		.65	149	114	.03	2.2	1.3	14	0	95	54	.03
6		.49	150	135	.03	2.3	1.1	.32	0	152	.03	90
7		.06	150	150	.03	2.1	1.0	.61	0	152	.03	151
8		.04	150	150	.03	1.8	1.0	.30	0	130	.03	150
9		.03	148	149	1.2	1.8	.98	.03	0	153	.03	65
10		.03	149	149	2.4	1.9	.92	.03	0	153	.03	.06
11		.03	151	150	2.4	1.8	.92	.03	0	153	.03	.06
12		.03	134	150	2.2	1.8	.92	.03	0	153	.03	.06
13		.03	58	150	2.3	1.8	.92	.03	0	154	0	.43
14		.03	131	150	1.4	1.7	.86	.03	0	154	0	.06
15		.03	131	150	.06	1.7	.71	.03	0	145	0	.06
16		.05	140	150	49	1.7	.71	.03	0	155	0	.04
17		.06	150	150	1.8	1.7	.71	0	0	155	0	.03
18		.04	152	150	1.4	1.7	.71	0	0	155	0	.03
19		.03	152	150	1.3	1.7	.66	0	0	155	0	.05
20		.70	152	149	1.3	1.7	.61	0	0	155	0	.06
21		3.0	151	149	1.3	1.7	.61	0	0	155	0	.49
22		3.0	152	149	1.4	1.7	.61	0	8.2	155	0	1.1
23		3.1	152	149	1.5	74	.61	0	4.0	155	0	1.6
24		5.0	150	149	1.5	.92	.61	0	1.1	155	0	1.6
25		2.4	151	149	1.5	1.5	.61	0	0	155	0	1.6
26		.06	151	149	1.5	1.5	.61	0	0	155	0	1.6
27		.03	151	57	1.6	1.5	.61	0	0	155	0	1.6
28		.03	151	.69	1.6	1.5	.61	0	0	155	0	1.5
29		.03	151	.70	1.7	1.5	.61	0	0	152	0	.78
30		.03	150	.06	---	1.5	.61	0	0	154	0	.03
31		---	153	.06	---	1.5	---	0	---	154	.21	---
TOTAL	0	19.72	4413	3913.51	80.65	125.92	25.83	17.14	13.3	4069	669.42	497.93
MEAN	0	.66	142	126	2.78	4.06	.86	.55	.44	131	21.6	16.6
MAX	0	5.0	153	154	49	74	1.5	14	8.2	155	155	151
MIN	0	0	58	.06	.03	.92	.61	0	0	0	0	.03
CAL YR 1987	TOTAL	8310.14	MEAN	22.8	MAX	166	MIN	0	AC-FT	16480		
WTR YR 1988	TOTAL	13845.42	MEAN	37.8	MAX	155	MIN	0	AC-FT	27460		

## SAN JOAQUIN RIVER BASIN

11244000 NORTH FORK WILLOW CREEK NEAR BASS LAKE, CA

LOCATION.--Lat 37°17'20", long 119°31'45", in SE 1/4 SE 1/4 sec.26, T.7 S., R.22 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on right bank 1,500 ft downstream from Bass Lake spillway and 2.5 mi southeast of town of Bass Lake.

DRAINAGE AREA.--50.8 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1940 to current year. Prior to October 1944, published as Willow Creek below Crane Valley Reservoir. October 1944 to September 1954, published as "below Crane Valley Reservoir."

GAGE.--Water-stage recorder. Broad-crested weir with V-notch Dec. 21, 1961, to Jan. 16, 1969, and since Mar. 26, 1971. Elevation of gage is 3,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Flow regulated by Bass Lake (station 11243400) 1,500 ft upstream and by diversion into Pacific Gas & Electric Co. conduit No. 3 near Bass Lake (station 11243500). Soquel ditch diverts up to 50 ft<sup>3</sup>/s from North Fork Willow Creek into Nelder Creek in Fresno River basin. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--48 years, 14.1 ft<sup>3</sup>/s, 10,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,100 ft<sup>3</sup>/s, Feb. 19, 1986; minimum daily, 0.1 ft<sup>3</sup>/s, Nov. 13-16, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36 ft<sup>3</sup>/s, Dec. 17, gage height, 2.42 ft; minimum daily, 0.24 ft<sup>3</sup>/s, Sept. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	1.4	.49	.34	.30	.94	.29	1.1	1.2	1.3	.44	.28
2	3.3	1.4	.48	.36	.30	.65	.29	.99	1.2	1.2	.42	.28
3	3.3	.96	.45	.56	.29	.44	.29	1.3	1.2	1.2	.40	.28
4	3.3	.72	.47	.74	.29	.37	.29	1.3	1.2	1.2	.38	.29
5	3.3	.45	.48	3.3	.29	.35	.28	1.3	1.2	1.2	.33	.29
6	3.3	.70	.62	1.0	.29	.34	.29	1.1	1.3	1.2	.30	.34
7	3.3	1.1	.61	.71	.29	.32	.32	1.0	1.3	1.2	.29	.40
8	3.3	1.1	.50	.62	.27	.32	.32	1.0	1.3	2.5	.34	.40
9	3.3	1.1	.46	.56	.27	.30	.32	1.1	1.3	2.8	.47	.36
10	3.3	1.1	.42	.52	.27	.30	.32	1.1	1.3	2.5	.47	.30
11	3.3	1.1	.40	.61	.27	.30	.33	1.3	1.3	2.3	.47	.30
12	3.3	1.1	.39	.52	.27	.29	.34	2.5	1.3	2.1	.49	.29
13	1.8	1.1	.38	.48	.27	.29	.34	2.7	1.3	2.0	.49	.29
14	.51	1.1	.36	.45	.27	.29	.63	2.7	1.4	1.8	.49	.29
15	.50	1.1	.36	.50	.27	.29	.49	2.5	1.5	1.7	.48	.28
16	.49	1.1	.36	.51	.27	.29	.45	2.3	1.5	1.6	.47	.36
17	.48	1.4	1.6	1.4	.27	.29	.45	2.2	1.5	1.5	.47	.51
18	.48	1.4	.35	.80	.26	.29	.45	1.7	1.5	1.4	.47	.58
19	.48	1.1	.33	.58	.25	.29	.90	1.2	1.5	1.3	.47	.44
20	.48	.66	.32	.51	.25	.29	1.2	1.2	1.5	1.2	.47	.28
21	.48	.53	.31	.47	.25	.29	.69	1.1	1.4	1.1	.47	.28
22	.52	.50	.40	.44	.25	.29	.71	1.1	1.5	.97	.47	.28
23	.50	.49	.38	.42	.25	.29	1.1	1.1	1.4	.87	.46	.28
24	.48	.49	.33	.40	.25	.29	.82	1.1	1.4	.74	.47	.27
25	.48	.49	.33	.40	.25	.29	.72	1.1	1.4	.65	.47	.28
26	.47	.49	.30	.38	.25	.29	.68	1.1	1.4	.61	.47	.28
27	.49	.49	.30	.36	.25	.29	.67	1.1	1.3	.58	.47	.24
28	.78	.49	.35	.32	.41	.29	.67	1.1	1.3	.55	.47	.27
29	.71	.49	.39	.32	.58	.29	.67	1.1	1.3	.51	.47	.27
30	.82	.49	.37	.32	---	.29	.73	1.1	1.2	.48	.46	.26
31	1.5	---	.36	.30	---	.29	---	1.2	---	.45	.33	---
TOTAL	52.05	26.14	13.65	19.20	8.25	10.43	16.05	43.79	40.4	40.71	13.62	9.55
MEAN	1.68	.87	.44	.62	.28	.34	.54	1.41	1.35	1.31	.44	.32
MAX	3.3	1.4	1.6	3.3	.58	.94	1.2	2.7	1.5	2.8	.49	.58
MIN	.47	.45	.30	.30	.25	.29	.28	.99	1.2	.45	.29	.24

CAL YR 1987 TOTAL 287.61 MEAN .79 MAX 3.8 MIN .15 AC-FT 570  
WTR YR 1988 TOTAL 293.84 MEAN .80 MAX 3.3 MIN .24 AC-FT 583

## SAN JOAQUIN RIVER BASIN

11246500 WILLOW CREEK AT MOUTH, NEAR AUBERRY, CA

LOCATION.--Lat 37°09'03", long 119°27'34", in SE 1/4 NE 1/4 sec.16, T.9 S., R.23 E., Madera County, Hydrologic Unit 18040006, Sierra National Forest, on left bank 40 ft upstream from bridge, 0.4 mi upstream from mouth, 1.3 mi downstream from Whiskey Creek, and 4.3 mi northeast of Auberry.

DRAINAGE AREA.--130 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1952 to current year.

REVISED RECORDS.--WSP 2130: 1956-58(M).

GAGE.--Water-stage recorder. Concrete control since Oct. 22, 1964. Datum of gage is 1,174.69 ft above National Geodetic Vertical Datum of 1929 (levels by Southern California Edison Co.).

REMARKS.--No estimated daily discharges. Flow regulated by Bass Lake (station 11243400) 10 mi upstream and diversion into Pacific Gas & Electric Co. conduit No. 1. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Southern California Edison Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--36 years, 69.0 ft<sup>3</sup>/s, 49,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 28.5 ft, from floodmarks, from rating curve extended above 4,700 ft<sup>3</sup>/s; no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 728 ft<sup>3</sup>/s, Jan. 5, gage height, 8.91 ft; no flow Aug. 22 to Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	4.1	1.9	5.7	10	40	9.6	19	8.7	2.4	.30	.0
2	.08	15	1.9	5.2	10	35	9.4	17	7.9	2.2	.30	.0
3	.08	11	2.0	7.3	9.2	27	9.2	17	6.8	2.0	.24	.0
4	.08	6.8	2.1	11	9.1	23	8.9	16	6.6	1.8	.23	.0
5	.08	5.0	3.0	374	9.1	25	8.9	15	6.8	1.9	.23	.0
6	.06	9.1	3.5	95	8.7	25	8.4	16	7.3	1.8	.21	.0
7	.06	9.2	12	27	8.9	25	8.0	16	7.3	1.6	.13	.0
8	.08	6.9	8.2	19	9.0	23	7.7	16	6.8	1.5	.13	.0
9	.08	5.8	6.1	16	9.4	22	7.6	15	6.4	1.5	.13	.0
10	.08	5.3	4.8	13	9.9	20	6.9	14	6.0	1.4	.13	.0
11	.10	4.9	4.5	15	10	19	6.5	13	5.7	1.2	.13	.0
12	.10	4.6	4.3	15	11	18	6.2	12	5.7	1.2	.11	.0
13	.10	4.4	11	12	11	16	6.1	11	5.5	1.2	.08	.0
14	.10	3.7	4.0	11	10	15	18	11	5.1	1.2	.08	.0
15	.10	2.7	3.2	13	10	15	18	10	4.6	1.1	.08	.0
16	.10	4.4	3.2	13	11	13	12	9.8	4.2	1.1	.08	.0
17	.08	4.8	3.4	35	10	13	11	10	4.2	.90	.06	.0
18	.08	6.5	3.0	28	9.7	13	11	10	4.0	.81	.02	.0
19	.08	5.8	3.0	17	9.0	13	12	10	3.8	.73	.03	.0
20	.08	4.3	2.9	14	9.0	13	38	9.4	3.6	.61	.02	.0
21	.08	3.9	2.8	13	9.3	13	21	8.5	3.6	.57	.01	.0
22	.13	2.9	3.3	12	9.5	13	19	7.6	3.6	.57	.0	.0
23	.40	2.5	6.6	12	9.8	13	23	7.3	3.2	.71	.0	.0
24	1.1	2.4	3.9	12	10	17	21	6.9	3.2	.87	.0	.12
25	1.6	2.2	5.0	12	10	12	21	6.5	3.4	.58	.0	.77
26	2.1	2.1	3.1	12	10	12	24	6.4	3.6	.52	.0	.84
27	1.7	1.9	3.0	12	11	11	27	6.3	3.4	.49	.0	.86
28	6.3	2.2	5.0	12	27	11	25	6.3	2.9	.42	.0	.88
29	21	2.2	21	11	32	11	21	14	2.6	.41	.0	.83
30	11	2.0	21	11	---	10	21	12	2.6	.37	.0	.91
31	5.2	---	9.2	11	---	9.9	---	9.8	---	.30	.0	---
TOTAL	52.29	148.6	171.9	876.2	322.6	545.9	446.4	358.8	149.1	33.96	2.73	5.21
MEAN	1.69	4.95	5.55	28.3	11.1	17.6	14.9	11.6	4.97	1.10	.088	.17
MAX	21	15	21	374	32	40	38	19	8.7	2.4	.30	.91
MIN	.06	1.9	1.9	5.2	8.7	9.9	6.1	6.3	2.6	.30	.00	.00
AC-FT	104	295	341	1740	640	1080	885	712	296	67	5.4	10

CAL YR 1987 TOTAL 2602.59 MEAN 7.13 MAX 345 MIN .00 AC-FT 5160  
WTR YR 1988 TOTAL 3113.69 MEAN 8.51 MAX 374 MIN .00 AC-FT 6180

## SAN JOAQUIN RIVER BASIN

## 11246650 KERCKHOFF RESERVOIR NEAR AUBERRY, CA

LOCATION.--Lat 37°07'40", long 119°31'25", in SE 1/4 SW 1/4 sec.24, R.9 S., T.22 E., Fresno County, Hydrologic Unit 18040006, near center of Kerckhoff Dam on San Joaquin River, 2.0 mi downstream from A.G. Wishon powerplant, and 7.9 mi northwest of Auberry.

DRAINAGE AREA.--1,460 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete arch dam with spillway completed in 1920. Usable contents, 4,247 acre-ft between elevations 900.14 ft, invert of sluice gates, and 985.68 ft, top of spillway gates. Water is released for use in Kerckhoff powerplants 1 and 2 before being discharged into the San Joaquin River above Millerton Lake. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,140 acre-ft, June 7, 1987, elevation, 985.0 ft; minimum, 3,104 acre-ft, Nov. 1, 18, 1987, elevation, 978.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,109 acre-ft, May 28, elevation, 984.8 ft; minimum, 3,104 acre-ft, Nov. 1, 18, elevation, 978.0 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Pacific Gas and Electric Co., from table dated July 16, 1919)

960	1090	970	2092	980	3387	990	4964
965	1549	975	2703	985	4140		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3694	3104	3387	3906	3876	3679	3906	3694	4030	3709	4015	3837
2	3546	3387	3272	3769	3860	3664	3650	3922	4030	3532	3922	3769
3	3502	3387	3845	3800	3876	3922	3754	3860	4030	3502	3992	4015
4	3488	3444	3739	3992	3922	3860	3769	3709	3891	3891	3679	3830
5	3694	3146	3620	3815	3876	3937	3724	3754	3830	3953	3739	3641
6	3620	3430	3739	3709	3769	3679	3984	3739	3891	3992	3800	3724
7	3845	3473	3800	3590	3922	3845	3953	3644	3922	3784	3532	3612
8	3694	3387	3800	3860	3709	3473	3876	3650	3906	3784	3769	3922
9	3473	3387	3937	3694	3605	3769	3815	3845	3930	3724	3860	3830
10	3473	3430	3845	3694	3845	3800	3784	3664	3906	3444	3992	3754
11	3473	3272	3739	3444	3815	3502	3876	3937	3984	3830	3664	3757
12	3992	3372	3815	3860	3754	3769	3650	3937	3968	3694	3906	3815
13	3922	3430	3739	3891	3891	3922	3815	3830	4068	3984	3561	3739
14	3800	3444	3800	3644	3876	3984	3830	3922	3900	3644	3830	3650
15	3561	3459	3694	3724	3724	3953	3769	3992	3891	3709	3891	3906
16	3860	3387	3891	3800	3860	3694	3800	3992	3984	3984	3937	3784
17	3992	3315	3800	3830	3784	3605	3937	4046	3906	3860	3876	3800
18	3984	3104	3845	3860	3739	3968	3650	4015	3922	3922	3953	3876
19	3546	3784	3694	3650	3815	3860	3679	3922	3968	4062	3984	3830
20	3679	3576	3830	3876	3709	3968	3800	3880	3968	3830	3953	3800
21	3459	3815	3891	3830	3845	3860	3709	3972	3968	3906	3546	3769
22	3502	3679	3906	3456	3387	3517	3650	3884	3992	3937	3679	3815
23	3590	3694	3664	3679	3906	3891	3769	3906	4015	3724	3746	3800
24	3532	3679	3815	3532	3644	3576	3891	3945	3876	4046	3922	3724
25	3830	3709	3876	3845	3532	3724	3532	3984	4062	3891	3784	3724
26	3502	3922	3679	3906	3784	3576	3709	4062	4062	3800	3830	3800
27	3605	3709	3953	3590	3891	3709	3891	3984	3845	3754	3784	3739
28	3344	3906	3876	3488	4030	3830	3724	4109	3815	3906	3694	3898
29	3876	3876	3815	3739	3784	3891	3937	3992	3815	3877	3891	3769
30	3423	3984	3590	3906	---	3845	3876	3891	3906	3907	3605	3769
31	3301	---	3984	3815	---	3473	---	3922	---	3784	3800	---
MAX	3992	3984	3984	3992	4030	3984	3984	4109	4068	4062	4015	4015
MIN	3301	3104	3272	3444	3387	3473	3532	3644	3815	3444	3532	3612
a	979.4	984.0	984.0	982.9	982.7	980.6	983.3	983.6	983.5	982.7	982.8	982.6
b	-559	+683	0	-169	-31	-311	+403	+46	-16	-122	+16	-31

CAL YR 1987 b +16

WTR YR 1988 b -91

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11246700 SAN JOAQUIN RIVER NEAR AUBERRY, CA

LOCATION.--Lat 37°07'56", long 119°31'50", in NW 1/4 SW 1/4 sec.24, T.9 S., R.22 E., Fresno County, Hydrologic Unit 18040006, on left bank 2,300 ft downstream from Kerckhoff Dam, 2.8 mi northwest of Auberry, and 6.7 mi south of town of North Fork.

DRAINAGE AREA.--1,461 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 870.11 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--No estimated discharge. Flow regulated by nine powerplants and eight reservoirs with combined capacity of about 609,300 acre-ft. See schematic diagram of lower San Joaquin River basin.

COOPERATION.--Records were provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft<sup>3</sup>/s, Apr. 7, 1988, gage height, 8.99 ft; minimum daily, 16 ft<sup>3</sup>/s, May 9-18, 1987, Sept. 29, 30, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,800 ft<sup>3</sup>/s, Apr. 7, gage height, 8.99 ft; minimum daily, 16 ft<sup>3</sup>/s, Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	17	18	18	18	18	17	18	18	19	18	17
2	17	17	17	18	18	18	17	18	18	19	18	17
3	17	17	17	18	18	18	17	18	18	19	18	17
4	17	17	18	18	18	18	17	18	19	19	18	18
5	17	17	18	20	18	18	17	19	18	19	18	17
6	17	17	18	18	18	18	17	18	18	19	18	18
7	17	17	18	18	18	18	56	18	18	33	17	18
8	18	17	18	18	18	18	17	18	18	20	17	17
9	17	17	18	18	18	18	17	18	19	20	17	18
10	17	17	18	18	18	18	17	18	19	20	17	17
11	17	17	18	18	18	18	17	18	19	20	18	17
12	17	17	18	18	18	17	17	18	19	20	18	17
13	18	17	18	18	18	18	17	18	19	20	17	17
14	18	17	18	18	18	18	18	18	19	20	17	17
15	18	17	18	18	18	18	18	18	19	19	17	17
16	18	17	18	18	18	18	17	18	19	19	17	17
17	18	17	18	19	18	17	17	34	19	20	17	17
18	18	17	18	18	18	17	17	20	19	19	17	17
19	18	17	19	18	18	18	17	18	19	19	17	17
20	18	18	19	18	18	20	18	18	19	20	17	18
21	18	18	19	18	18	18	17	18	19	19	17	18
22	18	18	19	18	18	18	17	18	19	19	17	17
23	18	18	19	18	18	18	17	19	19	20	17	17
24	17	18	18	18	18	18	17	18	19	19	17	17
25	17	18	18	18	18	17	17	19	19	20	18	17
26	18	18	18	18	18	17	18	18	19	20	17	17
27	17	18	18	19	18	18	18	18	19	20	17	17
28	18	18	19	18	18	18	19	19	19	49	17	17
29	18	18	19	18	19	17	33	19	19	18	17	16
30	18	18	19	18	---	17	18	18	19	18	17	16
31	18	---	18	18	---	17	---	18	---	18	17	---
TOTAL	544	521	564	562	523	552	573	581	563	643	536	514
MEAN	17.5	17.4	18.2	18.1	18.0	17.8	19.1	18.7	18.8	20.7	17.3	17.1
MAX	18	18	19	20	19	20	56	34	19	49	18	18
MIN	17	17	17	18	18	17	17	18	18	18	17	16
AC-FT	1080	1030	1120	1110	1040	1090	1140	1150	1120	1280	1060	1020
CAL YR 1987	TOTAL	7683	MEAN 21.0	MAX 66	MIN 16	AC-FT	15240					
WTR YR 1988	TOTAL	6676	MEAN 18.2	MAX 56	MIN 16	AC-FT	13240					

## SAN JOAQUIN RIVER BASIN

11250100 MILLERTON LAKE AT FRIANT, CA

LOCATION.--Lat 37°00'00", long 119°42'13", in SW 1/4 SW 1/4 sec.5, T.11 S., R.21 E., Fresno County, Hydrologic Unit 18040006, near center of Friant Dam on San Joaquin River just upstream from Cottonwood Creek, 0.9 mi northeast of Friant.

DRAINAGE AREA.--1,638 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1941 to current year. Monthend contents only for some periods, published in WSP 1315-A.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Prior to May 29, 1944, nonrecording gage on left bank at same datum.

REMARKS.--Reservoir is formed by gravity-type concrete dam with spillway near center, completed in December 1942. Control valves installed in February 1944, and spillway gates installed in November 1947. Usable capacity, 503,200 acre-ft between elevations 375.4 ft, invert of river outlet, and 578.0 ft, top of drum-type spillway gates. Not available for release, 17,400 acre-ft. Millerton Lake is one of the storage units in the Central Valley Project. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 528,700 acre-ft, June 12, 1973, elevation, 579.66 ft; minimum since lake first filled, 133,600 acre-ft, Apr. 11, 1969, elevation, 467.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 352,700 acre-ft, May 24, elevation, 539.94 ft; minimum, 145,000 acre-ft, Sept. 21, elevation, 472.95 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Bureau of Reclamation, from table dated 1921)

400	36,400	440	83,300	480	161,700	520	279,400	560	436,500
420	57,000	460	117,500	500	215,000	540	353,000	580	530,400

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166600	151300	180100	213500	267700	216100	255500	322700	351500	284700	171800	146600
2	165500	152500	180900	214600	267900	216600	257500	324900	350800	281100	168200	146800
3	164500	154000	181300	215900	268000	217600	259300	327500	350400	277200	165100	147000
4	163300	155500	182700	217200	267800	219000	260800	329900	349800	272300	163600	147200
5	161800	156900	183800	223100	267900	220300	262600	332100	348800	268100	162000	147600
6	160600	157900	184800	227100	267100	222100	263700	334300	347500	264600	160900	147200
7	159000	158900	186100	229700	265900	223400	264900	336700	346200	261700	160200	146800
8	157900	160200	187200	232200	265300	225300	266400	339000	344900	259000	158700	146400
9	156900	161000	188300	234800	263800	226200	267900	340700	343700	257000	157600	146600
10	155900	161900	189500	236600	261900	227300	269400	342300	342600	255000	156400	146500
11	155100	162800	190700	238700	260300	229200	270600	343200	341200	251300	155700	146500
12	154100	163500	191800	240100	258400	230100	271800	344500	339900	247500	155100	146300
13	153200	164200	192800	241700	255900	230700	272500	346300	338000	243200	154500	146300
14	152500	165100	193600	243300	253100	231800	274400	347800	335200	239600	153400	146100
15	151800	166100	194600	244900	250000	232900	276600	348800	332100	236400	153200	145800
16	150700	167000	195400	246400	246500	234300	278900	349300	329000	233000	152900	145900
17	150100	168200	196700	249400	243200	235400	281200	349600	326300	229700	152900	145800
18	149000	169400	197600	251500	239700	236200	284000	350100	323600	226500	153000	145700
19	148900	170000	198700	253300	236100	237200	287000	350700	320700	222700	152600	145600
20	148200	171100	199500	254800	233300	238300	290200	351300	318400	219200	151600	145500
21	147400	171900	200400	256700	230400	239800	293400	351800	316000	215900	150800	145000
22	147200	173000	201800	258500	228900	241900	296800	352100	313300	212500	150200	145200
23	146900	174100	203300	259400	226000	242300	299900	352300	310700	209000	149400	145800
24	146800	175200	203900	260600	223600	243400	302900	352700	308300	204600	148500	145800
25	146100	176400	205300	262200	221500	244700	306400	352100	305800	200300	148700	145400
26	146500	176800	206700	263700	219200	246700	309500	351500	303000	195600	148300	145800
27	146100	177700	207400	265500	217100	247800	312300	351700	299900	191000	148200	145800
28	146300	178100	208800	266800	215800	249000	315200	351900	296300	186400	147200	146100
29	147200	178600	210400	267100	215700	250200	317500	351800	292500	182800	146400	146100
30	148700	179000	211700	267300	---	251800	320000	351700	288400	179400	146900	145900
31	150200	---	212400	267600	---	253900	---	351700	---	176000	146700	---
MAX	166600	179000	212400	267600	268000	253900	320000	352700	351500	284700	171800	147600
MIN	146100	151300	180100	213500	215700	216100	255500	322700	288400	176000	146400	145000
a	475.19	486.80	498.89	516.52	500.03	512.38	531.37	539.68	522.62	485.64	473.66	473.34
b	-17500	+28800	+33400	+55200	-51900	+38200	+66100	+31700	-63300	-112400	-29300	-800
c	800	260	290	300	550	950	1390	2150	2590	2840	1810	1280

CAL YR 1987 b +53000

WTR YR 1988 b -21800

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided, not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11251000 SAN JOAQUIN RIVER BELOW FRIANT, CA

LOCATION.--Lat 36°59'04", long 119°43'24", in SW 1/4 SW 1/4 sec.7, T.11 S., R.21 E., Fresno County, Hydrologic Unit 18040001, on left bank 0.5 mi west of Friant, 1.5 mi downstream from Cottonwood Creek, 2 mi downstream from Friant Dam, and at mile 268.1.

DRAINAGE AREA.--1,676 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1907 to current year. Published as "near Pollasky" October 1907 to December 1908, and as "near Friant" January 1909 to September 1938. Monthly discharge only for October 1907 to November 1908, published in WSP 1315-A.

REVISED RECORDS.--WSP 843: 1914(M).

GAGE.--Water-stage recorder. Datum of gage is 294.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation). Oct. 18, 1907, to Nov. 9, 1913, nonrecording gage at site 4.5 mi upstream at different datum. Nov. 10, 1913, to Sept. 30, 1938, water-stage recorder at site 2.5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated by Millerton Lake (station 11250100) beginning in 1941, and by reservoirs described in REMARKS for San Joaquin River below Kerckhoff powerplant (station 11247000). Diversion for irrigation to Madera and Friant-Kern Canals (stations 11249500 and 11250000) began in 1944 and 1949, respectively. See schematic diagram of lower San Joaquin River basin.

AVERAGE DISCHARGE (adjusted for change in contents in and evaporation from Millerton Lake and for diversions to Madera and Friant-Kern Canals).--81 years, 2,432 ft<sup>3</sup>/s, 1,762,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77,200 ft<sup>3</sup>/s, Dec. 11, 1937, gage height, 23.8 ft, site and datum then in use; minimum, 38 ft<sup>3</sup>/s, regulated, July 29, 1940. Maximum discharge since construction of Friant Dam in 1941, 15,500 ft<sup>3</sup>/s, Feb. 18, 1986, gage height, 13.41 ft; minimum, 5.5 ft<sup>3</sup>/s, Oct. 20, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 196 ft<sup>3</sup>/s, July 19, gage height, 2.71 ft; minimum daily, 46 ft<sup>3</sup>/s, for several days in January.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	115	60	54	50	77	116	79	159	164	170	148
2	110	109	60	54	51	76	119	80	159	174	169	147
3	111	74	61	51	51	76	119	79	160	175	169	146
4	109	74	63	47	51	75	119	79	160	175	167	149
5	109	72	63	50	52	76	111	85	159	174	166	149
6	110	72	63	47	52	76	105	93	155	173	166	149
7	110	72	63	47	52	76	99	97	147	172	166	149
8	109	72	62	46	52	76	105	97	146	171	165	149
9	109	73	62	47	52	76	106	97	147	172	164	149
10	111	73	64	48	52	76	106	106	145	171	164	149
11	110	72	64	48	52	78	110	115	144	170	167	149
12	109	74	63	50	52	79	122	117	145	168	165	149
13	117	72	63	48	52	78	123	117	146	175	164	143
14	124	72	63	47	52	86	128	117	145	182	164	146
15	127	72	63	47	53	109	126	117	144	181	163	137
16	122	73	63	46	58	135	126	117	144	180	164	135
17	115	74	63	48	76	154	118	117	144	180	164	139
18	115	63	63	47	87	154	101	121	144	180	163	139
19	114	57	63	47	79	156	98	126	145	176	164	132
20	113	59	63	46	59	155	86	134	143	174	164	122
21	113	58	63	46	58	155	76	146	142	172	164	122
22	115	57	64	46	57	156	76	146	152	171	166	124
23	115	57	64	46	57	151	76	153	160	172	165	123
24	115	57	63	46	57	135	76	159	159	171	166	126
25	115	57	63	47	69	135	77	160	159	174	165	126
26	115	57	63	47	83	135	77	161	159	178	160	126
27	115	59	63	47	83	138	77	159	158	177	156	126
28	115	60	64	50	84	139	77	159	158	176	156	126
29	116	59	61	50	83	126	78	159	159	174	155	126
30	114	59	55	50	---	115	76	159	157	173	152	124
31	113	---	54	50	---	115	---	159	---	172	149	---
TOTAL	3524	2074	1929	1490	1766	3444	3009	3810	4544	5397	5062	4124
MEAN	114	69.1	62.2	48.1	60.9	111	100	123	151	174	163	137
MAX	127	115	64	54	87	156	128	161	160	182	170	149
MIN	109	57	54	46	50	75	76	79	142	164	149	122
AC-FT	6990	4110	3830	2960	3500	6830	5970	7560	9010	10700	10040	8180
MEAN a	583	620	666	1129	941	1508	1635	1661	1638	1634	1121	873
AC-FT a	35850	36890	40950	69420	54130	92720	97290	102100	97470	100500	68930	51950
b	0	0	0	0	0	0	99	8450	42890	60460	10370	0
c	45550	3750	3420	10970	102000	46760	23750	52260	106300	138900	76010	43310

CAL YR 1987 TOTAL 36183 MEAN 99.1 MAX 232 MIN 22 AC-FT 71770 MEAN a 1279 AC-FT a 926000  
WTR YR 1988 TOTAL 40173 MEAN 110 MAX 182 MIN 46 AC-FT 79680 MEAN a 1169 AC-FT a 848600

a Adjusted for change in contents and evaporation from Millerton Lake and for diversions to Madera and Friant-Kern canals.

b Diversion, in acre-feet, to Madera Canal.

c Diversion, in acre-feet, to Friant-Kern Canal.

Note: Records of evaporation and diversions provided by U.S. Bureau of Reclamation, not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11253310 CANTUA CREEK NEAR CANTUA CREEK, CA

LOCATION.--Lat 36°24'08", long 120°25'57", in SE 1/4 SE 1/4 sec.34, T.17 S., R.14 E., Fresno County, Hydrologic Unit 18030012, on left bank 9.2 mi southwest of town of Cantua Creek and 19 mi north of Coalinga.

DRAINAGE AREA.--46.4 mi<sup>2</sup>.

PERIOD OF RECORD.--Water years 1958-65 (annual maximum), October 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 680 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1966, crest-stage gage at datum 2.00 ft lower.

REMARKS.--Estimated daily discharges: Mar. 10-29. Records good. Some small dams for stock use above station.

AVERAGE DISCHARGE.--22 years, 3.23 ft<sup>3</sup>/s, 2,340 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,420 ft<sup>3</sup>/s, Mar. 1, 1983, gage height, 5.72 ft; maximum gage height, 6.60 ft, Feb. 24, 1969; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 17	1545	73	2.42	Feb. 29	0845	*77	*2.44

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.04	0	.23	.66	11	.25	.33				
2	0	.02	0	.22	.65	3.5	.19	.32				
3	0	0	0	.35	.61	2.1	.13	.30				
4	0	0	.42	.38	.56	1.5	.10	.24				
5	0	0	3.1	13	.54	1.2	.07	.22				
6	0	0	.44	3.1	.51	.99	.06	.32				
7	0	0	1.9	1.3	.50	.79	.05	.50				
8	0	0	.60	.90	.48	.63	.05	.55				
9	0	0	.46	.63	.40	.49	.04	.43				
10	0	0	.25	.53	.34	.50	.04	.29				
11	0	0	.10	.48	.28	.49	.03	.13				
12	0	0	.07	.43	.28	.46	.03	.07				
13	0	0	.06	.38	.25	.45	.03	.05				
14	0	0	.07	.35	.24	.49	.02	.05				
15	0	0	.06	.40	.27	.46	.11	.04				
16	0	0	.05	.49	.22	.43	.27	.04				
17	0	0	.06	22	.19	.38	.27	.05				
18	0	0	.06	9.7	.22	.33	.15	.05				
19	0	0	.05	2.6	.22	.30	.13	.05				
20	0	0	.05	1.6	.24	.29	.57	.04				
21	0	0	.04	1.4	.25	.27	.71	.04				
22	0	0	.04	1.2	.23	.25	.89	.03				
23	0	0	.03	1.1	.23	.24	.88	.03				
24	0	0	.03	1.2	.21	.23	.75	.02				
25	0	0	.02	1.3	.19	.22	.56	.02				
26	0	0	.02	1.1	.16	.22	.47	.02				
27	0	0	.02	.95	.13	.22	.39	.01				
28	0	0	.03	.81	.30	.23	.33	.01				
29	0	0	.73	.67	24	.26	.32	.01				
30	.68	0	.66	.69	---	.29	.31	0				
31	.17	---	.33	.70	---	.26	---	0	---			---
TOTAL	0.85	0.06	9.75	70.19	33.36	29.47	8.20	4.26	0	0	0	0
MEAN	.027	.002	.31	2.26	1.15	.95	.27	.14	0	0	0	0
MAX	.68	.04	3.1	22	24	11	.89	.55	0	0	0	0
MIN	0	0	0	.22	.13	.22	.02	0	0	0	0	0
AC-FT	1.7	.1	19	139	66	58	16	8.4	0	0	0	0

CAL YR 1987 TOTAL 218.20 MEAN .60 MAX 31 MIN 0 AC-FT 433  
WTR YR 1988 TOTAL 156.14 MEAN .43 MAX 24 MIN 0 AC-FT 310



## SAN JOAQUIN RIVER BASIN

11253500 JAMES BYPASS NEAR SAN JOAQUIN, CA

LOCATION.--Lat 36°39'09", long 120°10'49", in NE 1/4 SW 1/4 sec.1, T.15 S., R.16 E., Fresno County, Hydrologic Unit 18030012, on right bank 3.2 mi north of San Joaquin.

PERIOD OF RECORD.--October 1947 to current year. Published as "Fresno Slough bypass" in WSP 1315-A and 1735. Daily discharge data for period October 1954 to September 1972 are in files of U.S. Bureau of Reclamation. Monthly totals published in WDR CA-72-2.

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Diversion above station for irrigation. James Bypass carries overflow from Kings River to San Joaquin River.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation; rounded to U.S. Geological Survey standards.

AVERAGE DISCHARGE.--41 years, 274 ft<sup>3</sup>/s, 198,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 5,570 ft<sup>3</sup>/s, June 7, 1969; no flow for all or most of each year.

EXTREMES FOR CURRENT YEAR.--No flow for the entire year.

## SAN JOAQUIN RIVER BASIN

11257500 FRESNO RIVER NEAR KNOWLES, CA

LOCATION.--Lat 37°14'14", long 119°46'26", in SE 1/4 NW 1/4 sec.15, T.8 S., R.20 E., Madera County, Hydrologic Unit 18040007, on left bank at Fresno Crossing, 0.1 mi downstream from Bean Gulch, and 6 mi northeast of Knowles.

DRAINAGE AREA.--133 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1911 to August 1913, November 1915 to current year.

REVISED RECORDS.--WSP 1515: 1916-19, 1920(M), 1921-23, 1925-26(M), 1932(M), 1935-36(M).

GAGE.--Water-stage recorder. Datum of gage is 1,086.4 ft above National Geodetic Vertical Datum of 1929. Prior to June 13, 1930, nonrecording gage 10 ft upstream and June 13, 1930, to Jan. 13, 1931, water-stage recorder at site 40 ft upstream at datum 0.34 ft lower.

REMARKS.--Estimated daily discharges: June 5 to July 9, Aug. 2-24. Records fair. Diversions for irrigation of 160 acres above station. Diversions into Fresno River basin above station of up to 60 ft<sup>3</sup>/s at times since 1888 from the Merced River basin. Diversions are for irrigation downstream from station.

AVERAGE DISCHARGE.--73 years (water years 1912, 1917-88), 84.5 ft<sup>3</sup>/s, 61,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.52 ft, from rating curve extended above 4,500 ft<sup>3</sup>/s, on basis of slope-area measurement of peak flow; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 590 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 5	1430	*485	*2.81				

No flow July 21 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.48	3.5	26	14	26	159	26	57	22	3.7	.0	.0
2	.32	4.6	27	15	25	156	26	49	16	3.6	.0	.0
3	.32	5.5	27	16	25	70	26	47	11	3.3	.0	.0
4	.33	4.8	29	25	25	50	26	46	9.5	3.2	.0	.0
5	.22	3.5	38	254	24	42	26	45	9.6	2.9	.0	.0
6	.20	4.1	37	179	24	38	27	54	9.4	2.8	.0	.0
7	.25	5.8	68	69	24	36	27	43	9.7	2.6	.0	.0
8	.26	4.8	40	43	24	32	27	43	10	2.5	.0	.0
9	.35	4.0	26	34	24	30	27	41	9.3	2.3	.0	.0
10	.53	4.6	21	29	25	29	27	35	8.7	2.2	.0	.0
11	.57	5.9	20	32	25	27	27	34	8.3	.97	.0	.0
12	.58	6.4	19	38	25	27	27	34	7.9	.75	.0	.0
13	.91	6.9	19	28	25	26	27	33	7.6	1.4	.0	.0
14	1.3	8.3	16	27	25	26	77	33	7.3	1.7	.0	.0
15	.78	13	15	27	25	26	125	31	7.1	.68	.0	.0
16	1.7	10	17	29	25	26	59	29	6.8	.31	.0	.0
17	1.0	11	18	61	25	25	46	32	6.6	.09	.0	.0
18	1.1	13	17	96	25	25	45	33	6.4	.07	.0	.0
19	.92	14	16	39	24	25	61	32	6.3	.02	.0	.0
20	1.1	16	15	28	24	25	292	28	6.5	.01	.0	.0
21	1.1	26	15	27	24	25	162	21	6.6	.0	.0	.0
22	1.7	25	16	28	24	26	123	17	6.2	.0	.0	.0
23	3.2	24	28	27	25	26	129	14	5.8	.0	.0	.0
24	5.2	23	21	27	25	27	128	11	5.7	.0	.0	.0
25	3.4	24	14	27	24	27	98	9.5	5.8	.0	.0	.0
26	2.1	26	12	27	25	27	88	7.6	5.8	.0	.0	.0
27	2.0	28	14	27	26	27	83	6.0	5.0	.0	.0	.0
28	4.4	28	20	27	36	28	74	5.4	4.6	.0	.0	.0
29	18	29	24	27	71	27	65	25	4.2	.0	.0	.0
30	8.7	27	23	27	---	27	58	43	3.8	.0	.0	.0
31	4.1	---	18	26	---	27	---	31	---	.0	.0	---
TOTAL	67.12	409.7	716	1380	774	1194	2059	969.5	239.5	35.10	0.0	0.0
MEAN	2.17	13.7	23.1	44.5	26.7	38.5	68.6	31.3	7.98	1.13	.00	.00
MAX	18	29	68	254	71	159	292	57	22	3.7	.00	.00
MIN	.20	3.5	12	14	24	25	26	5.4	3.8	.00	.00	.00
AC-FT	133	813	1420	2740	1540	2370	4080	1920	475	70	.0	.0

CAL YR 1987 TOTAL 9085.70 MEAN 24.9 MAX 500 MIN .00 AC-FT 18020  
WTR YR 1988 TOTAL 7843.92 MEAN 21.4 MAX 292 MIN .00 AC-FT 15560

NOTE: Beaver activity affected stage-discharge relationship.

## SAN JOAQUIN RIVER BASIN

11257500 FRESNO RIVER NEAR KNOWLES, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1971 to September 1988 (discontinued).

INSTRUMENTATION.--Temperature recorder since July 1971.

REMARKS.--No temperatures shown for period of no flow July 21 to Sept. 30. Interruptions in record were due to malfunction of recording instrument.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 33.5 °C, July 5, 1984; minimum recorded, 0.0 °C, Jan. 5, 7, 1973, Dec. 8, 9, 1978.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.5 °C, July 3, 10, 11; minimum recorded, 0.5 °C, Dec. 25-27, Jan. 1.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	21.0	17.5	16.0	15.0	9.5	6.5	3.0	0.5	8.0	7.0	---	---
2	---	---	15.5	14.0	9.0	6.0	4.5	2.0	8.0	7.0	---	---
3	---	---	15.5	11.5	10.0	6.5	6.0	4.0	8.0	6.5	---	---
4	---	---	14.5	11.0	9.0	7.5	7.5	5.5	---	---	---	---
5	---	---	14.5	12.0	9.5	8.0	8.0	7.0	---	---	---	---
6	21.0	17.0	15.0	13.5	9.5	7.5	7.0	6.0	---	---	---	---
7	20.5	16.5	15.0	11.5	10.0	7.5	6.5	6.0	---	---	---	---
8	20.0	16.5	15.0	11.0	7.5	7.0	7.5	6.5	---	---	---	---
9	19.5	16.5	15.0	11.5	10.0	6.5	8.0	6.5	---	---	---	---
10	19.5	17.0	14.5	11.0	10.0	7.0	8.0	7.5	---	---	---	---
11	19.0	16.0	14.0	11.0	9.5	8.5	8.5	8.0	---	---	---	---
12	19.5	17.5	13.5	10.5	9.5	6.0	8.0	7.0	---	---	---	---
13	19.0	16.5	13.5	12.5	7.0	3.5	7.0	6.5	---	---	---	---
14	18.5	16.0	13.5	11.0	5.0	2.5	7.0	6.0	---	---	---	---
15	18.0	15.5	12.0	9.0	---	---	7.5	6.5	---	---	---	---
16	17.5	15.0	12.0	9.0	---	---	7.5	7.0	---	---	---	---
17	17.5	14.5	11.5	10.0	---	---	8.0	7.0	10.5	8.0	---	---
18	17.0	14.5	12.5	9.5	---	---	7.5	7.0	10.5	8.0	---	---
19	16.5	14.0	12.5	9.0	---	---	7.0	6.5	10.0	8.0	---	---
20	16.5	14.0	10.5	8.0	7.5	3.5	7.0	6.0	10.5	8.0	---	---
21	17.0	15.0	9.5	7.0	7.5	4.5	6.5	5.5	10.5	8.5	---	---
22	18.0	16.5	10.5	8.5	7.5	6.5	7.0	5.5	11.0	8.5	---	---
23	19.5	17.0	11.5	9.0	7.0	4.0	7.5	5.5	11.0	9.5	---	---
24	19.0	16.0	11.0	8.0	5.0	1.5	7.5	6.0	11.5	9.5	---	---
25	19.0	15.0	9.5	7.0	3.0	.5	8.0	6.0	---	---	---	---
26	19.0	16.0	9.0	5.0	3.0	.5	8.0	6.5	---	---	---	---
27	18.5	16.5	8.0	4.5	2.5	.5	8.5	7.0	---	---	---	---
28	19.5	17.0	8.0	4.0	4.0	1.5	9.0	7.5	---	---	---	---
29	18.5	16.0	7.5	4.0	4.0	3.0	9.0	8.0	---	---	---	---
30	17.0	14.5	7.5	4.0	5.0	2.5	9.0	8.5	---	---	---	---
31	16.0	14.0	---	---	4.5	1.0	9.0	8.0	---	---	---	---
MONTH	---	---	16.0	4.0	---	---	9.0	0.5	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11257500 FRESNO RIVER NEAR KNOWLES, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	15.0	13.5	20.0	17.5	25.0	21.5	---	---	---	---
2	---	---	15.0	13.5	21.0	18.5	25.0	22.0	---	---	---	---
3	---	---	15.5	14.0	21.5	19.0	25.5	22.5	---	---	---	---
4	---	---	16.0	14.5	21.0	19.5	25.0	22.0	---	---	---	---
5	---	---	16.0	14.5	19.5	18.0	24.0	21.5	---	---	---	---
6	---	---	15.0	14.0	19.0	16.5	24.0	21.5	---	---	---	---
7	---	---	14.5	14.0	18.0	16.5	24.5	21.5	---	---	---	---
8	18.5	15.0	15.0	13.0	19.0	16.0	24.5	22.0	---	---	---	---
9	19.0	14.5	16.5	14.0	19.5	16.5	25.0	22.0	---	---	---	---
10	19.0	15.0	18.0	15.0	20.5	17.5	25.5	22.5	---	---	---	---
11	19.5	15.5	19.0	16.5	21.0	18.5	25.5	22.5	---	---	---	---
12	19.0	15.5	20.0	17.5	21.5	19.0	24.5	22.0	---	---	---	---
13	18.0	16.0	20.0	18.5	22.5	20.0	25.0	22.0	---	---	---	---
14	17.5	14.5	20.0	18.0	23.0	21.0	25.0	22.0	---	---	---	---
15	14.5	13.0	21.0	18.5	23.5	21.0	25.0	23.5	---	---	---	---
16	14.0	12.5	20.5	19.0	23.0	21.5	---	---	---	---	---	---
17	15.5	13.5	19.0	17.5	23.0	21.0	---	---	---	---	---	---
18	17.0	13.5	19.5	16.5	23.5	21.5	---	---	---	---	---	---
19	15.5	13.5	20.5	17.5	24.5	22.5	---	---	---	---	---	---
20	14.0	12.5	22.0	18.5	24.5	23.0	---	---	---	---	---	---
21	13.5	12.5	22.5	18.5	24.0	22.0	---	---	---	---	---	---
22	13.5	12.5	22.5	19.0	24.5	22.5	---	---	---	---	---	---
23	12.5	12.0	22.5	19.5	24.5	23.5	---	---	---	---	---	---
24	13.0	12.0	22.5	19.5	24.5	22.5	---	---	---	---	---	---
25	14.5	13.0	22.5	19.5	24.5	23.0	---	---	---	---	---	---
26	15.5	14.0	21.5	19.0	25.0	22.5	---	---	---	---	---	---
27	15.5	14.5	21.0	19.0	24.5	22.0	---	---	---	---	---	---
28	15.5	15.0	20.5	19.0	24.5	22.0	---	---	---	---	---	---
29	15.5	14.0	20.0	17.5	24.0	21.5	---	---	---	---	---	---
30	16.5	14.5	18.0	16.0	24.0	21.5	---	---	---	---	---	---
31	---	---	19.0	16.0	---	---	---	---	---	---	---	---
MONTH	---	---	22.5	13.0	25.0	16.0	---	---	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11257950 HENSLEY LAKE NEAR DAULTON, CA

LOCATION.--Lat 37°06'34", long 119°53'05", in NE 1/4 NW 1/4 sec.34, T.9 S., R.19 E., Madera County, Hydrologic Unit 18040007, in control tower at center of Hidden Dam on Fresno River and 5.3 mi southeast of Daulton.

DRAINAGE AREA.--236 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam. Storage began Oct. 1, 1975, usable capacity, 85,289 acre-ft, between elevations 448.0 ft, lowest outlet, and 540.0 ft, crest of spillway. Dead storage, 4,970 acre-ft. Records, including extremes, represent total contents at 2400 hours. Reservoir is used for flood control, irrigation, recreation, and wildlife enhancement.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 89,509 acre-ft, June 6, 1979, elevation, 539.52 ft; minimum since reservoir first filled, 8,790 acre-ft, Sept. 30 and Oct. 1, 1984, elevation, 459.06 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,970 acre-ft, June 14, 15, elevation, 483.22 ft; minimum, 9,534 acre-ft, Oct. 25, 26, elevation, 460.81 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from 1975 survey)

435	2,134	460	9,185	490	28,556	520	61,525
445	4,173	470	14,138	500	38,094	530	75,247
455	7,217	480	20,569	510	49,115	540	90,259

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9644	9772	10361	11426	14115	15791	18237	21356	22793	18961	10132	9861
2	9635	9786	10384	11455	14161	16159	18284	21437	22816	18627	10123	9852
3	9631	9808	10398	11490	14206	16333	18330	21519	22831	18297	10114	9848
4	9626	9830	10435	11549	14240	16470	18371	21585	22831	17951	10105	9839
5	9622	9852	10458	11794	14292	16583	18418	21660	22839	17629	10091	9830
6	9618	9870	10486	12135	14326	16672	18465	21749	22854	17317	10082	9821
7	9609	9893	10528	12284	14372	16779	18505	21824	22869	17008	10073	9812
8	9604	9911	10622	12383	14412	16874	18546	21891	22885	16703	10064	9803
9	9596	9933	10678	12471	14464	16951	18586	21966	22900	16395	10050	9794
10	9591	9947	10716	12539	14516	17027	18627	22026	22916	16091	10046	9786
11	9587	9960	10754	12618	14556	17098	18661	22094	22931	15773	10032	9777
12	9583	9978	10782	12713	14608	17149	18695	22139	22939	15452	10023	9768
13	9578	9991	10816	12777	14655	17226	18722	22192	22954	15148	10014	9759
14	9574	10005	10839	12830	14707	17278	18810	22244	22970	14841	10005	9750
15	9569	10023	10844	12910	14748	17336	18947	22297	22970	14527	9996	9741
16	9565	10041	10873	12985	14800	17394	19036	22343	22908	14223	9987	9732
17	9561	10068	10906	13087	14841	17446	19105	22373	22816	13912	9978	9724
18	9552	10091	10930	13249	14888	17492	19167	22419	22716	13600	9969	9715
19	9547	10114	10968	13347	14923	17557	19326	22464	22609	13293	9960	9706
20	9539	10155	10983	13418	14970	17609	19723	22510	22457	12979	9955	9697
21	9539	10182	11007	13479	15011	17661	19984	22540	22177	12676	9947	9688
22	9547	10205	11040	13545	15053	17707	20168	22563	21854	12372	9938	9684
23	9543	10228	11069	13600	15094	17760	20347	22594	21548	12068	9924	9679
24	9539	10246	11113	13661	15142	17819	20526	22609	21238	11769	9920	9670
25	9534	10269	11142	13717	15183	17878	20677	22624	20931	11465	9915	9666
26	9534	10287	11166	13772	15231	17938	20822	22640	20612	11157	9906	9657
27	9543	10301	11186	13828	15290	17997	20953	22655	20275	10854	9897	9648
28	9618	10315	11234	13890	15356	18044	21077	22670	19941	10561	9893	9644
29	9670	10333	11313	13946	15524	18104	21180	22678	19625	10269	9884	9640
30	9719	10347	11362	14002	---	18150	21260	22724	19291	10155	9879	9635
31	9750	---	11401	14064	---	18197	---	22762	---	10141	9870	---
MAX	9750	10347	11401	14064	15524	18197	21260	22762	22970	18961	10132	9861
MIN	9534	9772	10361	11426	14115	15791	18237	21356	19291	10141	9870	9635
a	461.30	462.62	464.83	469.87	472.37	476.58	480.95	482.95	478.19	462.17	461.57	461.04
b	+102	+597	+1054	+2663	+1460	+2673	+3063	+1502	-3471	-9150	-271	-235
c	243	77	52	62	119	230	281	478	590	626	450	364

CAL YR 1987 b -5486

WTR YR 1988 b -13

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11258000 FRESNO RIVER BELOW HIDDEN DAM, NEAR DAULTON, CA

LOCATION.--Lat 37°06'16", long 119°53'13", in NE 1/4 SW 1/4 sec.34, T.9 S., R.19 E., Madera County, Hydrologic Unit 18040007, on left bank 350 ft upstream from Willow Creek, 2,000 ft downstream from Hidden Dam, and 5.2 mi southeast of Daulton.

DRAINAGE AREA.--237 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1941 to current year. Prior to October 1975, published as "near Daulton."

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Elevation of gage is 385 ft above National Geodetic Vertical Datum of 1929, from topographic map. See WDR CA-75-3 for history of changes prior to Oct. 1, 1975.

REMARKS.--Estimated daily discharges: Dec. 19 to Jan. 3 and May 4-6. Records good except those for flows below 25 ft<sup>3</sup>/s, which are fair. Flow completely regulated by Hensley Lake (station 11257950) since October 1975.

AVERAGE DISCHARGE.--47 years, 116 ft<sup>3</sup>/s, 84,040 acre-ft/yr, adjusted for change in contents and evaporation from Hensley Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 17.64 ft, site and datum then in use, from rating curve extended above 6,400 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 17.60 ft, site and datum then in use; maximum gage height; 17.69 ft, Feb. 24, 1969, site and datum then in use; no flow at times most years. Maximum discharge since construction of Hidden Dam in 1975, 4,190 ft<sup>3</sup>/s, Mar. 1, 1983, gage height, 8.83 ft; no flow at times some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 3, 1938, reached a discharge of 15,000 ft<sup>3</sup>/s, provided by U.S. Bureau of Reclamation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 163 ft<sup>3</sup>/s, July 4, gage height, 4.72 ft; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.01	.05	.09	.08	.10	.01	.03	0	158	.10	
2	0	.02	.05	.10	.07	.11	.01	.02	0	156	.05	
3	0	0	.05	.10	.06	.08	.01	.01	0	154	.02	
4	0	.01	.06	.10	.06	.07	.01	.01	0	159	.01	
5	0	.01	.08	.11	.05	.06	0	.01	0	151	.01	
6	0	.01	.08	.11	.04	.06	0	.01	0	146	.02	
7	0	.01	.08	.13	.03	.05	0	0	0	147	.02	
8	0	.01	.08	.16	.03	.04	0	0	0	144	.02	
9	0	0	.09	.20	.02	.04	0	.01	.01	144	.02	
10	0	.01	.09	.22	.02	.04	.01	.01	.01	146	.01	
11	0	.01	.08	.25	.02	.03	.01	.01	0	147	.01	
12	0	.01	.09	.27	.02	.02	.01	.01	0	147	0	
13	0	.01	.09	.30	.03	.02	0	.01	0	146	0	
14	0	.01	.09	.37	.03	.02	.02	.01	0	144	0	
15	0	.01	.10	.48	.04	.02	.02	0	0	145	0	
16	0	.01	.11	.44	.05	.01	.02	0	31	146	0	
17	0	.01	.10	.45	.05	.01	.02	0	51	148	0	
18	0	.01	.06	.34	.04	.01	.02	0	50	149	0	
19	0	.01	.08	.21	.04	0	.04	.01	50	146	0	
20	0	.02	.08	.14	.05	0	.08	.01	78	147	0	
21	0	.03	.08	.23	.05	0	.05	.01	132	147	0	
22	0	.03	.08	.27	.05	0	.06	.01	154	145	0	
23	0	.04	.08	.19	.05	0	.05	.01	152	146	0	
24	0	.04	.08	.13	.05	0	.03	.01	150	146	0	
25	0	.04	.08	.10	.05	0	.05	0	149	147	0	
26	0	.03	.09	.09	.05	0	.06	0	150	149	0	
27	0	.04	.09	.09	.05	0	.05	0	156	146	0	
28	0	.04	.09	.09	.06	0	.05	0	156	144	0	
29	.01	.04	.09	.10	.08	0	.05	0	154	142	0	
30	.01	.05	.09	.11	---	0	.05	0	156	61	0	
31	.01	---	.09	.09	---	.01	---	0	---	.41	0	---
TOTAL	.03	.58	2.53	6.06	1.32	.80	.79	.21	1769.02	4343.41	.29	0
MEAN	.001	.019	.082	.20	.046	.026	.026	.007	59.0	140	.009	0
MAX	.01	.05	.11	.48	.08	.11	.08	.03	156	159	.10	0
MIN	0	0	.05	.09	.02	0	0	0	0	.41	0	0
AC-FT	.06	1.2	5.0	12	2.6	1.6	1.6	.4	3510	8620	.6	0

CAL YR 1987 TOTAL 10720.74 MEAN 29.4 MAX 222 MIN 0 AC-FT 21260 MEAN a 27.2 AC-FT a 19690  
WTR YR 1988 TOTAL 6125.04 MEAN 16.7 MAX 159 MIN 0 AC-FT 12150 MEAN a 21.6 AC-FT a 15680

a Adjusted for change in contents and evaporation from Hensley Lake. Evaporation adjustments used as provided; not reviewed by U.S. Geological Survey.

NOTE.--Backwater from beaver dams Oct. 1 to June 16 and July 30 to Sept. 30.

## SAN JOAQUIN RIVER BASIN

11258000 FRESNO RIVER BELOW HIDDEN DAM, NEAR DAULTON, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1975 to current year.

INSTRUMENTATION.--Temperature recorder since Oct. 29, 1975.

REMARKS.--Water temperatures for periods when discharge was less than 1 ft<sup>3</sup>/s are not reliable and are not published. Water temperature is affected by regulation from Hidden Dam.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 32.0 °C, June 15, 1976; minimum recorded, 3.0 °C, Jan. 17, 1987.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 30.0 °C, July 30; minimum recorded, 13.5 °C, June 17, 18, 20.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH
DAY						
1						
2						
3						
4						
5						
6						
7						
8						
9						
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11						
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25						
26						
27						
28						
29						
30						
31						
MONTH						

## SAN JOAQUIN RIVER BASIN

11258000 FRESNO RIVER BELOW HIDDEN DAM, NEAR DAULTON, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	APRIL	MAY	JUNE		JULY		AUGUST	SEPTEMBER
DAY			MAX	MIN	MAX	MIN		
1			---	---	17.0	15.0		
2			---	---	17.5	16.0		
3			---	---	16.5	15.5		
4			---	---	19.0	15.5		
5			---	---	19.5	16.0		
6			---	---	18.0	16.5		
7			---	---	18.0	16.5		
8			---	---	18.0	16.5		
9			---	---	18.0	17.0		
10			---	---	18.5	17.5		
11			---	---	19.0	17.5		
12			---	---	19.0	18.0		
13			---	---	19.5	18.0		
14			---	---	19.5	18.5		
15			---	---	20.0	19.0		
16			---	---	20.0	19.0		
17			16.0	13.5	20.5	19.5		
18			16.0	13.5	21.0	19.5		
19			15.5	14.0	21.0	20.0		
20			15.0	13.5	21.5	20.0		
21			15.0	14.0	22.0	20.5		
22			15.0	14.0	22.5	21.0		
23			14.5	14.0	23.0	21.5		
24			15.0	14.0	23.5	22.0		
25			15.0	14.0	24.0	22.5		
26			15.0	14.0	24.5	23.0		
27			15.5	14.5	24.5	23.5		
28			15.5	14.5	25.0	23.5		
29			15.5	14.5	25.5	24.0		
30			15.5	14.5	30.0	24.5		
31			---	---	---	---		
MONTH			---	---	---	---		



## SAN JOAQUIN RIVER BASIN

11258960 CHOWCHILLA RIVER ABOVE WILLOW CREEK, NEAR RAYMOND, CA

LOCATION.--Lat 37°16'23", long 119°52'49", in NE 1/4 NW 1/4 sec.3, T.8 S., R.19 E., Madera County, Hydrologic Unit 18040007, on left bank 0.9 mi upstream from Willow Creek and 4.7 mi northeast of Raymond.

DRAINAGE AREA.--173 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1980 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 680 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: May 16, 17, May 21 to July 15. Records good except those for estimated daily discharges, which are fair. No storage or diversions above station.

AVERAGE DISCHARGE.--8 years, 112 ft<sup>3</sup>/s, 81,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft<sup>3</sup>/s, Feb. 18, 1986, gage height, 15.25 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 660 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	1215	*180	*4.86				
No flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	2.2	9.1	10	57	6.1	14	4.3	.32		
2		0	2.3	7.5	10	103	6.1	13	4.0	.23		
3		0	2.3	7.0	9.6	45	5.9	12	3.5	.15		
4		0	2.5	8.5	9.0	29	5.7	11	3.4	.05		
5		0	3.2	55	8.9	23	5.2	10	3.2	0		
6		0	3.5	86	8.6	20	5.0	12	3.0	0		
7		0	4.7	32	8.6	18	4.9	11	2.9	0		
8		0	8.3	22	8.3	17	4.7	11	2.8	0		
9		0	6.9	19	8.2	15	4.6	10	2.6	0		
10		.49	5.8	16	8.2	14	4.5	9.5	2.8	0		
11		1.1	5.2	15	8.0	13	4.5	8.6	2.8	0		
12		1.2	4.8	17	7.9	12	4.3	7.3	2.6	0		
13		1.3	4.5	14	7.9	12	4.1	6.7	2.4	0		
14		1.4	4.5	12	7.7	12	7.2	6.1	2.2	0		
15		1.3	4.4	12	7.6	11	27	5.8	2.0	0		
16		1.3	4.3	15	7.4	11	20	5.5	1.9	0		
17		1.9	4.3	29	7.3	10	14	5.2	1.9	0		
18		2.3	4.3	63	7.1	10	10	5.2	1.8	0		
19		2.1	4.3	33	7.0	9.7	11	5.4	1.7	0		
20		2.4	4.1	23	6.9	9.1	110	5.1	1.6	0		
21		2.9	4.1	19	6.8	8.7	69	4.5	1.4	0		
22		2.8	4.3	17	6.7	8.6	51	3.9	1.1	0		
23		3.0	5.0	15	6.7	8.1	51	3.8	1.1	0		
24		2.6	6.5	14	6.7	7.9	48	3.5	.96	0		
25		2.4	5.6	14	6.4	7.7	34	3.3	.96	0		
26		2.3	5.0	14	6.7	7.4	27	3.2	.90	0		
27		2.3	4.6	13	6.7	7.0	23	3.0	.78	0		
28		2.2	6.1	13	8.8	6.8	20	2.9	.66	0		
29		2.2	12	12	16	6.5	18	4.0	.52	0		
30		2.2	14	12	---	6.4	16	5.8	.42	0		
31		---	11	11	---	6.1	---	5.0	---	0		---
TOTAL	0	41.69	164.6	649.1	235.7	532.0	621.8	217.3	62.20	.75	0	0
MEAN	0	1.39	5.31	20.9	8.13	17.2	20.7	7.01	2.07	.024	0	0
MAX	0	3.0	14	86	16	103	110	14	4.3	.32	0	0
MIN	0	0	2.2	7.0	6.4	6.1	4.1	2.9	.42	0	0	0
AC-FT	0	83	326	1290	468	1060	1230	431	123	1.5	0	0
CAL YR 1987	TOTAL	4480.63	MEAN	12.3	MAX	422	MIN	0	AC-FT	8890		
WTR YR 1988	TOTAL	2525.14	MEAN	6.90	MAX	110	MIN	0	AC-FT	5010		

WATER-QUALITY RECORDS

WATER TEMPERATURE: July 1980 to September 1988 (discontinued).

INSTRUMENTATION.--Temperature recorder since July 9, 1980.

WATER TEMPERATURE: Maximum recorded, 38.0 °C July 2, 1985; minimum recorded, 1.5 °C, Dec. 10-14, 1980.

WATER TEMPERATURE: Maximum recorded, 16.5 °C, Mar. 5; minimum recorded, 3.0 °C, Dec. 23.

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## SAN JOAQUIN RIVER BASIN

11258990 H. V. EASTMAN LAKE NEAR RAYMOND, CA

LOCATION.--Lat 37°13'00", long 119°59'04", in SW 1/4 SE 1/4 sec.22, T.8 S., R.18 E., Madera County, Hydrologic Unit 18040007, in intake structure at center of dam on Chowchilla River, 4.4 mi west of Raymond.

DRAINAGE AREA.--235 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earth and rockfill dam completed in December 1975. Capacity, 150,604 acre-ft between elevations 410.0 ft, invert elevation to outlet tunnel, and 587.0 ft, crest of ungated spillway. Inactive pool, 10,150 acre-ft. Reservoir is used for flood control, irrigation, recreation, and fish and wildlife enhancement. Records, including extremes, represent total contents at 2400 hours.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 145,687 acre-ft, June 4, 5, 1979, elevation, 584.22 ft; minimum since initial season of normal operation, 1,978 acre-ft, Nov. 20, 1977, elevation, 440.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 34,476 acre-ft, May 11-16, elevation, 500.48 ft; minimum, 10,931 acre-ft, Sept. 30, elevation, 467.58 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from 1975 survey)

438	1,519	455	5,620	470	12,190	500	34,039	560	106,476
442	2,197	460	7,485	475	15,038	520	54,354	580	138,394
446	3,043	465	9,673	480	18,213	540	78,560	600	174,809
450	4,069			490	25,520				

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30276	30095	29992	30353	31818	32366	33170	34339	34175	33639	30370	11261
2	30276	30086	29992	30379	31835	32625	33170	34357	34120	33621	29480	11256
3	30259	30078	29992	30388	31835	32723	33170	34376	34102	33603	28577	11246
4	30250	30069	30018	30431	31826	32803	33170	34376	34075	33576	27671	11241
5	30241	30061	30018	30508	31800	32857	33170	34394	34057	33540	26706	11236
6	30224	30061	30044	30716	31800	32902	33170	34403	34047	33522	25726	11225
7	30207	30052	30044	30812	31818	32911	33170	34422	34020	33504	24749	11215
8	30207	30044	30061	30864	31835	32973	33144	34440	34011	33477	23813	11205
9	30190	30044	30078	30907	31844	32991	33099	34449	33993	33459	22933	11195
10	30181	30035	30086	30942	31871	32991	33081	34467	33984	33441	22011	11184
11	30164	30035	30095	30985	31879	33027	33081	34476	33975	33342	21028	11174
12	30147	30027	30095	31020	31897	33036	33081	34476	33966	33206	20062	11118
13	30147	30027	30104	31047	31915	33054	33081	34476	33957	33153	19146	11108
14	30138	30018	30104	31073	31924	33072	33135	34476	33948	33126	18286	11052
15	30129	30009	30104	31116	31932	33081	33170	34476	33939	33099	17428	11042
16	30112	30001	30104	31160	31941	33081	33215	34476	33920	33090	16528	11032
17	30104	30018	30112	31230	31959	33117	33233	34458	33902	33081	15616	11022
18	30086	30018	30112	31352	31968	33126	33261	34458	33893	33054	14697	11017
19	30078	30018	30121	31440	31977	33144	33405	34458	33884	33036	13744	11006
20	30069	30027	30121	31475	31994	33161	33594	34458	33857	33027	12811	11001
21	30061	30018	30129	31545	32003	33170	33757	34449	33839	33000	11903	10991
22	30069	30018	30147	31580	32012	33179	33866	34449	33820	32982	11328	10986
23	30069	30009	30155	31606	32012	33179	33984	34440	33812	32964	11323	10976
24	30061	30009	30155	31633	32021	33188	34084	34431	33803	32946	11318	10971
25	30052	30009	30155	31677	32047	33197	34166	34412	33793	32919	11318	10961
26	30052	30001	30164	31694	32056	33206	34230	34394	33757	32893	11308	10956
27	30069	30001	30164	31721	32083	33206	34275	34376	33730	32794	11308	10946
28	30112	29992	30215	31738	32109	33206	34312	34367	33703	32651	11292	10941
29	30112	29992	30284	31756	32189	33206	34330	34357	33676	32429	11287	10936
30	30104	29984	30310	31774	---	33197	34339	34339	33657	31941	11282	10931
31	30104	---	30336	31800	---	33188	---	34284	---	31221	11277	---
MAX	30276	30095	30336	31800	32189	33206	34339	34476	34175	33639	30370	11261
MIN	30052	29984	29992	30353	31800	32366	33081	34284	33657	31221	11277	10931
a	495.55	495.41	495.82	497.50	497.94	499.06	500.33	500.27	499.58	496.84	468.26	467.58
b	-189	-120	+352	+1464	+389	+999	+1151	-55	-627	-2436	-19944	-346
c	380	133	83	85	139	271	318	536	667	898	566	355

CAL YR 1987 b -61946

WTR YR 1988 b -19362

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11259000 CHOWCHILLA RIVER BELOW BUCHANAN DAM, NEAR RAYMOND, CA

LOCATION.--Lat 37°12'56", long 119°59'25", in SE 1/4 SW 1/4 sec.22, T.8 S., R.18 E., Madera County, Hydrologic Unit 18040007, on left bank 1,800 ft downstream from Buchanan Dam and 4.6 mi west of Raymond.

DRAINAGE AREA.--236 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1921 to September 1923, October 1930 to September 1972, October 1975 to current year. Prior to Oct. 1, 1962, published as "at Buchanan damsite."

GAGE.--Water-stage recorder and concrete control since October 1975. Elevation of gage is 420 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1921 to September 1923, at site 2.4 mi upstream at different datum. Oct. 30 to May 17, 1972, at site 0.3 mi upstream at datum 407.32 ft above National Geodetic Vertical Datum of 1929. May 18, 1972, to Sept. 30, 1972, at site 500 ft downstream at different datum. Oct. 1, 1975, to Mar. 2, 1982, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated by H. V. Eastman Lake (station 11258990) 1,800 ft upstream beginning Jan. 1, 1976.

AVERAGE DISCHARGE (adjusted for change in contents in and evaporation from H. V. Eastman Lake since 1976).--57 years (water years 1922-23, 1931-72, 1976-88), 104 ft<sup>3</sup>/s, 75,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 16.50 ft, site and datum then in use, from rating curve extended above 6,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 15.06 ft; no flow for part of each year except 1937-38, 1940-43. Maximum discharge since construction of Buchanan Dam in 1975, 5,020 ft<sup>3</sup>/s, Mar. 1, 1983, gage height, 11.67 ft; no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 508 ft<sup>3</sup>/s, Aug. 10, gage height, 6.06 ft; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.02	0	.04	.03	.36	11	.01	51	0	404	.01
2	.13	.02	0	.03	.02	.16	.11	.01	25	0	435	.01
3	.98	.01	.01	.03	.02	.09	.06	.01	.07	0	438	0
4	.10	.01	.01	.03	17	.07	.03	.01	.02	0	435	0
5	.07	.01	.01	.10	19	.06	.01	.01	.01	0	457	0
6	.03	.01	.02	.05	6.2	.05	.01	.01	.01	0	466	0
7	.03	.01	.01	.05	.14	.05	.01	.01	.02	0	469	0
8	.02	.01	.01	.03	.06	.04	14	.01	.01	0	446	0
9	.01	.01	.01	.02	.04	.03	24	.01	0	0	422	0
10	.02	.01	.01	.02	.03	.03	6.1	.01	0	0	457	0
11	.02	.01	.01	.04	.03	.03	.08	0	0	32	478	0
12	.01	.01	.01	.02	.03	.02	.04	0	0	51	472	0
13	.01	.01	0	.02	.02	.02	.03	0	0	18	449	0
14	.01	.01	0	.04	.02	.02	.07	0	0	.03	419	0
15	.01	.01	0	.10	.03	.02	.05	0	0	.01	417	0
16	.01	.01	.01	.06	.02	.02	.04	0	0	.01	441	0
17	.01	.01	.01	.12	.02	.02	.03	0	0	.01	451	0
18	.01	.02	.01	.09	.02	.02	.02	0	0	0	451	0
19	0	.02	.01	.05	.02	.02	.20	0	0	0	464	0
20	0	.02	.01	.04	.02	.02	.16	0	0	0	452	0
21	0	.02	.01	.03	.02	.01	.05	0	0	0	441	0
22	0	.01	.01	.04	.02	.01	.04	0	0	0	280	0
23	.01	.01	.02	.04	.02	.01	.08	0	0	0	.28	0
24	.01	.01	.02	.06	.02	.01	.05	0	0	0	.10	0
25	.01	.01	.02	.04	.02	.01	.04	0	0	0	.06	0
26	.01	.01	.02	.03	.02	.01	.02	0	0	0	.05	0
27	0	.01	.01	.03	.02	.01	.02	0	0	33	.04	0
28	.02	.01	.05	.03	.04	.01	.02	0	0	52	.03	0
29	.01	.01	.09	.03	.17	.01	.01	0	0	105	.02	0
30	.02	0	.09	.03	---	.01	.01	0	0	229	.01	0
31	.02	---	.06	.03	---	10	---	18	---	335	.02	---
TOTAL	1.61	.35	.56	1.37	43.12	11.25	56.39	18.10	76.14	855.06	9644.61	.02
MEAN	.052	.012	.018	.044	1.49	.36	1.88	.58	2.54	27.6	311	.0007
MAX	.98	.02	.09	.12	.19	.10	.24	.18	.51	.335	.478	.01
MIN	0	0	0	.02	.02	.01	.01	0	0	0	.01	0
AC-FT	3.2	.7	1.1	2.7	86	22	112	36	151	1700	19130	.04

CAL YR 1987 TOTAL 32978.32 MEAN 90.4 MAX 661 MIN 0 AC-FT 65410 MEAN a 13.4 AC-FT a 9700  
WTR YR 1988 TOTAL 10708.58 MEAN 29.3 MAX 478 MIN 0 AC-FT 21240 MEAN a 8.69 AC-FT a 6310

a Adjusted for change in contents and evaporation from H. V. Eastman Lake. Evaporation adjustments used as provided; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11259000 CHOWCHILLA RIVER BELOW BUCHANAN DAM, NEAR RAYMOND, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958-65, 1976 to current year.

CHEMICAL DATA: Water years 1958-65. Published as "at Buchanan Damsite."

WATER TEMPERATURE: Water years 1976 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1975 to current year.

INSTRUMENTATION.--Temperature recorder since October 1975.

REMARKS.--Water temperatures for periods when discharge was less than 1 ft<sup>3</sup>/s are not reliable and are not published. Water temperature is affected by regulation from Buchanan Dam.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 33.5 °C, June 7, 1977; minimum recorded, 0.0 °C, Jan. 2, 4, 1976.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.5 °C, Aug. 19-21; minimum recorded, 8.5 °C, Feb. 5.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY		MARCH
DAY					MAX	MIN	
1					---	---	
2					---	---	
3					---	---	
4					---	---	
5					10.0	8.5	
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					---	---	
MONTH					---	---	

## SAN JOAQUIN RIVER BASIN

11259000 CHOWCHILLA RIVER BELOW BUCHANAN DAM, NEAR RAYMOND, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER
	MAX	MIN			MAX	MIN	MAX	MIN	MAX	MIN	
1	---	---			13.0	12.0	---	---	14.0	12.0	
2	---	---			---	---	---	---	13.5	12.5	
3	---	---			---	---	---	---	13.5	12.0	
4	---	---			---	---	---	---	13.5	13.0	
5	---	---			---	---	---	---	14.0	13.5	
6	---	---			---	---	---	---	14.5	14.0	
7	---	---			---	---	---	---	14.5	13.5	
8	---	---			---	---	---	---	15.0	14.5	
9	13.5	11.5			---	---	---	---	16.0	14.5	
10	---	---			---	---	---	---	16.5	15.5	
11	---	---			---	---	---	---	17.5	16.5	
12	---	---			---	---	13.5	12.5	18.5	17.5	
13	---	---			---	---	---	---	19.5	18.5	
14	---	---			---	---	---	---	20.5	19.5	
15	---	---			---	---	---	---	22.0	20.5	
16	---	---			---	---	---	---	23.0	22.0	
17	---	---			---	---	---	---	24.0	23.0	
18	---	---			---	---	---	---	24.5	24.0	
19	---	---			---	---	---	---	25.5	24.5	
20	---	---			---	---	---	---	25.5	25.0	
21	---	---			---	---	---	---	25.5	25.0	
22	---	---			---	---	---	---	---	---	
23	---	---			---	---	---	---	---	---	
24	---	---			---	---	---	---	---	---	
25	---	---			---	---	---	---	---	---	
26	---	---			---	---	---	---	---	---	
27	---	---			---	---	---	---	---	---	
28	---	---			---	---	14.0	12.5	---	---	
29	---	---			---	---	13.5	12.0	---	---	
30	---	---			---	---	13.5	12.0	---	---	
31	---	---			---	---	13.5	12.0	---	---	
MONTH	---	---			---	---	---	---	---	---	

## SAN JOAQUIN RIVER BASIN

11261100 SALT SLOUGH AT HIGHWAY 165, NEAR STEVINSON, CA

LOCATION.--Lat 37°14'52", long 120°51'04", in SE 1/4 SE 1/4, sec.10, T.8 S., R.10 E., Merced County, Hydrologic Unit 18040001, on right bank at bridge on Highway 165 and 5.5 miles south of Stevinson.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 18-26, 31, Feb. 3-11, 20-22, Mar. 2, 3, 7-9, 11-18, and Aug. 14-18. Records good. Bimonthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 810 ft<sup>3</sup>/s, Feb. 20, 1986; minimum daily, 36 ft<sup>3</sup>/s, Dec. 27, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 528 ft<sup>3</sup>/s, Mar. 2, elevation, 67.88 ft; minimum daily, 90 ft<sup>3</sup>/s, Dec. 24, 27, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	330	130	111	161	472	260	260	262	288	347	317
2	196	301	136	107	164	521	238	271	271	326	358	288
3	185	285	125	106	168	489	259	278	247	365	361	305
4	159	269	117	105	193	451	291	272	251	382	341	330
5	157	252	125	114	226	440	266	253	289	383	339	319
6	174	238	116	115	233	434	226	222	318	371	372	300
7	147	222	117	108	229	446	224	230	374	394	393	292
8	111	224	115	101	227	461	225	240	379	398	388	273
9	102	225	109	105	227	422	246	239	374	354	380	255
10	108	226	117	109	222	378	288	269	319	339	378	259
11	110	240	119	112	212	410	287	283	325	368	339	295
12	117	242	118	118	233	408	285	266	336	366	303	338
13	125	237	108	135	245	420	258	222	335	354	311	326
14	130	239	114	158	225	459	286	204	321	321	354	295
15	147	237	122	156	237	494	382	243	276	264	392	277
16	152	234	134	158	232	513	448	230	283	270	441	252
17	142	221	117	171	218	501	450	241	292	262	452	291
18	152	223	108	210	210	477	422	252	288	274	413	306
19	174	219	101	212	208	431	405	264	307	276	420	286
20	163	221	99	194	233	389	394	280	341	292	410	274
21	135	228	99	180	254	360	413	282	364	275	427	252
22	150	209	100	179	259	387	394	292	368	274	437	240
23	197	187	92	197	260	360	329	289	351	295	422	218
24	245	197	90	217	258	311	344	276	344	320	399	200
25	260	234	94	210	265	291	350	237	318	328	402	242
26	289	225	93	180	275	309	341	232	343	310	372	252
27	289	209	90	137	295	275	331	216	331	274	359	259
28	278	169	90	158	342	274	280	239	339	269	333	243
29	290	140	108	174	429	284	252	282	308	270	383	222
30	345	131	132	174	---	277	245	314	296	281	379	195
31	366	---	124	171	---	283	---	292	---	304	324	---
TOTAL	5795	6814	3459	4682	6940	12427	9419	7970	9550	9847	11729	8201
MEAN	187	227	112	151	239	401	314	257	318	318	378	273
MAX	366	330	136	217	429	521	450	314	379	398	452	338
MIN	102	131	90	101	161	274	224	204	247	262	303	195
AC-FT	11490	13520	6860	9290	13770	24650	18680	15810	18940	19530	23260	16270
CAL YR 1987	TOTAL 95787	MEAN 262	MAX 762	MIN 90	AC-FT 190000							
WTR YR 1988	TOTAL 96833	MEAN 265	MAX 521	MIN 90	AC-FT 192100							



## SAN JOAQUIN RIVER BASIN

11261500 SAN JOAQUIN RIVER AT FREMONT FORD BRIDGE, CA

LOCATION.--Lat 37°18'35", long 120°55'47", in NW 1/4 SE 1/4 sec.24, T.7 S., R.9 E., Merced County, Hydrologic Unit 18040001, on left bank 20 ft upstream from Fremont Ford bridge, 2.1 mi downstream from Salt Slough, 4.5 mi west of Stevinson, and 6.7 mi upstream from Merced River.

DRAINAGE AREA.--7,615 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1937 to September 1970, October 1985 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to September 1970, records did not include flow bypassing station.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1970, at site 120 ft downstream at same datum. March 1937 to Oct. 1, 1959, at datum 3.77 ft lower.

REMARKS.--Estimated daily discharges: Mar. 30 to Apr. 4, May 1, 2. Records good. Natural flow of stream affected by storage reservoirs, ground-water withdrawals, diversions for irrigation, and imported water from Delta-Mendota Canal (station 11313000). Low flows consist mainly of return water from irrigated areas. Stage affected at times by backwater from the Merced River. Bimonthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18,100 ft<sup>3</sup>/s, Mar. 18, 1986; maximum elevation, 67.65 ft, Mar. 18, 1986; minimum, 9.5 ft<sup>3</sup>/s, Oct. 30, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 557 ft<sup>3</sup>/s, Apr. 26, elevation, 57.68 ft; minimum daily, 125 ft<sup>3</sup>/s, Dec. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	234	373	229	219	284	389	292	330	272	283	303	356
2	245	348	211	194	274	449	290	315	259	293	317	324
3	229	330	197	182	278	471	285	300	260	321	337	306
4	214	307	178	175	280	449	281	294	244	344	336	314
5	196	288	179	176	307	435	289	280	266	353	331	334
6	200	280	185	178	318	431	242	267	299	350	345	307
7	206	263	184	172	313	422	233	256	329	361	371	298
8	205	250	189	161	295	432	228	271	353	378	384	282
9	194	252	183	149	290	426	238	283	358	362	378	260
10	218	249	176	152	288	398	265	295	343	335	377	242
11	241	256	175	159	279	382	279	341	316	350	364	269
12	226	267	165	168	291	393	280	305	318	364	320	316
13	217	268	161	175	302	384	270	264	326	362	319	354
14	197	265	155	196	286	394	278	228	316	343	346	331
15	200	267	162	211	272	427	331	244	293	281	380	285
16	204	265	177	217	270	446	404	252	269	246	402	259
17	185	259	165	240	258	459	446	231	288	241	438	257
18	178	250	153	289	245	444	426	258	295	234	452	318
19	189	250	142	348	234	421	424	264	292	244	421	314
20	187	259	138	366	238	400	450	278	295	260	394	305
21	159	263	141	326	263	372	498	272	322	265	409	273
22	155	260	146	302	267	378	495	280	336	246	431	249
23	186	238	138	284	269	384	453	296	344	257	416	225
24	230	228	132	289	266	348	471	285	335	285	402	204
25	257	250	128	287	265	315	536	254	325	298	392	223
26	287	293	128	266	269	311	531	236	335	299	391	241
27	298	356	125	227	276	308	498	228	325	264	384	246
28	300	369	132	225	306	289	435	236	322	243	354	240
29	307	322	143	261	345	305	352	257	312	245	365	222
30	330	262	198	278	---	290	340	295	302	247	404	199
31	369	---	234	285	---	296	---	300	---	262	384	---
TOTAL	7043	8387	5149	7157	8128	12048	10840	8495	9249	9217	11647	8353
MEAN	227	280	166	231	280	389	361	274	308	297	376	278
MAX	369	373	234	366	345	471	536	341	358	378	452	356
MIN	155	228	125	149	234	289	228	228	244	234	303	199
AC-FT	13970	16640	10210	14200	16120	23900	21500	16850	18350	18280	23100	16570

CAL YR 1987 TOTAL 117630 MEAN 322 MAX 1380 MIN 125 AC-FT 233300  
WTR YR 1988 TOTAL 105713 MEAN 289 MAX 536 MIN 125 AC-FT 209700

## SAN JOAQUIN RIVER BASIN

11262900 MUD SLOUGH NEAR GUSTINE, CA

LOCATION.--Lat 37°15'45", long 120°54'20", in SE 1/4 SE 1/4 sec.6, T.8 S., R.10 E., Merced County, Hydrologic Unit 18040001, Kesterson National Wildlife Refuge, on right bank at footbridge 400 ft northwest of terminus of San Luis Drain and 5.2 mi east of Gustine.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 70 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Mar. 6-8. Records good. Bimonthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 570 ft<sup>3</sup>/s, Mar. 16, 1986; minimum daily, 0.40 ft<sup>3</sup>/s, Aug. 22, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 203 ft<sup>3</sup>/s, Mar. 2, gage height, 6.39 ft; minimum daily, 0.40 ft<sup>3</sup>/s, Aug. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	107	23	39	128	97	89	24	118	60	24	13
2	4.0	101	28	38	117	166	76	11	99	56	21	16
3	4.0	95	28	39	114	163	46	9.4	86	53	21	12
4	5.4	79	27	41	107	146	39	10	69	68	23	9.2
5	6.1	72	31	53	108	140	37	8.5	58	65	24	7.9
6	9.9	76	34	59	110	130	45	17	63	41	23	7.2
7	9.6	78	34	67	98	123	39	28	96	36	23	6.7
8	7.4	67	34	55	101	117	47	25	99	27	24	6.9
9	4.3	67	39	50	100	111	49	22	106	27	20	6.9
10	3.7	66	47	44	99	109	46	16	108	34	7.6	6.0
11	3.5	60	53	46	85	118	37	14	50	26	3.4	4.8
12	3.5	60	59	53	74	117	33	13	42	23	1.5	4.6
13	5.2	58	43	56	69	120	31	21	50	20	1.0	4.6
14	11	58	19	70	65	135	46	22	49	22	.77	4.1
15	16	63	16	90	67	170	72	23	48	22	.66	1.9
16	22	65	26	105	68	158	68	23	52	16	.57	.87
17	29	74	27	135	59	140	68	28	58	14	.54	4.6
18	38	78	29	153	58	131	69	23	47	13	1.5	.61
19	38	54	25	156	52	122	75	25	40	13	1.5	1.3
20	39	49	25	128	49	113	81	60	38	12	.86	1.5
21	50	52	23	112	52	122	57	100	38	15	.57	1.5
22	58	60	23	89	61	140	53	96	45	19	.40	1.3
23	69	68	22	76	67	138	48	80	60	21	2.3	1.0
24	71	91	14	70	75	149	61	106	70	19	2.3	.95
25	58	124	13	65	75	131	60	136	72	17	2.3	.57
26	51	91	13	67	81	117	40	122	95	21	2.6	.57
27	49	69	9.2	111	83	121	27	100	91	23	3.3	2.0
28	68	33	12	127	91	131	22	110	76	22	4.4	3.2
29	80	20	26	126	91	124	30	105	68	20	6.3	4.8
30	87	20	46	126	---	101	25	107	70	22	9.6	5.6
31	100	---	42	132	---	95	---	115	---	23	11	---
TOTAL	1004.6	2055	890.2	2578	2404	3995	1516	1599.9	2061	870	267.97	142.17
MEAN	32.4	68.5	28.7	83.2	82.9	129	50.5	51.6	68.7	28.1	8.64	4.74
MAX	100	124	59	156	128	170	89	136	118	68	24	16
MIN	3.5	20	9.2	38	49	95	22	8.5	38	12	.40	.57
AC-FT	1990	4080	1770	5110	4770	7920	3010	3170	4090	1730	532	282

CAL YR 1987 TOTAL 22986.1 MEAN 63.0 MAX 204 MIN 3.5 AC-FT 45590  
WTR YR 1988 TOTAL 19383.84 MEAN 53.0 MAX 170 MIN .40 AC-FT 38450

## SAN JOAQUIN RIVER BASIN

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA  
(Hydrologic bench-mark station)

LOCATION.--Lat 37°43'54", long 119°33'28", unsurveyed, Mariposa County, Hydrologic Unit 18040008, Yosemite National Park, on right bank 10 ft downstream from footbridge at Happy Isles, 0.4 mi downstream from Illilouette Creek, and 2.0 mi southeast of Yosemite National Park Headquarters.

DRAINAGE AREA.--181 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1915 to current year.

REVISED RECORDS.--WSP 1215: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 4,016.58 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 2, 1916, nonrecording gage at datum 0.55 ft lower.

REMARKS.--Estimated daily discharges: Oct. 1, 2. Records good. Up to 5 ft<sup>3</sup>/s can be diverted above station for Yosemite Valley water supply.

AVERAGE DISCHARGE.--73 years, 351 ft<sup>3</sup>/s, 254,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,860 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 12.73 ft, from rating curve extended above 4,000 ft<sup>3</sup>/s on basis of contracted-opening measurements at gage heights 10.4 and 11.55 ft; minimum, 1.5 ft<sup>3</sup>/s Sept. 30, 1926, Sept. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 16	0145	*1,640	*5.68				

Minimum daily, 5.1 ft<sup>3</sup>/s, Oct. 6-12, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	186	56	65	85	179	322	369	510	242	100	50
2	5.5	208	55	59	83	166	369	332	544	215	84	50
3	5.3	158	53	69	82	164	404	332	686	199	73	45
4	5.3	116	53	78	79	172	364	343	714	195	66	39
5	5.2	117	52	114	76	188	417	302	568	186	61	34
6	5.1	157	62	96	77	191	529	278	411	171	57	30
7	5.1	139	75	92	80	180	551	266	338	158	54	27
8	5.1	122	69	92	88	196	537	249	299	147	51	24
9	5.1	107	78	91	96	225	510	253	270	142	45	23
10	5.1	95	89	87	102	192	660	332	267	141	41	22
11	5.1	86	88	85	107	164	739	598	311	141	42	20
12	5.1	80	66	77	114	150	716	922	348	135	48	18
13	6.0	93	58	79	117	144	597	1170	409	122	44	17
14	6.1	108	60	77	117	142	577	1200	473	116	39	15
15	5.7	99	61	79	124	143	493	1320	519	114	35	14
16	5.4	98	62	78	126	131	444	1340	551	108	31	14
17	5.3	131	59	82	115	130	417	920	488	100	28	13
18	5.2	136	56	81	112	146	387	820	444	93	26	12
19	5.2	131	58	79	105	183	353	899	497	87	24	11
20	5.2	117	52	78	109	221	348	958	716	81	23	12
21	5.1	110	57	78	120	254	335	1080	654	74	24	15
22	10	108	79	83	127	232	319	1080	527	70	24	13
23	16	93	63	88	140	262	287	945	430	82	24	13
24	13	87	71	99	138	295	280	1020	378	127	23	12
25	12	77	70	109	149	354	329	984	487	286	23	12
26	12	67	66	110	167	433	405	930	682	259	25	11
27	11	66	58	107	195	462	437	774	436	186	26	11
28	179	61	56	108	219	416	389	718	356	139	32	10
29	351	54	59	107	193	385	399	842	305	107	42	9.6
30	222	55	62	100	---	369	446	610	272	89	41	9.2
31	155	---	63	93	---	319	---	523	---	100	51	---
TOTAL	1093.0	3262	1966	2720	3442	7188	13360	22709	13890	4412	1307	605.8
MEAN	35.3	109	63.4	87.7	119	232	445	733	463	142	42.2	20.2
MAX	351	208	89	114	219	462	739	1340	716	286	100	50
MIN	5.1	54	52	59	76	130	280	249	267	70	23	9.2
AC-FT	2170	6470	3900	5400	6830	14260	26500	45040	27550	8750	2590	1200
CAL YR 1987	TOTAL	62416.7	MEAN 171	MAX 1540	MIN 5.1	AC-FT 123800						
WTR YR 1988	TOTAL	75954.8	MEAN 208	MAX 1340	MIN 5.1	AC-FT 150700						

## SAN JOAQUIN RIVER BASIN

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

CHEMICAL DATA: Water years 1968 to current year.

BIOLOGICAL DATA: Water years 1973-81.

WATER TEMPERATURE: Water years 1966-77, 1979 to current year.

SEDIMENT DATA: Water years 1970-71, 1973 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1965 to September 1977, October 1978 to current year.

INSTRUMENTATION.--Temperature recorder October 1965 to September 1977 and since October 1978.

REMARKS.--Interruptions in record were due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 20.0 °C, July 15, 1979; minimum recorded, 0.0 °C on many days during winter period most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 19.0 °C, July 16, 24-26; minimum recorded, 0.0 °C, on several days from December to March.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV , 1987 23...	1315	83	21	7.10	2.5	0.40	665	11.6	97	K1	K5
JAN , 1988 12...	0950	57	31	6.70	1.5	0.20	670	12.0	97	<1	K1
MAY 20...	1330	920	8	6.60	11.0	0.60	--	--	--	<1	K2
JUL 19...	1130	87	15	7.10	17.0	0.70	670	10.2	120	<1	41

DATE	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3
NOV 23...	6	0	2.2	0.20	2.0	39	0.4	0.40	13	0	10
JAN 12...	8	0	2.8	0.26	2.6	39	0.4	0.60	9	0	8
MAY 20...	2	0	0.86	0.07	0.70	36	0.2	0.20	7	0	6
JUL 19...	4	0	1.7	0.04	1.2	35	0.3	0.30	7	0	5

DATE	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
NOV											
23...	10	1.9	4.0	<0.10	5.3	25	22	0.03	0.020	<0.050	0.010
JAN											
12...	9	1.8	4.5	0.10	7.7	22	26	0.03	<0.010	<0.100	<0.010
MAY											
20...	7	1.9	0.60	0.20	4.1	14	13	0.02	<0.010	<0.100	0.020
JUL											
19...	7	1.2	1.5	<0.10	3.6	8	14	0.01	<0.010	<0.100	<0.010

See footnotes at end of table.

## SAN JOAQUIN RIVER BASIN

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
NOV 23...	0.010	<0.20	0.010	<0.010	<0.010	30	1	7	<0.5	<1	2
JAN 12...	<0.010	0.30	0.010	<0.010	<0.010	20	1	7	<0.5	<1	<1
MAY 20...	<0.010	<0.20	0.020	0.020	<0.010	40	<1	6	<0.5	<1	1
JUL 19...	<0.010	0.40	0.020	0.020	<0.010	10	1	8	<0.5	<1	<1

DATE	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)
NOV 23...	<3	1	69	<5	10	1	<0.1	<10	<1	<1	<1.0
JAN 12...	<3	2	32	<5	5	2	<0.1	<10	<1	<1	<1.0
MAY 20...	<3	1	14	<5	<4	2	<0.1	<10	<1	<1	<1.0
JUL 19...	<3	1	44	<5	<4	<1	<0.1	<10	<1	<1	<1.0

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)
NOV 23...	36	<6	11	--	--	--	--	--	--	--
JAN 12...	47	<6	9	1.1	<0.4	1.8	<0.4	1.7	<0.4	0.05
MAY 20...	11	<6	7	--	--	--	--	--	--	--
JUL 19...	20	<6	5	0.6	<0.4	0.6	<0.4	0.6	<0.4	0.04

K Results based on colony count outside the acceptable range (non-ideal colony count).  
 < Actual value is known to be less than the value shown.

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	SEDI- MENT, SUS- PENDED (MG/L)
NOV									
23...*	1305	26.0	21	7.00	2.5	665	11.8	99	2
23...*	1310	36.0	22	7.10	2.5	665	11.8	99	1
23...*	1314	44.0	21	7.10	2.5	665	11.9	100	2
23...*	1320	53.0	22	7.00	2.5	665	11.9	100	3
23...*	1325	63.0	21	7.10	2.5	665	11.8	99	2
MAY									
20...*	1314	25.0	8	6.60	11.0	--	--	--	2
20...*	1327	38.0	7	6.60	11.0	--	--	--	6
20...*	1334	49.0	8	6.50	11.0	--	--	--	2
20...*	1342	59.0	8	6.60	11.0	--	--	--	3
20...*	1348	73.0	9	6.50	11.0	--	--	--	--

\* Instantaneous streamflow at the time of cross-sectional measurement: Nov. 23, 83 ft<sup>3</sup>/s; May 20, 920 ft<sup>3</sup>/s.

## SAN JOAQUIN RIVER BASIN

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX OCTOBER	MIN	MAX NOVEMBER	MIN	MAX DECEMBER	MIN	MAX JANUARY	MIN	MAX FEBRUARY	MIN	MAX MARCH	MIN
1	12.0	10.5	9.5	9.0	4.5	2.5	0.0	0.0	0.5	0.0	3.5	1.5
2	12.0	10.5	9.0	6.5	4.5	3.5	0.5	0.0	0.5	0.0	4.5	1.0
3	12.5	10.5	7.0	5.5	4.5	3.5	0.5	0.5	0.5	0.0	5.0	2.0
4	12.5	10.5	8.0	6.0	4.5	4.0	1.0	0.5	0.5	0.0	6.0	3.0
5	12.5	10.5	8.0	7.0	4.5	4.0	1.5	0.5	0.5	0.0	6.0	3.0
6	12.5	10.0	7.0	6.5	5.0	4.0	1.0	0.5	0.5	0.5	5.5	3.5
7	12.0	10.0	7.0	5.5	4.5	1.5	1.0	0.5	1.5	0.5	6.5	3.0
8	12.0	10.0	7.0	5.0	2.0	1.5	1.5	0.5	2.0	1.0	6.0	3.0
9	11.5	10.0	7.5	5.5	5.0	2.0	2.5	1.5	2.5	1.0	4.5	2.0
10	12.0	10.0	7.0	5.0	5.0	3.0	2.0	1.0	3.5	1.5	2.0	0.5
11	11.5	9.5	7.0	5.0	4.5	2.0	2.0	0.5	3.5	1.5	1.0	0.0
12	11.5	10.5	6.5	4.5	2.0	0.5	0.5	0.5	3.5	1.5	2.0	0.0
13	11.5	9.5	6.5	5.5	1.0	0.5	0.5	0.5	3.0	1.0	3.5	0.5
14	11.0	9.0	6.0	4.0	0.5	0.0	1.5	0.5	4.0	1.5	4.5	2.0
15	10.5	9.0	4.5	2.5	0.5	0.0	1.5	0.5	4.0	2.0	4.5	2.0
16	10.5	9.0	6.0	4.0	1.0	0.5	1.0	0.5	2.5	1.0	4.0	1.0
17	10.5	8.5	6.5	5.5	1.0	0.5	1.0	0.5	2.0	0.5	5.5	1.5
18	10.0	8.5	6.5	4.5	1.0	1.0	0.5	0.5	2.0	0.5	6.5	2.5
19	10.0	8.5	5.5	4.5	1.0	1.0	0.5	0.0	2.5	0.5	6.0	3.0
20	10.0	8.5	5.0	3.5	1.0	1.0	0.5	0.0	4.0	1.5	6.5	3.5
21	10.0	8.5	3.5	2.5	1.5	1.0	0.5	0.5	4.5	2.0	5.5	3.5
22	10.5	9.5	3.5	2.5	1.5	1.0	1.0	0.5	4.5	2.0	6.5	3.0
23	10.5	9.5	3.0	2.0	1.0	0.0	2.0	1.0	4.5	2.5	7.5	4.0
24	9.5	8.5	3.5	2.5	0.5	0.0	2.5	1.5	4.5	2.5	7.0	3.0
25	9.5	8.5	3.0	1.5	0.0	0.0	2.5	1.5	5.0	2.0	8.5	4.0
26	9.5	9.0	1.5	1.0	0.0	0.0	3.0	1.5	5.5	3.5	7.5	4.0
27	10.0	9.0	1.5	1.0	0.5	0.0	3.0	1.5	5.0	4.0	7.0	3.5
28	10.5	9.5	2.0	1.0	0.5	0.5	3.5	2.0	4.5	3.5	6.5	2.0
29	9.5	9.0	1.5	1.0	0.5	0.0	3.0	2.0	3.5	3.0	6.5	3.0
30	9.5	7.5	2.5	1.0	0.5	0.0	2.5	1.0	---	---	5.5	2.5
31	9.0	7.5	---	---	0.0	0.0	2.0	0.5	---	---	6.0	1.5
MONTH	12.5	7.5	9.5	1.0	5.0	0.0	3.5	0.0	5.5	0.0	8.5	0.0
DAY MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL	MAY		JUNE		JULY		AUGUST		SEPTEMBER			
1	6.5	3.0	6.0	1.0	12.0	9.0	16.5	12.0	18.0	15.5	16.0	14.5
2	7.0	3.5	8.0	3.5	13.0	8.5	16.5	12.5	17.5	15.0	16.5	14.5
3	6.0	4.0	8.5	4.5	13.5	9.5	16.5	13.0	17.5	14.5	16.5	14.0
4	8.5	5.5	7.0	5.0	11.5	9.5	16.0	13.0	18.0	15.5	16.5	14.0
5	9.0	4.0	5.5	2.5	9.0	7.0	15.5	12.0	18.0	16.0	16.0	14.5
6	8.5	4.5	5.5	2.0	7.5	6.0	16.0	12.0	16.0	14.0	16.5	15.0
7	8.5	5.0	5.5	3.5	8.0	5.5	16.5	13.0	16.0	13.0	15.0	13.5
8	8.0	3.5	8.0	3.0	10.0	5.0	16.5	13.0	16.0	13.5	14.5	13.0
9	9.5	5.0	10.0	5.0	11.0	6.5	17.5	14.0	16.0	13.5	14.0	13.0
10	9.5	5.0	11.5	6.0	12.5	7.5	17.5	14.5	16.0	13.5	14.0	12.5
11	9.0	5.5	12.0	7.5	12.5	9.0	17.0	14.0	15.5	13.0	13.5	12.0
12	8.5	5.5	11.5	7.0	14.0	9.0	17.0	13.5	15.0	12.5	12.5	11.0
13	7.0	6.0	11.0	8.0	14.0	10.5	18.0	15.0	14.0	12.0	12.0	10.0
14	6.5	4.5	12.0	7.0	14.5	11.0	18.0	15.0	14.0	11.5	12.5	10.5
15	6.0	4.5	12.0	7.5	15.0	11.5	18.0	15.0	14.0	12.0	13.0	11.0
16	6.5	5.0	9.5	8.5	14.5	12.0	19.0	15.5	14.5	12.0	12.5	11.0
17	8.0	5.5	10.5	7.5	15.0	10.5	18.5	15.5	14.5	12.5	12.0	10.5
18	7.0	4.0	11.5	6.5	16.0	11.5	18.5	15.0	15.0	12.5	12.0	10.0
19	5.5	2.5	12.0	6.5	15.5	13.0	18.0	14.5	15.0	13.0	12.0	10.0
20	4.0	2.5	12.0	8.0	15.5	13.5	18.0	14.5	15.5	13.5	11.5	10.0
21	5.0	1.0	12.0	8.5	16.5	12.0	18.0	15.5	16.5	14.5	11.5	9.5
22	4.5	3.0	12.0	8.0	16.5	12.5	18.0	15.5	16.5	14.0	11.5	9.5
23	5.5	2.0	12.5	8.5	15.5	13.5	18.0	15.5	17.0	15.0	12.0	10.5
24	7.5	3.0	12.5	8.5	17.5	13.5	19.0	16.5	17.5	16.0	12.5	10.5
25	8.5	3.0	12.5	9.0	17.0	14.0	19.0	15.5	17.0	15.5	12.0	10.0
26	9.5	4.5	12.0	8.0	16.5	13.0	19.0	16.0	18.5	16.5	11.5	9.5
27	9.0	5.0	12.0	7.5	16.0	12.5	18.0	15.5	17.5	15.5	11.5	9.5
28	8.0	4.5	11.5	9.0	16.5	12.5	17.0	14.0	17.5	16.0	11.5	9.5
29	9.0	4.5	8.5	6.0	16.5	12.0	17.0	14.0	16.5	15.0	12.0	10.5
30	7.5	2.0	9.0	4.5	16.5	12.5	18.5	16.0	15.5	14.0	12.5	10.5
31	---	---	11.0	6.5	---	---	18.5	15.5	16.5	14.0	---	---
MONTH	9.5	1.0	12.5	1.0	17.5	5.0	19.0	12.0	18.5	11.5	16.5	9.5

## SAN JOAQUIN RIVER BASIN

11264500 MERCED RIVER AT HAPPY ISLES BRIDGE, NEAR YOSEMITE, CA--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 23...	1315	83	2.5	2	0.45	66
JAN 12...	0950	57	1.5	1	0.15	--
MAY 20...	1330	920	11.0	4	9.9	--
JUL 19...	1130	87	17.0	2	0.47	43

## SAN JOAQUIN RIVER BASIN

11266500 MERCED RIVER AT POHONO BRIDGE, NEAR YOSEMITE, CA

LOCATION.--Lat 37°43'01", long 119°39'55", unsurveyed, Mariposa County, Hydrologic Unit 18040008, Yosemite National Park, on left bank 150 ft upstream from Pohono bridge, 0.4 mi upstream from Artist Creek, and 4.8 mi southwest of Yosemite National Park Headquarters.

DRAINAGE AREA.--321 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1916 to current year. Monthly discharge only for October and November 1916, published in WSP 1315-A.

GAGE.--Water-stage recorder. Datum of gage is 3,861.66 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 5, 1918, at datum 1.8 ft higher. Sept. 5, 1918, to Sept. 30, 1955, at datum 1.0 ft higher.

REMARKS.--Estimated daily discharges: Oct. 2-28, Nov. 26 to Jan. 12. Records good, except those for periods of estimated daily discharges, which are fair. No diversions between stations at Happy Isles bridge and Pohono bridge.

AVERAGE DISCHARGE.--72 years, 618 ft<sup>3</sup>/s, 447,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,400 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 21.52 ft, from floodmarks in well, from rating curve extended above 17,000 ft<sup>3</sup>/s on basis of computation of flow over diversion dam for Yosemite powerplant 1 mi downstream at gage heights 20.1 and 21.98 ft, present datum; minimum, 3.3 ft<sup>3</sup>/s, Sept. 29, Oct. 1, 1924.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 16	0345	*2,090	*6.11				

Minimum daily, 12 ft<sup>3</sup>/s, Oct. 7-12, 18-21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	228	103	119	164	370	633	780	840	334	131	69
2	13	292	100	110	159	340	700	715	832	300	113	68
3	13	242	98	126	154	344	772	702	941	274	101	65
4	13	174	98	150	151	358	684	710	976	261	93	57
5	13	161	96	210	147	389	775	645	848	250	87	50
6	13	233	111	190	149	400	960	605	666	230	82	45
7	12	219	135	180	156	380	996	576	566	213	78	41
8	12	183	127	178	173	410	998	546	507	197	76	38
9	12	158	140	174	192	469	927	554	460	187	71	36
10	12	139	163	170	209	385	1120	633	438	182	66	34
11	12	125	160	167	218	331	1220	979	470	182	63	33
12	12	115	120	165	234	304	1230	1380	504	178	68	31
13	13	124	107	162	240	294	1090	1640	563	164	68	30
14	14	180	110	156	239	297	1120	1670	636	153	64	28
15	13	162	111	160	258	305	1010	1770	677	150	59	27
16	13	156	113	158	261	276	943	1850	705	143	54	26
17	13	197	108	162	234	276	873	1440	649	135	51	25
18	12	234	103	154	229	312	799	1260	586	128	49	24
19	12	224	109	146	205	384	741	1310	613	120	45	23
20	12	199	97	148	221	456	748	1330	861	112	40	23
21	12	185	104	149	244	523	711	1440	853	104	40	26
22	23	189	146	160	262	482	695	1450	680	98	39	26
23	36	162	118	169	285	547	631	1280	571	118	39	24
24	29	148	131	191	279	613	645	1340	495	192	39	23
25	27	134	129	212	303	711	772	1290	548	313	38	23
26	25	125	120	218	335	857	925	1240	847	328	38	23
27	25	120	110	211	390	923	1000	1080	596	241	39	22
28	146	112	104	211	449	832	903	1000	479	188	42	21
29	441	99	108	210	401	761	876	1240	414	148	52	20
30	314	101	113	199	---	736	931	1000	369	124	57	19
31	203	---	115	180	---	638	---	896	---	121	59	---
TOTAL	1533	5120	3607	5295	6941	14703	26428	34351	19190	5868	1941	1000
MEAN	49.5	171	116	171	239	474	881	1108	640	189	62.6	33.3
MAX	441	292	163	218	449	923	1230	1850	976	334	131	69
MIN	12	99	96	110	147	276	631	546	369	98	38	19
AC-FT	3040	10160	7150	10500	13770	29160	52420	68140	38060	11640	3850	1980

CAL YR 1987 TOTAL 100542 MEAN 275 MAX 2110 MIN 12 AC-FT 199400  
WTR YR 1988 TOTAL 125977 MEAN 344 MAX 1850 MIN 12 AC-FT 249900



## SAN JOAQUIN RIVER BASIN

11267350 BIG CREEK DIVERSION NEAR FISH CAMP, CA

LOCATION.--Lat 37°28'10", long 119°36'51", in SE 1/4 NE 1/4 sec.25, T.5 S., R.21 E., Mariposa County, Hydrologic Unit 18040008, Sierra National Forest, on right bank 0.5 mi downstream from diversion weir, 0.5 mi upstream from Rainier Creek, and 1.2 mi southeast of Fish Camp.

PERIOD OF RECORD.--October 1969 to June 1977, April 1987 to current year.

GAGE.--Water-stage recorder, crest-stage gage and culvert control. Elevation of gage is 5,400 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Periods of ice-effect, Nov. 25-30, Dec. 12 to Jan. 26, Jan. 30 to Feb. 8, Feb. 13, 14, 25-27. Records good except those for periods of estimated discharge, which are fair. Flow is diverted from the left bank of Big Creek, a tributary to the Merced River, to Rainier Creek which is tributary to the Fresno River. Flow is used for domestic and irrigation purposes.

AVERAGE DISCHARGE.--8 years (water years 1970-76, 1988), 11.3 ft<sup>3</sup>/s, 8,190 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 66 ft<sup>3</sup>/s, June 1, 2, 1975; no flow July 1, 2, 1973, and many days in August and September 1987, Oct. 1, 1987, July 27 to Aug. 11, Sept. 6-16, 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.7	2.6	3.8	6.2	17	15	22	12	3.9	.00	.01
2	.03	4.4	2.5	3.3	6.0	17	15	22	11	3.8	.00	.01
3	.32	2.1	2.5	3.0	6.6	17	15	22	11	3.8	.00	.01
4	.32	2.6	2.6	3.5	6.7	17	15	21	9.8	3.8	.00	.01
5	.32	2.5	2.7	20	6.8	18	16	20	10	3.7	.00	.01
6	.32	3.3	11	15	6.5	17	16	19	9.9	3.6	.00	.00
7	.38	2.6	10	3.8	6.4	17	16	19	10	3.4	.00	.00
8	.46	2.3	5.9	3.5	7.1	18	16	18	11	3.4	.00	.00
9	.46	2.1	5.4	3.4	8.0	17	15	18	9.8	3.3	.00	.00
10	.56	2.1	5.7	3.5	8.8	15	15	19	9.0	3.3	.00	.00
11	.56	2.0	5.1	4.0	9.0	14	15	21	8.7	1.2	.00	.00
12	.56	2.0	4.2	4.1	9.2	13	14	22	8.4	.33	.02	.00
13	.67	2.6	3.3	4.0	9.2	13	14	21	8.1	.32	.07	.00
14	.78	3.4	3.4	3.9	9.4	13	20	19	7.6	.29	.07	.00
15	.78	2.2	3.4	4.0	8.6	13	17	19	7.5	.26	.07	.00
16	.78	2.1	3.5	3.9	9.8	12	16	18	7.1	.21	.07	.00
17	.78	3.3	3.3	4.1	9.2	13	17	18	6.9	.07	.06	.01
18	.78	3.0	3.3	4.4	9.0	13	16	16	6.7	.05	.05	.01
19	.78	2.5	3.3	4.2	8.4	14	19	15	6.7	.05	.05	.01
20	.78	2.3	3.3	4.1	8.8	15	20	14	6.9	.02	.05	.01
21	2.1	2.5	3.3	3.9	9.4	15	17	13	6.9	.03	.05	.01
22	2.3	2.5	6.0	4.2	9.7	15	17	13	6.3	.02	.05	.01
23	3.2	2.3	5.2	4.9	9.9	16	16	12	6.0	.01	.04	.01
24	1.3	2.3	3.8	5.1	10	17	19	12	6.0	.01	.02	.01
25	1.0	2.2	3.9	5.2	9.7	18	23	11	6.2	.01	.02	.01
26	.90	2.2	3.8	5.6	10	20	26	10	6.2	.01	.02	.01
27	1.0	2.2	3.7	7.9	13	20	27	11	5.4	.00	.02	.01
28	9.2	2.1	4.0	8.2	25	18	26	11	4.6	.00	.01	.01
29	7.2	2.1	4.5	8.4	21	17	26	20	4.3	.00	.01	.01
30	1.0	2.4	5.2	7.3	---	16	25	14	3.9	.00	.01	.01
31	.90	---	4.4	6.7	---	15	---	13	---	.00	.01	---
TOTAL	40.52	73.9	134.8	170.9	277.4	490	544	523	233.9	38.89	0.77	0.19
MEAN	1.31	2.46	4.35	5.51	9.57	15.8	18.1	16.9	7.80	1.25	.025	.006
MAX	9.2	4.4	11	20	25	20	27	22	12	3.9	.07	.01
MIN	.00	1.7	2.5	3.0	6.0	12	14	10	3.9	.00	.00	.00
AC-FT	80	147	267	339	550	972	1080	1040	464	77	1.5	.4

WTR YR 1988 TOTAL 2528.27 MEAN 6.91 MAX 27 MIN .00 AC-FT 5010

## SAN JOAQUIN RIVER BASIN

11269500 LAKE MCCLURE AT EXCHEQUER, CA

LOCATION.--Lat 37°35'02", long 120°16'09", in NW 1/4 SE 1/4 sec.13, T.4 S., R.15 E., Mariposa County, Hydrologic Unit 18040008, on left end of New Exchequer Dam on Merced River, 0.9 mi east of Exchequer, and 5.5 mi northeast of Merced Falls.

DRAINAGE AREA.--1,037 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1926 to September 1930 (daily gage heights; also summary of yearly contents in WSP 881), October 1930 to current year.

REVISED RECORDS.--WSP 881: 1926-32 (yearly summaries only). WSP 1345: 1951(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Merced Irrigation District). Prior to Oct. 1, 1964, indicator in powerplant at same datum. Oct. 1, 1964, to July 31, 1966, nonrecording gage at center of upstream face of dam at same datum.

REMARKS.--Reservoir is formed by a rockfill dam with a reinforced concrete face completed in March 1967. Dam is downstream from and connected to the original concrete arch and gravity-type dam which was completed in April 1926. Usable capacity, 1,024,000 acre-ft between elevations 440.0 ft, invert entrance to outlet tunnel, and 867.0 ft, top of spillway gates. Dead storage, 300 acre-ft. Water is released through a series of powerplants down the Merced River to a diversion dam for Merced Irrigation District's main canal. Records, including extremes, represent total contents at 2400 hours.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,026,000 acre-ft, July 14, 15, 1969, elevation, 867.2 ft; practically no storage at times in 1926, 1930-31, 1964-65 when reservoir was drained for inspection or construction. Minimum since construction of New Exchequer Dam in 1966 and since lake first filled, 72,200 acre-ft, Dec. 14, 1977, elevation, 593.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 390,200 acre-ft, June 1, elevation, 742.7 ft; minimum, 147,800 acre-ft, Sept. 30, elevation, 645.9 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Merced Irrigation District, from table dated June 1966)

590	67,900	640	137,800	720	317,800	840	845,800
600	79,900	660	173,500	750	415,900	860	975,700
610	92,800	680	215,200	780	534,500	870	1,046,000
620	106,700	700	263,000	820	729,600		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	313700	308500	309600	309600	324300	336100	326700	362100	390200	354700	265600	177500
2	313700	309100	309900	309900	323700	338000	326400	363400	389900	352100	262200	175100
3	313400	309100	310200	310200	324300	338900	326100	363400	388800	349900	259200	172900
4	313100	309100	310500	310500	324300	340200	325800	363100	388800	347000	256000	171000
5	313100	309400	310800	312300	324300	341400	325800	363400	388500	344800	252800	168900
6	313100	309600	311100	314000	324900	342300	326700	363400	388100	343000	249500	166500
7	312800	309600	311400	314600	325200	343300	327000	362700	386800	340200	246600	164200
8	312800	309900	312000	314300	325800	343900	328200	362100	385700	337400	243900	162000
9	311100	309900	312500	314900	325800	344800	328800	362100	384400	334900	240800	160000
10	311100	309400	311700	315200	326100	345500	329700	361100	383000	331900	237900	157900
11	310800	309400	309900	315500	326400	346700	330600	361100	381000	329400	235000	156400
12	310800	309400	309600	316000	326400	346400	331600	363700	380700	327000	231800	153600
13	310500	309400	309900	316300	327000	346400	332800	366000	379000	323700	228500	152100
14	310500	309600	309600	316600	327300	345500	334300	369300	378600	321000	225300	150000
15	310500	309900	309400	316600	327600	344200	336100	371900	377300	318100	223000	149700
16	310200	309900	309400	317200	328200	342300	336800	375300	375900	314900	219800	149500
17	310200	309900	309400	318100	328800	340200	338000	378300	374600	312000	217300	149400
18	309900	310200	309600	318700	328800	338600	338900	379300	373900	308800	214100	149400
19	309400	310500	309600	319300	329100	337400	339800	380000	372600	305900	211200	149200
20	309100	310800	309900	319600	329100	336400	342600	381000	371300	302500	208400	149200
21	307900	311100	309900	320200	329700	334900	344200	383400	370600	299100	206400	149000
22	307900	311100	309900	320500	330300	333700	344800	385400	369300	295800	203200	149000
23	307900	311100	310500	321000	330900	332200	347300	386400	368600	292700	200800	148800
24	307600	311100	308800	321600	331300	330600	349900	387100	367300	289700	198100	148800
25	307600	309900	308800	321900	331600	330000	351800	387800	365400	285700	195400	148700
26	307100	309600	309100	322200	331900	329700	353100	388100	363700	284300	193100	148700
27	306800	309600	309400	322500	333100	329400	355600	388500	362700	281300	190100	148500
28	306800	309400	309900	323100	334000	329100	358200	388800	360500	278300	187500	148500
29	307400	309400	310200	324000	335500	328800	359800	388800	358800	275200	185100	148300
30	307600	309400	309400	324300	---	328200	361400	389500	356300	272600	182300	147800
31	308200	---	309600	324600	---	327300	---	389500	---	269500	179900	---
MAX	313700	311100	312500	324600	335500	346700	361400	389500	390200	354700	265600	177500
MIN	306800	308500	308800	309600	323700	327300	325800	361100	356300	269500	179900	147800
a	716.7	717.1	717.2	722.3	725.9	723.2	734.1	742.5	732.5	702.5	663.2	645.9
b	-5600	+1200	+200	+15000	+10900	-8200	+34100	+28100	-33200	-86800	-89600	-32100
CAL YR 1987	b	-322600										
WTR YR 1988	b	-166000										

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

## 11270800 NORTHSIDE CANAL AT MERCED FALLS, CA

LOCATION.--Lat 37°31'22", long 120°20'00", in SE 1/4 SW 1/4 sec.4, T.5 S., R.15 E., Merced County, Hydrologic Unit 18040008, on left bank 1,200 ft downstream from Merced Falls Dam, 0.2 mi west of Merced Falls, and 5.8 mi east of Snelling.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and sharp-crested rectangular weir. Elevation of gage is 340 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Flow diverted at Merced Falls Dam for irrigation of 4,100 acres below gage. Flow regulated by three powerplants and Lake McClure (station 11269500) and McSwain Reservoir, combined capacity, 1,035,000 acre-ft.

COOPERATION.--Records were provided by Merced Irrigation District under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 72 ft<sup>3</sup>/s, July 21, 1987; no flow for many days in 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	2.9	2.9	.0	.0	3.8	58	33	66	65	69	51
2	5.0	.0	2.9	.0	.0	3.8	58	42	66	65	69	51
3	5.0	.0	2.9	.0	.0	3.8	58	52	66	65	69	51
4	5.0	.0	2.9	.0	.0	3.8	58	55	66	65	69	51
5	5.0	.0	2.9	.0	.0	3.8	58	55	66	65	69	51
6	5.0	.0	2.6	.0	.0	3.8	59	55	66	64	69	51
7	9.8	.0	2.6	.0	.0	3.8	59	55	66	64	69	51
8	12	.0	2.6	.0	.0	4.4	59	55	66	64	69	49
9	9.3	.0	2.6	.0	.0	3.8	59	55	66	64	69	47
10	6.1	4.1	2.6	.0	.0	3.8	59	55	66	64	69	47
11	6.1	11	2.6	.0	2.0	3.8	59	55	66	64	69	47
12	5.3	5.7	2.6	.0	4.1	3.8	59	56	66	66	69	47
13	7.3	.0	2.6	.0	4.1	3.8	59	56	66	70	69	47
14	8.5	.0	4.7	.0	4.1	8.2	57	56	66	70	69	47
15	8.5	.0	5.7	.0	4.1	24	54	56	66	70	70	19
16	8.5	1.3	5.7	.0	4.1	45	54	56	65	70	67	4.7
17	8.5	3.5	5.7	.0	4.1	52	54	56	65	70	66	4.1
18	8.5	3.5	5.7	.0	4.1	52	54	56	65	70	66	3.8
19	8.9	3.5	5.7	.0	4.1	52	45	58	65	70	66	4.4
20	9.3	3.5	5.7	.0	4.1	52	35	63	65	70	66	4.1
21	9.3	3.2	2.1	.0	4.1	54	29	66	65	70	66	8.1
22	9.3	2.9	.0	.0	4.1	58	26	66	65	70	56	7.3
23	9.3	2.9	.0	.0	4.1	59	26	66	65	69	51	6.9
24	9.3	2.9	.0	.0	4.1	59	26	66	65	69	50	6.9
25	9.3	2.9	.0	.0	4.1	59	26	66	65	69	50	6.9
26	9.3	2.9	2.6	.0	4.1	59	26	66	65	69	50	6.9
27	9.3	2.9	6.9	.0	4.1	58	26	66	65	69	50	6.5
28	9.3	2.9	1.3	.0	4.1	58	26	66	65	69	50	6.5
29	9.3	2.9	.0	.0	4.1	58	30	66	65	69	50	6.5
30	9.3	2.9	.0	.0	---	58	33	66	65	69	50	6.5
31	9.3	---	.0	.0	---	58	---	66	---	69	50	---
TOTAL	248.9	68.3	87.1	0.0	75.8	973.2	1389	1806	1965	2096	1940	797.1
MEAN	8.03	2.28	2.81	.00	2.61	31.4	46.3	58.3	65.5	67.6	62.6	26.6
MAX	12	11	6.9	.00	4.1	59	59	66	66	70	70	51
MIN	5.0	.00	.00	.00	.00	3.8	26	33	65	64	50	3.8
AC-FT	494	135	173	.0	150	1930	2760	3580	3900	4160	3850	1580

CAL YR 1987 TOTAL 11985.4 MEAN 32.8 MAX 72 MIN .00 AC-FT 23770  
WTR YR 1988 TOTAL 11446.4 MEAN 31.3 MAX 70 MIN .00 AC-FT 22700

## SAN JOAQUIN RIVER BASIN

11270900 MERCED RIVER BELOW MERCED FALLS DAM, NEAR SNELLING, CA

LOCATION.--Lat 37°31'18", long 120°19'53", in SE 1/4 SW 1/4 sec.4, T.5 S., R.15 E., Merced County, Hydrologic Unit 18040008, on right bank 0.1 mi south of Merced Falls, 0.2 mi downstream from Merced Falls Dam, and 5.8 mi east of Snelling.

DRAINAGE AREA.--1,061 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1901 to current year. Records for water years 1914-16 incomplete, yearly estimates published in WSP 1315-A. Published as "near Merced Falls" 1901-13; as "at Exchequer" 1916-64. Records at present site are about equivalent when adjusted for diversion to North Side Canal and change in contents in Lake McClure and McSwain Reservoir.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 310.55 ft above National Geodetic Vertical Datum of 1929. See WSP 1930 for history of changes prior to Oct. 1, 1964.

REMARKS.--No estimated daily discharges. Records excellent. Merced Falls Dam diverts water to North Side Canal to irrigate 4,100 acres below station. Flow regulated by Exchequer, McSwain, and Merced Falls powerplants, Lake McClure (station 11269500) since 1926, and McSwain Reservoir since 1966, capacity, 9,200 acre-ft.

AVERAGE DISCHARGE (adjusted for diversion to North Side Canal and change in contents in Lake McClure since 1965, and change in contents in McSwain Reservoir since 1969).--87 years, 1,359 ft<sup>3</sup>/s, 984,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (water years 1901-13, 1916-88): Maximum discharge observed, 47,700 ft<sup>3</sup>/s, Jan. 31, 1911, gage height, 23.3 ft, site and datum then in use; no flow for part of Nov. 21, 1901. Maximum discharge since construction of Exchequer Dam in 1926, 46,200 ft<sup>3</sup>/s, Dec. 4, 1950, gage height, 22.6 ft, from floodmarks, site and datum then in use, from rating curve extended above 16,000 ft<sup>3</sup>/s on basis of computation of peak flow over dam; minimum daily, 3.4 ft<sup>3</sup>/s, Mar. 5, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,940 ft<sup>3</sup>/s, June 24, gage height, 7.03 ft; minimum daily, 78 ft<sup>3</sup>/s, Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	107	181	190	204	209	210	1280	796	1210	1380	1600	1140
2	89	198	197	206	215	212	1210	893	1210	1380	1580	1080
3	79	202	194	204	217	210	1190	981	1220	1380	1560	1060
4	78	205	192	202	215	212	1140	1040	1230	1390	1560	1100
5	95	208	192	204	215	209	1130	1100	1220	1390	1540	1070
6	116	204	190	206	215	209	1130	1100	1220	1380	1480	1060
7	110	204	196	202	215	208	1090	1100	1190	1380	1450	1050
8	110	205	193	207	208	215	1070	1090	1180	1390	1450	1020
9	105	206	195	208	209	206	1070	1090	1170	1390	1450	1010
10	109	200	192	211	208	208	1080	1090	1170	1390	1450	1010
11	107	199	203	208	206	354	1080	1100	1180	1460	1450	1000
12	108	204	199	210	208	572	1090	1090	1180	1490	1440	933
13	103	210	195	212	208	603	1090	1090	1200	1520	1440	845
14	103	205	192	210	205	947	919	1090	1220	1550	1440	754
15	100	204	193	212	209	1340	783	1090	1240	1560	1460	307
16	155	199	193	212	208	1270	786	1130	1260	1560	1400	84
17	184	200	200	221	204	1190	794	1130	1240	1560	1360	81
18	182	194	210	215	203	1270	779	1130	1250	1570	1320	80
19	167	194	194	209	203	1350	708	1140	1240	1590	1310	84
20	164	200	198	214	204	1360	613	1150	1240	1610	1310	83
21	159	197	202	209	212	1430	593	1140	1290	1600	1310	89
22	162	190	206	208	203	1480	590	1130	1330	1580	1270	88
23	162	197	192	206	203	1460	445	1150	1320	1590	1250	88
24	160	196	202	206	205	1450	350	1220	1330	1580	1250	87
25	159	199	212	203	206	1420	348	1240	1360	1580	1260	88
26	161	203	201	203	211	1400	378	1240	1350	1590	1240	86
27	158	203	194	206	208	1400	440	1220	1340	1590	1240	89
28	156	201	204	205	208	1370	495	1220	1360	1580	1240	88
29	155	203	207	206	213	1350	594	1220	1360	1580	1200	81
30	156	195	204	206	---	1330	667	1220	1370	1570	1180	83
31	158	---	212	205	---	1310	---	1220	---	1600	1170	---
TOTAL	4117	6006	6144	6440	6053	27755	24932	34640	37680	46760	42660	15718
MEAN	133	200	198	208	209	895	831	1117	1256	1508	1376	524
MAX	184	210	212	221	217	1480	1280	1240	1370	1610	1600	1140
MIN	78	181	190	202	203	206	348	796	1170	1380	1170	80
AC-FT	8170	11910	12190	12770	12010	55050	49450	68710	74740	92750	84620	31180

CAL YR 1987 TOTAL 306255 MEAN 839 MAX 1850 MIN 78 AC-FT 607500 MEAN a 427 AC-FT a 309100  
WTR YR 1988 TOTAL 258905 MEAN 707 MAX 1610 MIN 78 AC-FT 513500 MEAN a 510 AC-FT a 370200

a Adjusted for diversion to Northside Canal and change in contents in Lake McClure and McSwain Reservoir.

## SAN JOAQUIN RIVER BASIN

11271290 MERCED RIVER AT SHAFFER BRIDGE, NEAR CRESSEY, CA

LOCATION.--Lat 37°27'15", long 120°36'28", in NW 1/4 SW 1/4 sec.36, T.5 S., R.12 E., Merced County, Hydrologic Unit 18040002, near center of span on downstream side of county road bridge, 0.6 mi upstream from Dry Creek, and 4.0 mi northeast of Cressey.

DRAINAGE AREA.--1,117 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1965 to current year (low flow only).

GAGE.--Water-stage recorder. Datum of gage is 116.79 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. Most water released from Lake McClure (station 11269500) is diverted upstream into the Main Canal of Merced Irrigation District. Flow past station consists of releases from diversion dam, irrigation return flow, and tributary inflow. No records computed above 200 ft<sup>3</sup>/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1967 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	148	187	---	179	177	146	189	144	134	81	115
2	90	155	177	197	174	172	148	---	134	125	89	102
3	81	189	189	197	177	168	146	---	127	117	73	76
4	68	174	189	197	185	166	149	---	136	111	67	48
5	60	172	191	193	181	162	151	---	153	115	73	36
6	84	166	187	193	179	160	168	---	164	102	81	29
7	86	174	183	191	174	158	164	---	172	89	113	28
8	64	172	195	191	170	158	160	---	162	78	111	29
9	63	174	191	191	162	156	166	---	142	76	105	29
10	63	183	189	189	162	155	162	---	138	89	89	27
11	66	177	187	189	162	149	158	---	123	91	89	25
12	72	177	191	187	160	144	125	---	129	94	84	19
13	75	183	189	185	153	127	121	---	136	89	70	16
14	77	191	185	185	158	141	132	193	134	81	84	19
15	82	189	183	191	160	156	146	197	132	70	96	16
16	75	187	189	189	162	153	139	193	121	84	138	12
17	80	185	187	---	158	139	136	168	127	96	125	14
18	129	187	183	---	149	148	153	144	113	102	119	12
19	140	177	189	---	139	149	162	138	115	78	111	19
20	140	181	191	195	141	153	185	134	115	76	107	14
21	135	191	189	193	136	153	---	149	121	91	109	17
22	134	189	181	189	142	144	---	149	117	96	111	24
23	139	179	191	185	144	141	---	148	132	89	102	27
24	146	181	185	185	146	156	---	139	134	98	98	31
25	144	177	193	185	146	170	---	144	134	98	102	30
26	144	177	199	183	149	160	197	146	151	100	100	34
27	151	179	193	181	148	148	---	151	144	111	100	39
28	151	181	---	183	160	149	---	138	134	109	102	34
29	151	183	---	183	172	136	---	148	132	73	119	14
30	149	183	---	177	---	144	---	153	144	70	117	12
31	151	---	---	179	---	142	---	158	---	61	123	---
a	315	238	210	149	173	43190	38840	55500	64510	83480	78390	29600

a Diversion, in acre-feet, to Main Canal near diversion dam, near Merced Falls, published as provided by Merced Irrigation District; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11271320 DRY CREEK NEAR SNELLING, CA

LOCATION.--Lat 37°33'18", long 120°27'44", in NE 1/4 SE 1/4 sec.30, T.4 S., R.14 E., Merced County, Hydrologic Unit 18040002, on left bank 650 ft downstream from Fields Road and 2.8 mi northwest of Snelling.

DRAINAGE AREA.--67.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Small weir upstream from gage regulates storage for stock pond and irrigation pumping.

AVERAGE DISCHARGE.--22 years, 21.0 ft<sup>3</sup>/s, 15,210 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,710 ft<sup>3</sup>/s, Jan. 21, 1969, gage height, 17.01 ft; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 17	2130	*157	*5.23				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.0	.0	3.0	1.2	7.5	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	2.0	1.1	10	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	1.9	.97	4.2	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	1.9	.97	2.7	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	2.0	.97	2.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	3.6	.95	1.5	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	4.3	.93	1.2	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	3.7	.94	.97	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	3.1	.95	.88	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	2.8	.97	.68	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	2.9	.97	.47	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	2.8	.97	.36	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	2.8	.97	.36	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	2.9	.86	.34	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	3.5	.92	.45	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	4.5	.91	.43	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	90	.76	.33	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	36	.90	.31	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	8.8	.69	.30	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	5.4	.68	.24	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	4.0	.70	.22	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	3.2	.73	.19	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	2.7	.73	.13	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	2.4	.73	.01	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	2.1	.73	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	1.9	.77	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	1.7	.83	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	1.5	1.3	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	1.4	1.3	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	3.4	1.3	---	.0	.0	.0	.0	.0	.0	.0
31	.0	---	4.8	1.2	---	.0	---	.0	---	.0	.0	---
TOTAL	0.0	0.0	8.2	211.3	26.40	35.77	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	.00	.00	.26	6.82	.91	1.15	.00	.00	.00	.00	.00	.00
MAX	.00	.00	4.8	90	1.3	10	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	1.2	.68	.00	.00	.00	.00	.00	.00	.00
AC-FT	.0	.0	16	419	52	71	.0	.0	.0	.0	.0	.0

CAL YR 1987 TOTAL 1491.29 MEAN 4.09 MAX 476 MIN .00 AC-FT 2960  
WTR YR 1988 TOTAL 281.67 MEAN .77 MAX 90 MIN .00 AC-FT 559

## SAN JOAQUIN RIVER BASIN

11272500 MERCED RIVER NEAR STEVINSON, CA

LOCATION.--Lat 37°22'15", long 120°55'46", in SW 1/4 NE 1/4 sec.36, T.6 S., R.9 E., Merced County, Hydrologic Unit 18040002, on right bank 4.4 mi upstream from mouth and 5.3 mi northwest of Stevinson.

DRAINAGE AREA.--1,273 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1940 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. October 1940 to Aug. 15, 1955, at datum 55.74 ft higher; Aug. 16, 1955, to Sept. 30, 1959, at datum 54.74 ft higher.

REMARKS.--No estimated daily discharges. Records good except those for July through September, which are fair. Practically entire flow is diverted above station for irrigation of 120,000 acres during low runoff years. Some return flow enters above station. Flow regulated by three reservoirs, combined capacity, 1,035,000 acre-ft, the largest of which is Lake McClure (station 11269500). Monthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

AVERAGE DISCHARGE.--48 years, 714 ft<sup>3</sup>/s, 517,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft<sup>3</sup>/s, Dec. 5, 1950, elevation, 73.79 ft, present datum; no flow July 19 to Aug. 21, 1961, result of temporary dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 382 ft<sup>3</sup>/s, Jan. 19, elevation, 57.92 ft; minimum daily, 11 ft<sup>3</sup>/s, Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	159	219	258	230	220	146	186	160	112	39	44
2	110	159	221	247	231	226	137	202	160	109	33	48
3	107	157	215	242	229	214	145	196	142	91	34	57
4	96	176	213	239	233	206	161	218	153	112	33	33
5	90	181	217	236	238	203	163	211	153	115	38	32
6	81	181	219	233	239	221	161	209	177	119	29	55
7	78	179	213	232	239	215	165	231	184	58	47	33
8	76	182	211	230	233	198	164	247	179	41	55	34
9	69	188	214	231	230	208	162	248	165	41	58	33
10	69	188	219	232	227	201	180	248	145	57	61	34
11	77	191	216	230	223	191	175	225	122	56	48	53
12	88	196	214	231	222	187	167	205	129	37	51	37
13	77	196	214	230	219	191	136	199	133	26	60	20
14	76	199	214	229	216	206	146	190	129	29	74	11
15	71	208	212	230	218	193	165	190	101	48	74	20
16	80	210	217	232	216	205	171	202	96	45	76	25
17	95	212	215	248	216	204	169	188	95	50	87	46
18	86	214	213	311	212	176	158	161	99	64	81	29
19	95	215	210	369	207	202	168	153	106	80	68	31
20	108	212	209	317	201	207	186	147	106	77	78	47
21	124	208	211	287	198	199	195	142	97	50	103	40
22	123	215	210	268	195	193	208	142	103	28	119	38
23	122	216	207	252	196	185	229	136	93	24	108	31
24	125	213	208	245	198	167	266	125	100	45	104	19
25	140	211	212	241	198	163	260	111	104	64	98	34
26	140	211	211	239	194	166	237	99	128	53	101	22
27	136	213	216	236	197	161	215	113	149	36	100	25
28	138	215	224	233	196	159	206	130	144	52	77	32
29	148	216	230	232	211	139	203	133	118	76	78	69
30	151	216	251	233	---	130	200	148	116	66	75	40
31	154	---	263	229	---	133	---	161	---	50	48	---
TOTAL	3235	5937	6738	7702	6262	5869	5444	5496	3886	1911	2135	1072
MEAN	104	198	217	248	216	189	181	177	130	61.6	68.9	35.7
MAX	154	216	263	369	239	226	266	248	184	119	119	69
MIN	69	157	207	229	194	130	136	99	93	24	29	11
AC-FT	6420	11780	13360	15280	12420	11640	10800	10900	7710	3790	4230	2130

CAL YR 1987 TOTAL 67628 MEAN 185 MAX 996 MIN 67 AC-FT 134100  
WTR YR 1988 TOTAL 55687 MEAN 152 MAX 369 MIN 11 AC-FT 110500

## SAN JOAQUIN RIVER BASIN

11274000 SAN JOAQUIN RIVER NEAR NEWMAN, CA

LOCATION.--Lat 37°21'02", long 120°58'34", in NW 1/4 SW 1/4 sec.3, T.7 S., R.9 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 600 ft downstream from bridge on Hills Ferry Road, 650 ft downstream from Merced River, and 3.5 mi northeast of Newman.

DRAINAGE AREA.--9,520 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1912 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 3, 1931, gage at various sites within 240 ft of bridge. Mar. 3, 1931, to Sept. 30, 1959, water-stage recorder within 300 ft of bridge, at datum 47.31 ft higher. Oct. 1, 1959, to Aug. 9, 1960, water-stage recorder at site 70 ft upstream, at present datum. Since Aug. 10, 1960, at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Natural flow of stream affected by storage reservoirs, ground-water withdrawals, diversions for irrigation, and imported water; low flows consist mainly of return water from irrigated areas. Monthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

AVERAGE DISCHARGE.--76 years, 2,067 ft<sup>3</sup>/s, 1,498,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (river only), 30,700 ft<sup>3</sup>/s, Mar. 4, 1983, elevation, 65.78 ft; river and Merced River Slough, 34,400 ft<sup>3</sup>/s, Feb 26, 1969, elevation, 65.90 ft, present datum; minimum, 15 ft<sup>3</sup>/s, Aug. 9, 10, 1924.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 2, 1868, reached a stage of 69.0 ft from floodmarks; flood of February 1886 reached a stage of 67.1 ft from floodmarks; and flood of 1911 reached a stage of 66.3 ft from floodmarks. All stages referred to current datum. Discharges unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,040 ft<sup>3</sup>/s, Jan. 19, elevation, 50.36 ft; minimum daily, 220 ft<sup>3</sup>/s, Oct. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	720	506	654	775	751	642	563	595	472	411	514
2	320	705	487	612	747	827	614	558	573	462	431	496
3	292	669	472	587	731	914	565	545	536	469	444	484
4	269	607	454	566	722	896	577	552	504	507	437	463
5	241	570	464	558	741	871	578	550	495	533	414	482
6	223	543	478	559	763	865	557	526	542	552	407	469
7	233	526	477	559	759	843	535	536	600	504	455	454
8	254	508	476	549	732	811	518	570	657	483	503	417
9	220	511	476	518	720	809	484	599	662	463	517	386
10	246	506	480	511	718	792	516	608	655	418	501	360
11	285	516	482	514	698	757	582	625	581	418	448	377
12	291	533	492	544	692	764	525	578	541	433	394	432
13	282	523	491	590	691	763	477	511	538	435	394	458
14	251	525	465	590	670	781	478	452	517	439	431	450
15	255	533	445	628	638	863	571	471	465	417	476	383
16	267	539	445	656	641	940	666	505	430	372	501	349
17	270	538	444	742	613	957	739	478	456	317	563	342
18	261	553	433	894	599	890	749	463	466	312	587	403
19	286	562	417	1030	572	870	750	465	458	336	550	407
20	302	543	404	1020	564	851	775	517	467	326	518	415
21	320	544	410	951	566	812	827	561	470	332	542	376
22	313	567	417	881	570	821	830	583	503	300	601	336
23	351	567	410	815	575	833	816	590	496	302	612	323
24	419	550	397	770	576	788	833	559	517	335	582	292
25	466	588	388	750	577	757	898	554	510	389	563	274
26	491	645	383	756	578	738	891	534	554	389	567	314
27	487	679	383	751	591	720	826	505	606	347	580	350
28	511	679	403	731	617	684	753	506	596	340	558	349
29	552	612	423	761	682	686	867	538	537	371	527	351
30	618	539	530	777	---	675	606	581	493	396	556	319
31	682	---	634	775	---	640	---	616	---	373	562	---
TOTAL	10548	17200	14066	21599	19118	24969	19845	16799	16020	12542	15632	11825
MEAN	340	573	454	697	659	805	661	542	534	405	504	394
MAX	682	720	634	1030	775	957	898	625	662	552	612	514
MIN	220	506	383	511	564	640	477	452	430	300	394	274
AC-FT	20920	34120	27900	42840	37920	49530	39360	33320	31780	24880	31010	23450
CAL YR 1987	TOTAL 227078		MEAN 622	MAX 1980	MIN 318	AC-FT 450400						
WTR YR 1988	TOTAL 200163		MEAN 547	MAX 1030	MIN 220	AC-FT 397000						



## SAN JOAQUIN RIVER BASIN

11274500 ORESTIMBA CREEK NEAR NEWMAN, CA

LOCATION.--Lat 37°18'56", long 121°07'27", in NE 1/4 NE 1/4 sec.19, T.7 S., R.8 E., Stanislaus County, Hydrologic Unit 18040002, on right bank 20 ft downstream from bridge at California Aqueduct siphon, 3 mi downstream from Oso Creek, and 5.5 mi west of Newman.

DRAINAGE AREA.--134 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1932 to current year.

REVISED RECORDS.--WSP 1445: 1932(M), 1938(P), 1940-41(M), 1945, 1951(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 216.01 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1958, at site 1,080 ft downstream at datum 24.14 ft lower. Oct. 1, 1958, to Aug. 13, 1969, at site 960 ft downstream at datum 27.14 ft lower. Aug. 13, 1969, to Feb. 6, 1984, at site 240 ft upstream, present datum.

REMARKS.--No estimated daily discharges. Records good. No storage or diversion above station except for minor stock ponds.

AVERAGE DISCHARGE.--56 years, 17.0 ft<sup>3</sup>/s, 12,320 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft<sup>3</sup>/s, Apr. 2, 1958, gage height, 6.57 ft, site and datum then in use, from rating curve extended above 5,000 ft<sup>3</sup>/s; no flow for all or parts of each year.

EXTREMES FOR CURRENT YEAR.--No flow during the entire year.

## SAN JOAQUIN RIVER BASIN

11274630 DEL PUERTO CREEK NEAR PATTERSON, CA

LOCATION.--Lat 37°29'12", long 121°12'29", in SE 1/4 NW 1/4 sec.21, T.5 S., R.7 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 1.0 mi upstream from California Aqueduct crossing and 4.4 mi west of Patterson.

DRAINAGE AREA.--72.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1958 to May 1965 (maximums only), June 1965 to current year.

REVISED RECORDS.--WSP 1930: 1959-60(M), drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 200 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 1965, crest-stage gage at site 1.0 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. Some stock ponds and small diversions above station.

AVERAGE DISCHARGE.--23 years, 7.28 ft<sup>3</sup>/s, 5,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft<sup>3</sup>/s, Feb. 16, 1959, gage height, 14.68 ft, site and datum then in use, from rating curve extended above 690 ft<sup>3</sup>/s; no flow for several months in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 17	2200	*80	*2.63				
No flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				0	1.9	3.3	.01	.07	.11			
2				0	1.8	2.2	.01	.06	.08			
3				0	1.7	1.8	.02	.06	.06			
4				0	1.5	1.4	.02	.04	.05			
5				0	1.4	1.2	.01	.05	.05			
6				.08	1.2	1.0	.01	.07	.05			
7				.99	1.1	.85	.02	.13	.09			
8				1.4	1.1	.52	.01	.14	.12			
9				1.4	1.1	.55	.01	.12	.08			
10				1.6	1.0	.43	.02	.11	.05			
11				1.8	1.0	.36	.02	.12	.03			
12				1.7	1.2	.34	.03	.13	.02			
13				1.8	1.2	.26	.06	.13	.01			
14				1.9	1.2	.26	.16	.12	.01			
15				2.5	1.4	.22	.18	.12	0			
16				3.8	1.3	.19	.16	.18	0			
17				38	1.1	.16	.14	.28	0			
18				39	1.2	.14	.09	.20	0			
19				13	1.1	.16	.14	.16	0			
20				6.6	1.0	.15	.27	.15	0			
21				4.5	1.2	.13	.18	.17	0			
22				3.3	1.2	.10	.16	.16	0			
23				2.8	1.3	.10	.60	.16	0			
24				2.2	1.2	.08	.45	.17	0			
25				2.1	1.1	.07	.49	.15	0			
26				2.0	1.0	.07	.42	.15	0			
27				2.0	.96	.05	.20	.14	0			
28				1.9	1.4	.05	.12	.14	0			
29				1.8	3.3	.06	.09	.16	0			
30				1.8	---	.04	.07	.17	0			
31		---		1.9	---	.01	---	.14	---			---
TOTAL	0	0	0	141.87	38.16	16.25	4.17	4.15	.81	0	0	0
MEAN	0	0	0	4.58	1.32	.52	.14	.13	.027	0	0	0
MAX	0	0	0	39	3.3	3.3	.60	.28	.12	0	0	0
MIN	0	0	0	0	.96	.01	.01	.04	0	0	0	0
AC-FT	0	0	0	281	76	32	8.3	8.2	1.6	0	0	0

CAL YR 1987 TOTAL 348.43 MEAN .95 MAX 53 MIN 0 AC-FT 691  
WTR YR 1988 TOTAL 205.41 MEAN .56 MAX 39 MIN 0 AC-FT 407

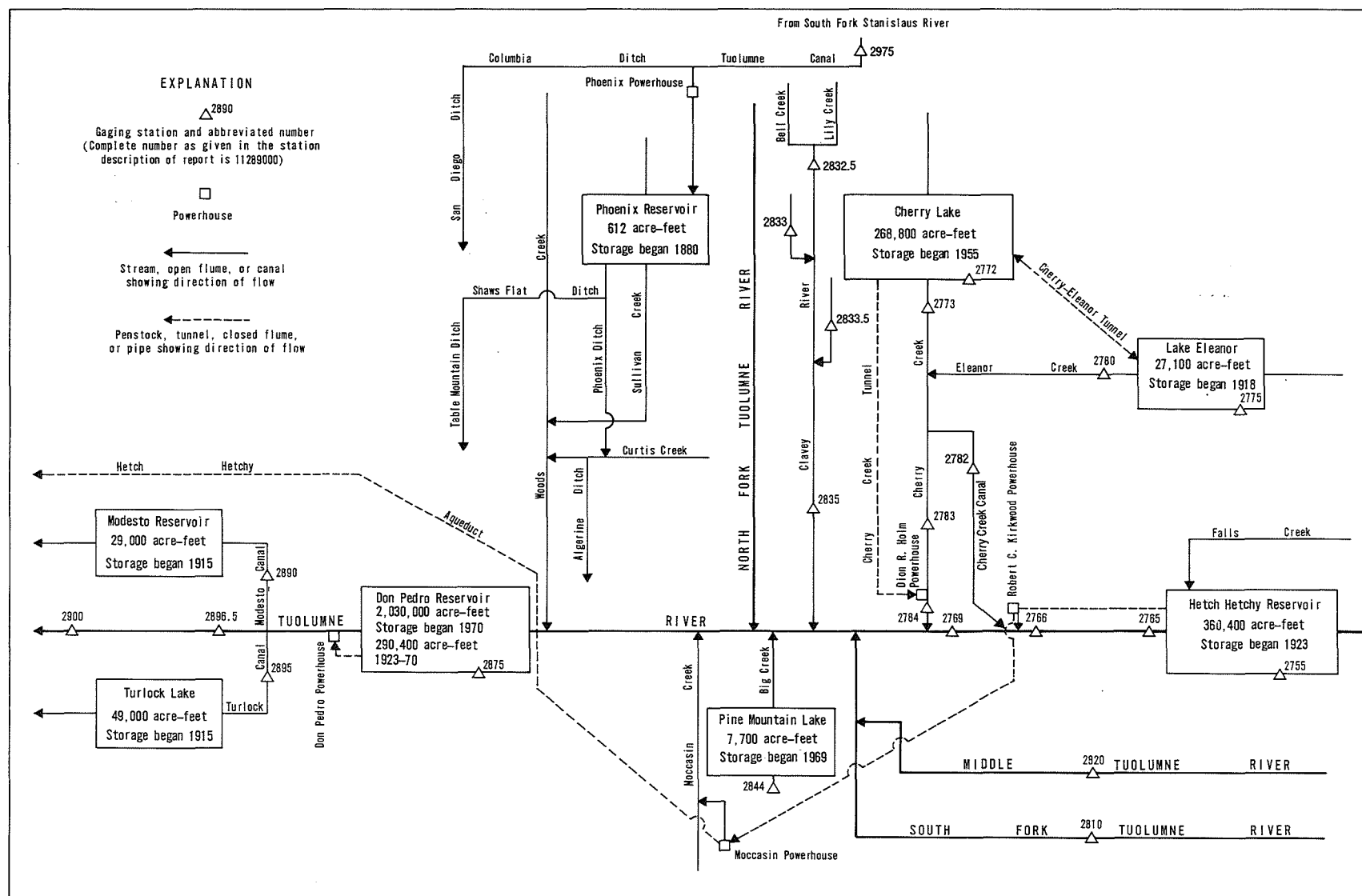


Figure 33.--Schematic diagram showing diversions and storage in Tuolumne River basin.

LOCATION.--Lat 37°56'52", long 119°47'13", in NW 1/4 NW 1/4 sec.16, T.1 N., R.20 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, near center of O'Shaughnessy Dam on Tuolumne River at Hetch Hetchy, 1.5 mi downstream from Falls Creek.

PERIOD OF RECORD.--May 1923 to current year. Prior to October 1930 monthend contents published in WSP 1315-A.  
REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is 1.84 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1927, nonrecording gage at same site and datum. Oct. 1, 1927, to July 9, 1972, water-stage recorder at same site and datum. Prior to October 1974, datum published as at mean sea level.

REMARKS.--Reservoir is formed by concrete gravity-type dam, completed to crest gage height 3,726.5 ft in 1923 and raised to 3,812.0 ft in 1937. Storage began Apr. 6, 1923. Ten-foot drum gates were installed on spillway in 1949. Capacity, 360,400 acre-ft between gage heights 3,512.0 ft, bottom outlet, and 3,806.0 ft, top of drum-type spillway gates. Water is diverted from reservoir through tunnel to Robert C. Kirkwood powerplant 15 mi downstream. Flow is diverted from powerplant tailrace in a closed conduit through Hetch Hetchy aqueduct to Moccasin Creek powerplant with flows in excess of aqueduct capacity being spilled to the river. At Moccasin Creek diversion dam, water re-enters Hetch Hetchy aqueduct and flows into Crystal Springs Reservoir, which supplies city of San Francisco. Surplus water is spilled into Don Pedro Reservoir (station 1287500) at Red Mountain Bar. Flow downriver is for State Department of Fish and Game and Raker Act requirements. Hetch Hetchy Reservoir is the main storage unit of Hetch Hetchy water-supply system for San Francisco. See schematic diagram of Tuolumne River basin. Records, including extremes, represent contents at 0800 hours.

COOPERATION.--Record of gage heights were provided by city and county of San Francisco.

EXTREMES (AT 0800) FOR PERIOD OF RECORD.--Maximum contents, 369,100 acre-ft, Dec. 3, 1950, gage height, 3,810.4 ft; no contents at times in 1929-31.

EXTREMES (AT 0800) FOR CURRENT YEAR.--Maximum contents, 314,500 acre-ft, June 27, gage height, 3,782.2 ft; minimum, 135,900 acre-ft, Mar. 20, gage height, 3,672.4 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by San Francisco Public Utilities Commission, dated May 20, 1971)

3,512	0	3,530	3,300	3,600	57,400	3,680	146,200	3,760	273,700
3,513	51	3,540	8,700	3,620	76,500	3,700	175,000	3,780	310,400
3,515	154	3,560	22,900	3,640	97,000	3,720	206,000	3,800	348,600
3,520	410	3,580	39,500	3,660	119,900	3,740	238,900	3,810.4	369,100

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	231500	201400	182900	164600	152100	139900	144000	196800	300000	312100	284900	261500
2	230500	200600	182000	163900	151400	140100	144400	198100	302000	310900	284200	260600
3	229500	200000	181400	163000	150500	140000	145000	199000	304600	309800	283400	259900
4	228200	199400	180600	163200	150100	139600	145900	200300	307600	308700	282700	259200
5	227300	198700	179700	163200	149400	139600	146300	201300	310400	307600	282200	258500
6	226300	198100	178800	163900	148700	139600	147500	202000	312100	306300	281400	257500
7	225500	197300	178600	163600	148000	139600	149300	202800	312600	305200	280700	256800
8	224200	196700	178300	163500	147300	139700	151000	203600	312600	303700	280000	256100
9	223200	195900	177900	163200	146800	139700	153200	204100	311900	302400	279300	255400
10	222200	195100	177600	162600	146200	139700	155400	204900	310600	301100	278600	254700
11	221400	194400	177300	162300	145900	139700	158400	206500	309800	300000	277600	253800
12	220400	193700	177100	162000	145600	139700	161500	210000	309300	298800	277100	252800
13	219400	192700	176200	161400	145300	138600	165100	215300	308700	297700	276200	251800
14	218300	192600	175800	160800	144700	138400	167600	221200	308100	297900	275500	250900
15	217100	191800	175000	160200	144400	138000	170300	227300	307900	297500	274600	249900
16	216000	191500	174300	159900	144200	137600	172200	234200	308300	297000	273900	248800
17	215000	191000	173800	159500	143600	137200	174000	239900	309300	296100	273000	247800
18	213900	190500	173100	159500	143500	136800	175800	244700	310000	295000	272300	246800
19	213100	190400	172200	158500	142700	136300	177300	248300	310800	293500	271600	245900
20	211900	189900	171300	158000	142200	135900	179000	252300	311300	292800	270700	245000
21	211100	189400	170700	157400	141600	136500	180800	257000	312200	291700	270000	244200
22	209800	189000	170300	156800	141200	136600	181800	262200	313200	290700	269100	243200
23	209200	188500	170100	156300	140800	136800	183100	267000	313800	289800	268400	242500
24	208400	187800	169800	155700	140300	137200	184100	271900	313800	289100	267500	241600
25	207000	187300	169200	155400	140000	137600	185300	276600	313600	288500	266800	240800
26	206000	186600	168500	155000	139600	138500	186900	280700	314100	288200	266100	239800
27	205100	185900	167600	154600	139300	139700	189000	284500	314500	287800	265200	238900
28	204300	185200	167200	154200	139300	141300	190800	287600	314100	287300	264500	238100
29	203500	184100	166600	153800	139400	142300	192900	291300	313800	286700	263600	237400
30	203000	183400	166000	153200	---	143000	194800	294600	312800	286200	262900	236400
31	202200	---	165400	152400	---	143600	---	297400	---	285400	262000	---
MAX	231500	201400	182900	164600	152100	143600	194800	297400	314500	312100	284900	261500
MIN	202200	183400	165400	152400	139300	135900	144000	196800	300000	285400	262000	236400
a	3717.6	3705.5	3693.5	3684.4	3675.0	3678.1	3712.9	3773.0	3781.3	3766.5	3753.4	3738.5
b	-30300	-18800	-18000	-13000	-13000	+4200	+51200	+102600	+15400	-27400	-23400	-25600
CAL YR 1987	b	+13000										
WTR YR 1988	b	+3900										
a	Gage height, in feet, at end of month.											
b	Change in contents, in acre-feet.											

## SAN JOAQUIN RIVER BASIN

11276500 TUOLUMNE RIVER NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°56'15", long 119°47'50", in SW 1/4 SE 1/4 sec.17, T.1 N., R.20 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, on left bank 0.9 mi downstream from O'Shaughnessy Dam at Hetch Hetchy and 2.5 mi downstream from Falls Creek.

DRAINAGE AREA.--457 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "at Hetch Hetchy damsite, near Sequoia" 1910-14 and as "below Hetch Hetchy damsite, near Sequoia" 1915-18.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder, crest-stage gage with concrete control since May 5, 1970. Elevation of gage is 3,480 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Jan. 1, 1915, water-stage recorder at site 1 mi upstream, at damsite, at different datum. Jan. 1, 1915, to Sept. 30, 1968, water-stage recorder, at same site and datum. Oct. 1, 1968, to May 4, 1970, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Hetch Hetchy Reservoir (station 11275500) 1 mi upstream beginning in April 1923. Flow diverted above station through tunnel to Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct beginning Apr. 26, 1967. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (prior to diversion to Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct).--57 years (water years 1911-67), 999 ft<sup>3</sup>/s, 723,800 acre-ft/yr; 21 years (water years 1968-88), 418 ft<sup>3</sup>/s, 302,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft<sup>3</sup>/s, June 1, 1943, gage height, 13.90 ft; no flow at times in 1968-70.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 374 ft<sup>3</sup>/s, Oct. 9, gage height, 5.04 ft; minimum daily, 34 ft<sup>3</sup>/s, Oct. 28, Nov. 7-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	35	36	42	62	58	52	70	97	86	75	93
2	45	35	35	41	64	50	44	86	108	76	75	95
3	45	35	35	46	64	53	38	85	108	75	75	96
4	45	35	35	46	64	58	37	85	108	77	75	96
5	45	35	37	56	64	57	38	85	109	78	75	96
6	45	35	36	63	63	58	38	85	108	77	75	96
7	45	34	38	66	63	57	38	86	109	77	75	96
8	44	34	38	64	64	57	38	86	145	77	86	95
9	56	34	38	64	64	57	39	86	176	77	92	112
10	44	34	38	63	64	55	39	86	176	78	91	130
11	41	34	38	63	65	52	39	86	176	78	91	130
12	41	37	37	63	64	52	39	87	176	78	91	130
13	40	38	36	63	64	52	39	87	176	78	91	129
14	40	38	36	63	64	52	41	85	175	78	91	129
15	40	37	37	62	64	52	40	82	175	78	91	129
16	40	37	41	63	64	51	40	83	134	167	91	105
17	40	37	41	65	64	51	40	84	108	242	91	75
18	40	37	41	67	65	51	40	84	106	242	91	76
19	42	36	42	67	67	52	41	84	106	243	90	66
20	44	37	42	63	67	52	42	84	108	244	90	59
21	44	38	42	61	67	52	41	85	109	243	90	59
22	45	37	42	61	67	51	41	85	110	241	90	59
23	46	37	43	61	67	52	41	85	109	132	90	59
24	46	36	42	61	67	51	41	86	109	76	90	59
25	45	35	41	61	67	51	41	86	109	76	90	58
26	40	35	42	61	66	52	41	84	109	76	92	58
27	35	36	43	59	67	52	42	83	109	75	93	58
28	34	36	42	60	68	52	42	83	109	76	93	58
29	36	36	42	60	67	52	41	83	109	75	93	58
30	35	35	42	60	---	52	42	83	109	76	92	47
31	35	---	42	60	---	52	---	84	---	76	93	---
TOTAL	1309	1075	1220	1855	1887	1646	1215	2613	3775	3528	2708	2606
MEAN	42.2	35.8	39.4	59.8	65.1	53.1	40.5	84.3	126	114	87.4	86.9
MAX	56	38	43	67	68	58	52	87	176	244	93	130
MIN	34	34	35	41	62	50	37	70	97	75	75	47
AC-FT	2600	2130	2420	3680	3740	3260	2410	5180	7490	7000	5370	5170

CAL YR 1987 TOTAL 21473 MEAN 58.8 MAX 161 MIN 34 AC-FT 42590  
WTR YR 1988 TOTAL 25437 MEAN 69.5 MAX 244 MIN 34 AC-FT 50450

## SAN JOAQUIN RIVER BASIN

11276500 TUOLUMNE RIVER NEAR HETCH HETCHY, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1987 to current year.

INSTRUMENTATION.--Temperature recorder since August 1987.

REMARKS.--Temperature recorder installed Aug. 13, 1987, located 0.6 mi upstream from gaging station on left bank at road bridge. Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by releases from O'Shaughnessy Dam.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 12.0 °C, Oct. 2, 6, 1987; minimum recorded, 5.0 °C on several days in February and March 1988.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 12.0 °C, Oct. 2, 6; minimum recorded, 5.0 °C, on several days in February and March.

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.5	9.0			---	---	---	---	6.0	5.0	6.5	5.5
2	12.0	9.0			---	---	---	---	6.5	5.0	7.5	5.0
3	11.0	9.5			---	---	---	---	6.5	5.0	7.5	5.5
4	11.0	9.5			---	---	---	---	6.5	5.0	7.5	6.0
5	11.5	9.0			10.5	10.0	---	---	7.0	5.0	7.5	5.5
6	12.0	9.0			10.5	10.0	---	---	6.5	5.5	7.5	5.5
7	11.0	9.0			10.5	9.5	---	---	7.0	5.0	7.5	5.5
8	10.5	8.5			10.0	9.0	---	---	7.0	5.5	7.5	5.5
9	11.5	9.5			11.0	9.5	---	---	7.0	5.5	7.0	5.5
10	11.5	9.0			10.5	10.0	---	---	7.5	6.0	7.0	5.0
11	11.0	9.0			10.5	10.0	---	---	7.0	5.5	7.5	5.5
12	11.0	9.0			10.0	8.0	---	---	7.0	5.5	7.5	5.5
13	11.5	9.0			9.0	8.0	---	---	7.0	5.5	7.5	5.0
14	11.5	9.0			9.5	8.0	---	---	7.0	5.5	7.5	5.5
15	11.0	9.0			9.5	8.0	---	---	7.0	5.5	7.5	5.5
16	10.5	9.0			---	9.0	6.5	6.0	7.0	5.0	8.0	5.5
17	10.5	8.5			---	---	7.0	6.5	7.0	5.5	8.0	6.0
18	10.5	8.5			---	---	6.5	5.5	6.5	5.0	8.0	6.0
19	10.5	9.0			---	---	6.5	5.5	7.0	5.5	8.0	6.0
20	10.5	9.0			---	---	7.0	6.0	7.0	5.5	8.0	6.5
21	11.0	9.0			---	---	7.0	5.5	7.0	5.5	8.0	5.5
22	11.0	9.5			---	---	7.0	5.5	7.0	5.5	8.0	6.0
23	11.0	9.5			---	---	7.0	6.5	7.0	5.5	8.0	6.0
24	11.0	9.5			---	---	7.0	6.0	7.5	5.5	8.0	6.0
25	11.0	9.0			---	---	7.0	5.5	7.5	5.5	8.5	6.0
26	11.0	9.0			---	---	7.0	6.0	7.5	6.0	8.0	6.0
27	11.0	9.5			---	---	7.0	5.5	7.0	5.5	8.0	6.0
28	11.0	9.5			---	---	7.0	5.5	7.0	5.5	8.0	6.0
29	11.0	9.5			---	---	6.5	5.5	6.5	5.5	8.0	6.0
30	---	---			---	---	6.5	5.5	---	---	8.0	5.5
31	---	---			---	---	6.5	5.5	---	---	8.0	5.5
MONTH	12.0	8.5			---	---	---	---	7.5	5.0	8.5	5.0

## SAN JOAQUIN RIVER BASIN

11276500 TUOLUMNE RIVER NEAR HETCH HETCHY, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	8.0	6.0	8.0	6.5	9.0	7.5	10.0	8.5	10.5	9.0	11.0	10.0
2	8.5	6.5	8.5	6.5	9.0	7.5	9.5	8.5	10.5	9.5	11.0	10.0
3	8.0	6.0	---	---	9.0	7.5	10.5	8.5	10.5	9.0	11.0	9.5
4	8.5	7.0	---	---	8.5	7.5	10.0	8.5	10.5	9.5	11.0	10.0
5	8.5	6.5	---	---	8.5	7.0	10.0	8.5	11.0	9.5	11.0	10.0
6	8.0	6.5	---	---	8.0	7.0	10.0	9.0	11.0	9.5	11.0	10.0
7	9.0	6.5	---	---	8.5	7.0	10.0	9.0	11.0	9.5	10.5	9.5
8	8.5	6.5	---	---	9.0	7.0	10.5	8.5	10.5	9.5	10.5	9.5
9	8.5	6.5	---	---	9.0	7.5	10.0	9.5	10.5	9.0	11.0	10.0
10	8.5	7.0	---	---	8.5	7.5	10.0	9.5	10.5	9.5	11.0	10.0
11	8.5	6.5	---	---	9.0	7.5	10.5	9.0	10.5	9.5	10.5	10.0
12	8.5	6.5	---	---	9.0	7.5	10.0	9.0	10.5	9.0	10.5	9.5
13	8.0	6.5	---	---	9.0	8.0	10.5	9.0	10.5	9.0	10.5	9.5
14	8.0	6.5	9.0	7.0	9.0	8.0	10.5	9.0	10.5	9.5	10.5	9.5
15	7.5	6.5	8.5	7.0	9.0	8.0	10.0	8.5	10.5	9.0	10.5	9.5
16	8.0	6.5	8.5	7.5	9.0	8.0	10.0	9.0	10.5	9.5	11.0	9.5
17	9.0	6.5	9.0	7.5	9.0	8.0	9.5	8.5	10.5	9.5	11.0	9.5
18	8.5	6.5	9.0	7.0	9.5	8.0	9.5	9.0	10.5	9.0	11.0	9.5
19	7.5	6.0	9.0	7.0	9.5	8.0	9.5	8.5	10.5	10.0	11.0	9.5
20	8.0	6.0	8.5	7.5	9.5	8.5	9.5	8.5	11.0	9.5	11.5	9.5
21	8.5	6.5	8.5	7.5	10.0	8.5	10.0	8.5	11.0	9.5	11.5	9.5
22	7.5	6.0	8.5	7.5	9.5	8.5	10.0	9.0	11.0	9.5	11.0	9.0
23	7.5	6.5	9.0	7.5	9.5	9.0	10.5	9.0	11.0	9.5	11.0	9.5
24	9.0	6.5	8.5	7.5	9.5	8.5	10.5	9.5	11.0	10.0	11.0	9.0
25	9.0	6.0	8.5	7.5	10.0	9.0	10.5	9.5	11.0	9.5	11.5	9.0
26	9.5	6.5	9.0	7.5	9.5	8.5	10.5	9.0	11.0	10.0	11.0	9.5
27	9.0	6.5	9.5	7.5	9.5	8.0	10.5	9.0	10.5	10.0	11.0	9.5
28	8.5	6.5	9.0	7.5	9.5	8.5	10.5	9.5	10.5	9.5	11.5	9.0
29	9.5	6.5	8.5	7.0	9.5	8.0	10.5	9.0	11.0	10.5	11.0	9.5
30	8.0	6.5	9.0	7.0	9.5	8.0	10.5	9.5	11.0	10.0	11.0	9.0
31	---	---	9.0	7.0	---	---	10.5	9.0	11.0	9.5	---	---
MONTH	9.5	6.0	---	---	10.0	7.0	10.5	8.5	11.0	9.0	11.5	9.0

## SAN JOAQUIN RIVER BASIN

11276600 TUOLUMNE RIVER ABOVE EARLY INTAKE, NEAR MATHER, CA

LOCATION.--Lat 37°52'46", long 119°56'46", in SE 1/4 SW 1/4 sec.1, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 0.5 mi upstream from Early Intake, 2.4 mi upstream from Cherry Creek, and 5.0 mi west of Mather.

DRAINAGE AREA.--484 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,420 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Feb. 7-25. Records good. Flow regulated by Hetch Hetchy Reservoir (station 11275500) 12 mi upstream. Flow diverted above station through tunnel to Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--18 years, 449 ft<sup>3</sup>/s, 325,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft<sup>3</sup>/s, July 7, 1983, gage height, 21.38 ft; minimum daily, 33 ft<sup>3</sup>/s, Aug. 17, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1943, reached a stage of 22.1 ft, discharge, 12,900 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 280 ft<sup>3</sup>/s, Jan. 5, gage height, 13.41 ft; minimum daily, 36 ft<sup>3</sup>/s, Nov. 4, 5, 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	37	39	47	71	87	54	48	88	105	73	93
2	45	37	39	47	73	76	54	89	109	77	73	93
3	42	37	39	78	73	65	45	90	111	75	73	95
4	42	36	39	92	72	66	41	90	111	74	73	95
5	42	36	39	177	72	66	41	90	111	76	73	95
6	42	40	41	107	71	66	40	91	112	76	73	95
7	42	38	49	96	73	66	40	90	112	76	73	94
8	42	37	45	92	73	65	40	91	118	75	74	94
9	42	37	45	87	73	64	40	90	180	75	90	95
10	51	37	43	82	73	64	40	90	182	75	90	128
11	41	36	41	91	71	59	40	90	183	76	90	130
12	40	36	40	86	71	58	40	90	182	76	90	129
13	40	42	39	79	71	58	41	90	182	77	90	130
14	40	47	40	77	65	58	49	90	182	77	90	130
15	40	41	40	80	66	57	46	84	181	76	90	129
16	39	39	43	86	66	57	43	85	171	92	90	128
17	39	41	44	96	68	56	43	89	113	239	90	80
18	39	40	43	88	68	56	43	86	110	242	90	73
19	39	39	43	83	68	56	48	86	110	244	89	73
20	42	41	43	80	69	55	72	86	110	245	89	59
21	43	44	43	79	69	55	67	87	112	244	90	55
22	46	41	59	78	70	55	57	87	112	245	90	55
23	48	40	57	77	70	55	56	87	112	205	90	55
24	45	39	47	77	70	55	53	87	112	82	90	54
25	44	39	45	76	70	54	50	87	112	76	90	54
26	44	39	44	75	69	54	49	87	111	75	90	54
27	39	39	44	73	70	54	48	84	110	74	92	53
28	42	39	48	73	76	54	47	86	110	74	92	53
29	43	39	51	72	77	54	47	96	110	74	92	53
30	38	39	50	72	---	54	47	87	110	73	92	53
31	37	---	48	70	---	54	---	86	---	73	92	---
TOTAL	1314	1172	1370	2573	2048	1853	1421	2696	3869	3523	2663	2577
MEAN	42.4	39.1	44.2	83.0	70.6	59.8	47.4	87.0	129	114	85.9	85.9
MAX	56	47	59	177	77	87	72	96	183	245	92	130
MIN	37	36	39	47	65	54	40	48	88	73	73	53
AC-FT	2610	2320	2720	5100	4060	3680	2820	5350	7670	6990	5280	5110
CAL YR 1987	TOTAL	23380	MEAN 64.1	MAX 162	MIN 36	AC-FT 46370						
WTR YR 1988	TOTAL	27079	MEAN 74.0	MAX 245	MIN 36	AC-FT 53710						



## SAN JOAQUIN RIVER BASIN

11276600 TUOLUMNE RIVER ABOVE EARLY INTAKE, NEAR MATHER, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1987 to current year.

INSTRUMENTATION.--Temperature recorder since August 12, 1987.

REMARKS.--Temperature recorder located 150 ft upstream from gaging station on right bank. Interruptions in record were due to malfunction of recording instrument.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 23.0 °C, July 9-16, 1988; minimum recorded, 2.0 °C, Dec. 27, 28, 1987, and Jan. 1, 1988.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.0 °C, July 9-16; minimum recorded, 2.0 °C, Dec. 27, 28, and Jan. 1.

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	13.0	12.5	7.5	6.5	3.5	2.0	6.0	5.0	9.0	7.5
2	---	---	12.5	11.0	---	---	4.5	3.0	5.5	4.5	9.5	7.0
3	---	---	12.0	10.0	---	---	5.0	4.0	5.0	3.5	9.5	7.5
4	---	---	11.5	9.5	8.0	6.5	6.0	5.0	4.5	3.0	10.5	7.5
5	---	---	11.5	10.0	8.5	7.5	7.0	6.0	4.5	3.0	11.0	8.5
6	---	---	11.5	10.5	8.5	7.5	6.5	5.5	5.0	3.0	11.5	9.0
7	---	---	11.5	10.0	8.0	7.5	6.0	5.0	5.5	3.5	12.0	9.0
8	---	---	10.5	9.0	8.0	7.5	6.5	5.5	6.0	4.0	12.5	9.5
9	---	---	11.0	9.5	9.0	7.5	7.5	6.0	6.5	4.5	12.0	10.0
10	17.0	14.5	10.5	9.0	9.0	8.0	7.5	6.0	7.0	5.0	11.0	8.5
11	16.5	14.0	10.0	8.5	8.5	7.5	7.0	6.0	7.0	5.5	10.5	7.5
12	16.5	14.5	10.0	8.5	8.0	6.0	6.0	5.5	7.5	5.5	10.0	7.0
13	16.0	13.5	10.0	9.0	5.5	4.5	6.0	5.0	7.5	5.5	10.5	7.0
14	15.5	13.0	10.0	8.0	5.5	4.0	6.0	5.0	7.5	6.0	11.0	7.5
15	15.5	13.0	9.0	7.5	5.5	4.5	6.0	5.5	8.0	6.0	11.0	8.0
16	15.0	12.5	9.0	7.5	---	---	5.5	5.0	8.0	6.0	11.0	7.5
17	15.0	12.5	9.5	8.5	5.5	5.0	5.5	5.0	7.5	5.0	11.5	8.0
18	14.5	12.0	9.0	8.0	5.0	4.0	5.0	4.0	7.0	5.5	12.5	9.0
19	14.0	11.5	8.5	7.0	5.5	5.0	4.5	3.5	7.0	4.5	13.0	9.5
20	14.0	11.5	8.5	7.0	5.5	5.0	4.5	3.5	7.0	5.0	13.5	10.0
21	14.0	12.0	8.5	7.0	6.5	5.0	4.5	3.5	7.5	5.0	13.5	10.5
22	14.0	13.0	8.0	7.0	7.0	6.5	5.0	4.0	8.0	4.5	13.5	10.5
23	14.0	12.5	7.5	6.5	6.5	5.0	5.5	4.0	8.5	6.0	14.5	11.0
24	14.0	12.0	7.0	5.5	4.5	3.5	5.5	4.5	9.5	7.0	14.5	10.0
25	14.0	12.0	6.5	5.0	3.5	2.5	6.0	5.0	9.5	7.0	15.5	11.0
26	14.0	12.5	5.5	4.5	3.0	2.5	7.0	5.0	10.5	8.0	16.0	12.0
27	14.0	12.5	5.5	4.5	3.0	2.0	7.0	5.5	10.0	9.0	15.5	12.0
28	14.5	13.5	5.5	4.0	4.0	2.0	7.5	6.0	10.0	9.0	15.0	11.5
29	14.0	13.0	5.0	4.5	4.0	3.0	7.5	6.5	9.5	9.0	15.0	11.5
30	13.5	12.5	6.5	5.5	4.0	3.0	7.5	6.5	---	---	15.0	11.0
31	13.5	12.0	---	---	3.0	2.5	6.5	5.5	---	---	14.5	10.5
MONTH	---	---	13.0	4.0	---	---	7.5	2.0	10.5	3.0	16.0	7.0

## SAN JOAQUIN RIVER BASIN

11276600 TUOLUMNE RIVER ABOVE EARLY INTAKE, NEAR MATHER, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	15.0	10.5	15.5	10.5	16.5	13.0	20.0	16.0	22.0	18.0	20.0	17.0
2	15.0	10.5	15.0	11.5	18.0	13.5	21.5	17.0	22.0	18.0	19.5	16.5
3	13.5	10.0	15.0	11.5	17.0	14.0	22.5	17.5	22.0	17.5	19.5	16.5
4	16.0	11.0	14.0	11.5	15.0	13.0	22.0	17.5	21.5	18.0	19.5	16.5
5	17.0	10.0	12.0	10.5	13.5	11.5	22.0	17.0	22.0	18.5	19.0	16.0
6	16.5	13.0	11.5	10.0	11.5	9.5	22.0	17.5	21.5	18.0	19.0	15.5
7	17.5	13.0	10.0	9.5	12.0	9.5	22.0	17.5	21.5	17.5	19.0	16.0
8	16.5	13.0	13.0	9.0	14.0	9.5	22.5	17.5	21.5	17.5	18.5	15.5
9	18.0	12.5	14.5	10.0	14.5	9.5	23.0	18.0	21.0	17.5	17.5	15.5
10	18.0	13.5	16.0	11.5	14.5	11.0	23.0	18.5	20.5	17.0	17.5	14.5
11	18.5	14.0	18.0	13.0	15.0	11.5	23.0	19.0	20.5	16.5	17.0	14.0
12	17.5	14.0	18.0	14.5	15.5	12.0	23.0	18.5	20.0	16.5	16.0	13.5
13	16.0	14.5	18.5	15.0	16.0	12.5	23.0	18.5	19.5	16.5	15.5	13.0
14	15.0	13.5	19.0	14.5	16.0	13.0	23.0	18.5	19.0	16.0	15.5	13.0
15	13.5	12.5	19.5	15.0	16.0	13.0	23.0	19.0	19.0	16.0	16.0	13.0
16	13.0	12.0	16.5	14.5	15.5	13.0	23.0	18.5	19.0	15.0	16.0	13.0
17	16.0	12.0	17.0	13.5	17.0	12.5	19.5	15.5	19.0	15.5	16.0	13.0
18	14.5	12.0	17.5	13.0	18.0	13.5	17.0	14.0	19.0	15.0	16.5	13.0
19	12.5	10.5	18.0	13.5	18.0	15.0	17.0	14.0	19.0	14.5	15.5	13.0
20	12.0	10.0	19.0	14.5	18.5	15.5	16.5	13.5	19.0	14.0	16.5	14.0
21	12.5	9.5	19.5	15.0	19.0	15.0	16.5	13.5	19.0	16.0	16.0	13.0
22	10.5	9.5	19.5	15.5	19.0	15.5	16.5	14.0	19.5	15.5	16.5	13.5
23	11.0	9.0	19.5	15.5	18.0	16.5	17.0	14.0	20.0	16.5	17.0	13.5
24	14.0	9.5	19.5	15.5	18.5	15.5	19.5	15.5	20.5	17.0	17.0	14.0
25	15.5	10.5	19.5	15.5	18.0	16.0	21.0	16.5	20.0	16.5	17.0	14.0
26	17.0	11.5	18.0	15.5	19.5	15.5	22.0	18.0	20.5	17.5	17.0	14.0
27	16.5	13.0	19.0	15.0	19.5	15.5	22.5	19.0	20.5	17.0	16.5	14.0
28	15.0	13.0	17.0	14.5	20.0	16.0	22.0	18.0	20.5	17.0	17.5	14.0
29	17.5	12.0	14.5	12.5	20.0	16.0	21.5	17.5	20.5	17.5	17.5	14.5
30	14.0	12.0	15.0	11.5	20.0	16.0	21.5	18.5	20.5	17.5	17.5	14.5
31	---	---	16.0	12.0	---	---	22.0	18.0	20.0	18.0	---	---
MONTH	18.5	9.0	19.5	9.0	20.0	9.5	23.0	13.5	22.0	14.0	20.0	13.0

## SAN JOAQUIN RIVER BASIN

11276900 TUOLUMNE RIVER BELOW EARLY INTAKE, NEAR MATHER, CA

LOCATION.--Lat 37°52'54", long 119°58'09", in NW 1/4 SW 1/4 sec.2, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 0.6 mi upstream from Cherry Creek, 0.7 mi downstream from Robert C. Kirkwood powerplant and Hetch Hetchy aqueduct, and 6.3 mi west of Mather.

DRAINAGE AREA.--487 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,200 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: June 30 to July 13, Sept. 14-30. Records good. Flow regulated by Hetch Hetchy Reservoir (station 11275500) 13 mi upstream and Robert C. Kirkwood powerplant beginning Apr. 26, 1967. Water is diverted to Hetch Hetchy aqueduct from the tailrace of the powerplant through a closed conduit. Flow in excess of aqueduct capacity is diverted to river. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--22 years, 551 ft<sup>3</sup>/s, 399,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft<sup>3</sup>/s, June 4, 1969, gage height, 9.82 ft; minimum daily, 12 ft<sup>3</sup>/s, Nov. 28-30, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 810 ft<sup>3</sup>/s, June 10, gage height, 5.09 ft; minimum daily, 33 ft<sup>3</sup>/s, Oct. 31 to Nov. 3, Nov. 9-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	33	34	43	69	83	41	61	95	425	71	84
2	49	33	34	42	70	75	39	84	114	388	71	84
3	46	33	34	70	70	64	43	84	114	388	71	84
4	44	34	34	105	71	53	42	84	114	392	71	84
5	43	34	34	161	71	64	39	83	114	392	71	84
6	43	38	34	107	69	63	38	83	152	392	71	84
7	42	35	41	90	69	62	92	86	385	388	71	84
8	72	34	40	87	69	62	91	86	517	383	71	84
9	45	33	40	84	69	62	36	86	517	383	74	84
10	51	33	38	79	68	60	38	86	696	210	76	108
11	40	33	38	86	68	57	38	86	779	77	76	121
12	38	33	36	83	68	56	38	86	779	228	76	121
13	54	33	35	77	68	55	38	87	779	72	76	121
14	39	35	35	74	68	54	38	108	779	75	76	121
15	39	35	35	76	68	54	38	85	779	74	76	117
16	39	37	36	81	68	54	37	85	296	99	76	123
17	37	37	39	89	66	54	37	85	228	235	76	72
18	38	37	39	88	66	54	36	84	220	244	76	67
19	38	37	39	81	68	54	37	82	220	242	76	68
20	40	35	39	79	69	54	56	82	220	239	76	53
21	43	36	38	77	69	53	61	118	220	238	76	53
22	45	36	53	78	69	53	53	85	256	239	76	53
23	47	36	55	76	69	53	108	85	259	177	76	53
24	43	36	43	76	71	54	54	85	250	79	76	54
25	43	36	42	74	73	53	51	85	454	74	80	53
26	42	35	41	74	70	53	49	85	449	71	82	60
27	38	34	40	73	69	76	49	80	449	71	82	55
28	85	34	43	74	72	55	47	76	449	71	83	49
29	41	34	47	74	74	54	47	78	439	71	84	51
30	35	34	46	70	---	54	47	79	439	71	84	51
31	33	---	44	69	---	54	---	79	---	71	84	---
TOTAL	1391	1043	1226	2497	2008	1806	1458	2628	11561	6559	2361	2380
MEAN	44.9	34.8	39.5	80.5	69.2	58.3	48.6	84.8	385	212	76.2	79.3
MAX	85	38	55	161	74	83	108	118	779	425	84	123
MIN	33	33	34	42	66	53	36	61	95	71	71	49
AC-FT	2760	2070	2430	4950	3980	3580	2890	5210	22930	13010	4680	4720

CAL YR 1987 TOTAL 24976 MEAN 68.4 MAX 275 MIN 33 AC-FT 49540  
WTR YR 1988 TOTAL 36918 MEAN 101 MAX 779 MIN 33 AC-FT 73230

LOCATION.--Lat 37°58'33", long 119°54'47", in SE 1/4 NW 1/4 sec.5, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on upstream face of Cherry Valley Dam on Cherry Creek, 4.2 mi upstream from Eleanor Creek, 7 mi north of Early Intake, and 7.3 mi northwest of Hetch Hetchy.

DRAINAGE AREA.--117 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1956 to current year. Prior to October 1959, published as Lake Lloyd near Hetch Hetchy.

GAGE.--Water-stage recorder. Datum of gage is 2.42 ft above National Geodetic Vertical Datum of 1929. Prior to October 1974, datum published as at mean sea level.

REMARKS.--Reservoir is formed by a rockfill dam completed in 1956. Storage began in December 1955. Capacity, 274,300 acre-ft between gage heights 4,430 ft, bottom of sluice gates, and 4,703 ft, top of flashboard gates on concrete spillway. No dead storage. Installation of flashboard gates on top of concrete spillway completed in 1979. Water is released down Cherry Creek for power development and domestic supply as part of Hetch Hetchy system of city and county of San Francisco. Unmeasured diversion from Lake Eleanor into Cherry Lake began Mar. 6, 1960. Diversion from Cherry Lake through tunnel to Dion R. Holm powerplant near mouth of Cherry Creek began Aug. 1, 1960. See schematic diagram of Tuolumne River basin. Records, including extremes, represent contents at 2400 hours.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 274,300 acre-ft, June 25-28, 1986, gage height, 4,703.0 ft; normal minimum since reservoir first filled, 7,660 acre-ft, Jan. 24, 1960, gage height, 4,502.1 ft. Reservoir drained for inspection in 1961 and 1964.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 203,400 acre-ft, May 30, gage height, 4,661.4 ft; minimum, 34,700 acre-ft, Sept. 30, gage height, 4,535.8 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by San Francisco Public Utilities Commission, dated May 15, 1971)

4,440	0	4,490	3,020	4,560	60,800	4,660	201,100
4,450	75	4,500	6,030	4,580	85,100	4,680	234,100
4,460	250	4,510	11,700	4,600	111,800	4,700	268,800
4,470	675	4,520	19,700	4,620	139,900	4,705	277,900
4,480	1,530	4,540	38,900	4,640	169,700		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	188400	184300	189500	198200	179800	180400	199500	198600	202100	165300	124600	76100
2	188100	184600	189600	198000	178700	181000	199500	197800	201400	164000	122900	74200
3	187900	184700	189800	198400	177800	181600	200000	196800	200300	162600	121200	72700
4	187700	184900	190000	198200	176800	182200	199300	195700	199300	161200	119600	71300
5	187600	184900	190000	198600	175900	182900	199000	194400	198200	159900	118100	69900
6	187300	185200	190600	197600	175100	183500	198700	193500	196800	158500	116800	68000
7	186900	185400	191200	196600	174800	184300	198700	193500	195100	157000	116000	66300
8	186600	185500	191700	195400	174000	184900	198700	193500	193500	155600	114400	64500
9	186500	185500	192400	194900	173300	185500	198900	193100	191900	154400	112800	62700
10	186500	185500	193000	194600	172500	186000	199700	192800	190400	154000	111100	61500
11	186300	185500	193500	193800	171700	186500	200000	193100	188900	153400	109300	60700
12	186200	185700	193800	193500	171100	186800	199800	193900	187400	152500	107800	59300
13	185800	186000	194100	193300	170500	187100	199700	195100	186000	151800	106600	57700
14	185700	186300	194300	192700	170500	187300	200000	196300	184700	150800	105600	56400
15	185400	186500	194300	192000	170300	187700	199800	197900	183300	149500	104000	55000
16	185000	186600	194400	191600	169700	188100	200300	199300	182200	148400	102400	53500
17	185000	187100	194700	191600	169400	188400	200600	200300	181300	147300	100600	52500
18	185000	187400	194700	190900	170200	189000	200300	200800	180400	145800	98700	51800
19	184700	187700	194900	190300	170900	189500	199800	200800	179300	144200	96600	50500
20	184400	188200	194900	189500	171900	190300	199500	200900	178400	142400	95300	49100
21	184300	188500	195100	188900	172600	190900	199200	201600	177300	140700	94200	47600
22	184100	188700	196000	187900	173600	191600	198700	202200	176000	138900	92400	46200
23	184000	188900	196500	186900	174300	192500	198400	202700	174800	137500	90600	44700
24	184100	188900	196800	186200	175000	193500	198600	202700	173700	136200	88800	43400
25	184100	188900	197100	185500	175700	194400	198600	202700	172600	134800	87200	42300
26	183800	189000	197300	184600	176500	195700	198600	202600	171600	133200	85300	40900
27	183600	189000	197400	184000	177400	197000	198700	202400	170500	131500	83800	39300
28	184100	189200	197600	182900	178500	197900	198600	202400	169200	130000	82600	37800
29	184400	189200	197900	182100	179500	198700	198400	203000	167900	128500	80900	36200
30	184300	189300	198200	181200	---	199500	198400	203400	166700	127400	79300	34700
31	184300	---	198100	180500	---	200000	---	202900	---	126100	77800	---
MAX	188400	189300	198200	198600	179800	200000	200600	203400	202100	165300	124600	76100
MIN	183600	184300	189500	180500	169400	180400	198400	192800	166700	126100	77800	34700
a	4649.4	4652.6	4658.1	4647.0	4646.3	4659.3	4658.3	4661.1	4638.0	4610.3	4574.1	4535.8
b	-4400	+5000	+8800	-17600	-1000	+20500	-1600	+4500	-36200	-40600	-48300	-43100
CAL YR	1987	b	+43500									
WTR YR	1988	b	-154000									
a Gage height, in feet, at end of month.												
b Change in contents, in acre-feet.												

## SAN JOAQUIN RIVER BASIN

11277300 CHERRY CREEK BELOW CHERRY VALLEY DAM, NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°58'04", long 119°54'59", in SE 1/4 SW 1/4 sec.5, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 0.7 mi downstream from Cherry Valley Dam, 3.5 mi upstream from Eleanor Creek, 6.7 mi north of Early Intake, and 7.2 mi west of Hetch Hetchy.

DRAINAGE AREA.--118 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,337.08 ft above National Geodetic Vertical Datum of 1929 (levels by city and county of San Francisco).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Cherry Lake (station 11277200) 0.7 mi upstream. Diversion between Lake Eleanor (station 11277500) and Cherry Lake began Mar. 6, 1960. Diversion from Cherry Lake to Dion R. Holm powerplant began Aug. 1, 1960. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (since diversion to Dion R. Holm powerplant).--28 years (water years 1961-88), 36.0 ft<sup>3</sup>/s, 26,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,210 ft<sup>3</sup>/s, July 10, 1974, gage height, 10.53 ft; minimum daily, 1.6 ft<sup>3</sup>/s, Apr. 10, 1957, Oct. 12, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 415 ft<sup>3</sup>/s, June 7, gage height, 5.84 ft; minimum daily, 4.4 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	6.1	6.8	6.8	7.2	7.4	5.2	5.2	6.4	189	167	185
2	6.4	6.1	6.8	6.8	7.2	7.2	5.2	5.2	6.4	194	167	186
3	6.4	6.1	6.8	7.7	6.8	7.2	5.2	5.2	6.4	193	167	188
4	6.3	6.1	6.6	7.5	6.8	7.2	5.2	94	6.4	193	166	188
5	6.1	6.1	6.8	9.2	6.8	7.2	5.2	177	6.4	192	166	187
6	6.1	6.4	7.0	7.8	6.8	7.2	45	169	89	192	165	186
7	6.1	6.4	6.9	7.5	6.8	7.2	5.3	169	336	192	164	185
8	6.1	6.4	6.9	7.5	6.8	6.0	5.2	169	415	192	165	189
9	6.1	6.2	6.8	7.3	6.8	5.2	5.2	169	414	191	165	190
10	6.1	6.3	6.8	7.2	6.8	5.2	5.2	169	414	191	165	69
11	6.1	6.4	6.8	7.7	6.8	5.2	5.1	169	412	191	165	14
12	6.1	6.4	6.8	7.5	6.8	5.2	5.1	169	412	191	164	14
13	6.1	6.6	6.8	7.2	6.8	5.2	5.0	169	411	190	168	13
14	6.1	6.4	6.8	7.2	6.8	5.2	5.5	170	409	190	170	13
15	6.1	6.4	6.8	7.2	6.8	5.2	5.2	172	408	190	169	13
16	6.1	6.4	6.8	7.3	6.8	5.2	5.2	172	288	190	169	13
17	6.1	6.5	6.8	7.2	6.8	5.2	5.2	151	169	189	168	13
18	6.1	6.4	6.8	7.2	6.8	5.2	5.2	8.4	168	188	176	13
19	6.1	6.4	6.8	7.2	6.8	5.2	5.6	6.7	167	188	183	13
20	6.1	6.5	6.8	7.2	6.8	5.2	5.8	6.4	175	188	183	12
21	6.1	6.4	6.8	7.2	6.8	5.2	5.5	6.4	184	187	182	12
22	6.2	6.4	7.2	7.2	6.8	5.2	5.5	6.4	184	187	182	12
23	6.2	6.4	6.8	7.2	6.8	5.2	5.5	6.4	183	186	181	12
24	6.1	6.4	6.8	7.2	6.8	5.2	5.4	6.4	183	186	186	12
25	6.1	6.4	6.8	7.2	6.8	5.2	5.3	6.4	182	186	190	12
26	6.1	6.6	6.8	7.2	6.8	5.2	5.2	6.4	182	186	189	11
27	6.1	6.6	6.8	7.2	6.8	5.2	5.2	6.4	182	174	188	11
28	6.5	6.6	7.0	7.2	7.0	5.2	5.2	6.7	182	167	188	11
29	6.4	6.6	6.9	7.2	7.0	5.2	5.2	6.7	182	167	187	7.2
30	6.1	6.5	6.8	7.2	---	5.2	5.2	6.5	181	167	187	4.4
31	6.1	---	6.8	7.2	---	5.4	---	6.4	---	167	186	---
TOTAL	194.0	191.5	211.7	227.4	198.4	176.4	198.0	2396.2	6544.0	5774	5418	1988.6
MEAN	6.26	6.38	6.83	7.34	6.84	5.69	6.60	77.3	218	186	175	66.3
MAX	9.3	6.6	7.2	9.2	7.2	7.4	45	177	415	194	190	190
MIN	6.1	6.1	6.6	6.8	6.8	5.2	5.0	5.2	6.4	167	164	4.4
AC-FT	385	380	420	451	394	350	393	4750	12980	11450	10750	3940
CAL YR 1987	TOTAL	20545.0	MEAN	56.3	MAX	177	MIN	5.4	AC-FT	40750		
WTR YR 1988	TOTAL	23518.2	MEAN	64.3	MAX	415	MIN	4.4	AC-FT	46650		

## SAN JOAQUIN RIVER BASIN

## 11277500 LAKE ELEANOR NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°58'27", long 119°52'48", in SE 1/4 NW 1/4 sec.3, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, 710 ft from left bank on upstream side of dam on Eleanor Creek, 1.7 mi upstream from Miguel Creek, and 5.5 mi northwest of Hetch Hetchy.

DRAINAGE AREA.--78.1 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1918 to current year. Prior to October 1930, published in WSP 1315-A. Published as "near Sequoia" 1919-20.

REVISED RECORDS.--WSP 1445: 1938(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2.39 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1927, nonrecording gage on upstream side of dam at same site and datum.

REMARKS.--Reservoir is formed by multiple-arch dam completed in 1918; storage began June 23, 1918. Usable capacity, 26,110 acre-ft between gage heights 4,620.9 ft, natural outlet of old lake, and 4,660.0 ft, top of 5-ft flashboards. Records, including extremes, represent usable contents at 2400 hours. See schematic diagram of Tuolumne River basin.

COOPERATION.--Periodic observations of gage height were provided by city and county of San Francisco.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 31,000 acre-ft, Dec. 11, 1937, from capacity table then in use, gage height, 4,663.4 ft; no usable contents at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 27,100 acre-ft, Apr. 14, 15, gage height, 4,661.0 ft; no usable contents Aug. 18 to Sept. 30.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by San Francisco Public Utilities Commission, dated May 1941)

4,608	0	4,620	36	4,628	1,480	4,646	13,500
4,610	6	4,622	49	4,630	2,450	4,650	17,000
4,612	12	4,624	92	4,632	3,580	4,655	21,500
4,614	18	4,625	211	4,635	5,270	4,660	26,100
4,616	24	4,626	550	4,638	7,330	4,663	29,100
4,618	27	4,627	996	4,642	10,300		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19100	16600	19400	24500	19300	14300	25800	26400	26700	12800	639	0
2	18900	16600	19500	24500	18900	14700	26100	26500	26700	12000	550	0
3	18700	16700	19600	24800	18400	15100	26400	26500	26600	11300	550	0
4	18600	16700	19700	25000	18000	15400	26800	26600	26500	10600	505	0
5	18500	16800	19700	26000	17500	15800	27000	26800	26400	9820	416	0
6	18400	16900	20200	26200	17100	16100	26900	26700	26400	9020	371	0
7	18200	17100	20800	26200	16600	16500	26900	26400	26100	8290	282	0
8	18200	17200	20800	26000	16100	16800	26900	26100	25900	7610	246	0
9	18000	17200	21100	25700	15800	17300	26900	25900	25600	6920	211	0
10	17900	17300	21500	25500	15400	17500	26900	25600	25200	6160	130	0
11	17700	17300	21800	25300	15100	17700	26900	25500	24700	5410	92	0
12	17600	17300	22000	25000	14800	17900	26900	25400	24200	4760	74	0
13	17500	17400	22100	24800	14500	18100	26900	25500	23700	4140	56	0
14	17400	17600	22100	24600	14100	18200	27100	25700	23200	3520	40	0
15	17300	17700	22100	24300	13900	18400	27100	25900	22800	3010	33	0
16	17200	17800	22200	24100	13500	18700	27000	26100	22100	2560	18	0
17	17000	18100	22300	23900	13200	18900	26900	26700	21600	2210	18	0
18	17000	18200	22400	23600	12900	19100	26800	26800	21000	1960	0	0
19	16900	18400	22500	23400	12600	19500	26700	26500	20500	1770	0	0
20	16700	18500	22600	23000	12400	19900	26600	26400	19900	1580	0	0
21	16600	18700	22700	22700	12200	20300	26600	26400	19300	1480	0	0
22	16600	18900	23300	22400	12100	20700	26600	26500	18800	1330	0	0
23	16500	19000	23500	22100	12100	21100	26500	26600	18200	1240	0	0
24	16500	19100	23500	21900	12200	21800	26500	26700	17400	1140	0	0
25	16400	19100	23700	21600	12400	22300	26800	26700	16800	1040	0	0
26	16300	19100	23800	21400	12500	23000	27000	26700	16100	1000	0	0
27	16200	19100	23900	21100	12900	23700	27000	26700	15500	906	0	0
28	16500	19200	24100	20800	13500	24300	26900	26800	14900	861	0	0
29	16600	19200	24200	20400	13900	24800	26700	27000	14100	772	0	0
30	16700	19300	24300	20100	---	25300	26500	26900	13500	728	0	0
31	16600	---	24500	19800	---	25500	---	26800	---	683	0	---
MAX	19100	19300	24500	26200	19300	25500	27100	27000	26700	12800	639	0
MIN	16200	16600	19400	19800	12100	14300	25800	25400	13500	683	0	0
a	4648.6	4652.6	4658.2	4653.1	4646.4	4659.3	4660.4	4660.7	4645.9	4626.3	---	---
b	-2500	+2700	+5200	-4700	-5900	+11600	+1000	+300	-13300	-12800	-683	0

CAL YR 1987 b +21400

WTR YR 1988 b -19100

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11278000 ELEANOR CREEK NEAR HETCH HETCHY, CA

LOCATION.--Lat 37°58'09", long 119°52'52", in NW 1/4 SW 1/4 sec.3, T.1 N., R.19 E., Tuolumne County, Hydrologic Unit 18040009, Yosemite National Park, on right bank 0.5 mi downstream from Lake Eleanor Dam, 1.1 mi upstream from Miguel Creek, and 5.5 mi northwest of Hetch Hetchy.

DRAINAGE AREA.--78.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1909 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "near Sequoia" 1910-18.

REVISED RECORDS.--WSP 1315-A: 1923(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. November 1909 to November 1915, nonrecording gage and water-stage recorder at site 1 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 23 to Jan. 12. Records good except those for estimated daily discharges, which are fair. Flow regulated by Lake Eleanor (station 11277500) 0.5 mi upstream beginning in 1918. Diversion from Lake Eleanor to Cherry Lake began in March 1960. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (prior to diversion to Cherry Lake).--50 years (water years 1910-59), 223 ft<sup>3</sup>/s, 161,400 acre-ft/yr; 29 years (water years 1960-88), 88.9 ft<sup>3</sup>/s, 64,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft<sup>3</sup>/s, Nov. 19, 1950, gage height, 14.95 ft, from rating curve extended above 1,600 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 9.94 and 12.24 ft; no flow at times in 1910, 1930-31, 1933, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 522 ft<sup>3</sup>/s, May 18, gage height, 4.38 ft; minimum daily, 0.58 ft<sup>3</sup>/s, Sept. 17-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	5.9	7.2	7.6	8.1	8.4	8.5	261	218	15	17	1.1
2	3.8	5.7	7.2	7.6	8.1	8.5	8.5	184	205	19	17	1.0
3	4.8	5.8	7.2	11	8.1	8.5	8.7	177	197	19	17	.98
4	5.3	5.9	7.1	9.4	7.5	8.5	11	105	195	18	17	.98
5	5.6	5.9	7.2	19	7.2	8.9	133	27	195	18	17	.98
6	5.6	5.9	7.8	12	7.2	7.7	258	47	169	17	17	.95
7	5.6	5.9	8.1	207	7.2	6.7	272	19	90	17	18	.83
8	5.6	5.9	8.3	205	7.2	6.7	274	19	9.2	17	18	.83
9	5.6	5.9	8.5	205	7.2	6.7	263	18	8.3	16	18	.83
10	5.6	5.9	8.4	7.6	7.2	6.7	255	18	7.7	16	18	.78
11	5.6	5.9	8.5	7.6	7.0	6.7	256	18	6.8	16	17	.69
12	5.8	5.9	8.4	6.5	6.7	6.7	257	18	7.6	16	16	.82
13	6.3	6.3	8.1	6.1	6.7	6.7	257	18	8.5	16	16	.69
14	6.3	6.1	8.1	5.9	6.7	6.5	304	18	8.5	17	17	.69
15	5.9	5.9	8.1	5.9	6.4	6.3	404	18	8.5	16	17	.69
16	5.9	5.9	8.4	5.9	6.3	6.3	399	18	8.5	17	17	.62
17	5.9	6.2	8.3	5.9	6.3	6.3	340	65	8.2	17	14	.58
18	5.9	6.0	8.3	5.6	6.3	6.3	301	399	8.1	17	7.3	.58
19	5.9	6.1	8.5	6.0	6.3	6.3	360	434	8.1	17	6.3	.58
20	5.9	6.1	8.3	6.3	6.8	6.3	375	334	7.9	18	5.6	.58
21	5.9	6.2	8.1	5.7	7.2	6.3	356	280	7.6	17	5.1	.58
22	6.1	6.3	132	5.6	7.2	6.3	358	229	7.6	17	4.5	.58
23	6.3	6.3	8.5	7.3	6.9	6.3	339	196	7.6	17	3.9	.58
24	6.3	6.3	8.1	8.7	6.7	6.3	249	195	7.3	17	3.4	.58
25	6.3	5.8	8.1	8.5	6.7	6.3	232	198	7.2	16	2.6	.58
26	6.2	5.6	8.5	8.3	6.7	6.7	406	200	7.2	17	2.4	.58
27	5.9	5.6	5.9	8.1	6.7	6.7	478	200	6.9	17	2.1	.58
28	6.4	5.6	5.9	8.1	7.4	7.2	465	198	6.7	17	2.0	.58
29	6.1	6.5	6.3	8.1	7.9	7.6	397	234	8.0	17	1.9	.58
30	5.9	6.8	7.2	8.1	---	8.6	362	269	8.9	17	1.8	.58
31	5.9	---	7.2	8.1	---	8.7	---	244	---	17	1.6	---
TOTAL	181.5	180.1	365.8	837.5	203.9	218.7	8386.7	4658	1449.9	525	338.5	21.58
MEAN	5.85	6.00	11.8	27.0	7.03	7.05	280	150	48.3	16.9	10.9	.72
MAX	7.3	6.8	132	207	8.1	8.9	478	434	218	19	18	1.1
MIN	3.8	5.6	5.9	5.6	6.3	6.3	8.5	18	6.7	15	1.6	.58
AC-FT	360	357	726	1660	404	434	16640	9240	2880	1040	671	43

CAL YR 1987 TOTAL 9691.2 MEAN 26.6 MAX 448 MIN 3.8 AC-FT 19220  
WTR YR 1988 TOTAL 17367.18 MEAN 47.5 MAX 478 MIN .58 AC-FT 34450

## SAN JOAQUIN RIVER BASIN

## 11278200 CHERRY CREEK CANAL NEAR EARLY INTAKE, CA

LOCATION.--Lat 37°53'36", long 119°57'17", in SW 1/4 SW 1/4 sec.36, T.1 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 1.3 mi northeast of Early Intake and 10 mi southwest of Hetch Hetchy Reservoir.

PERIOD OF RECORD.--April 1956 to May 1971, July 1987 to current year.

GAGE.--Water-stage recorder and concrete canal. Elevation of gage is 2,700 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Canal diverts from left bank of Cherry Creek in NW 1/4 SW 1/4 sec.31, T.1 N., R.19 E., to supplement Tuolumne River flows exported to city of San Francisco via the Hetch Hetchy Aqueduct. Canal was originally constructed in 1915 to provide flow for domestic use and power development at Early Intake powerplant during initial construction of Hetch Hetchy Project facilities.

AVERAGE DISCHARGE.--15 years (water years 1957-70, 1988), 54.4 ft<sup>3</sup>/s, 39,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 194 ft<sup>3</sup>/s, July 30, 1959; no flow at times in 1964, 1969, 1971, and 1988.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	0	.07		.02	0	151	155	154	155	153
2	0	0	0	.15		0	0	148	154	156	154	152
3	0	0	0	.70		0	0	152	153	155	154	153
4	0	0	0	.08		0	0	154	153	155	153	152
5	0	0	0	.04		0	0	156	153	155	153	152
6	0	0	.01	0		0	0	156	154	155	153	152
7	0	0	.01	0		0	78	151	146	154	152	152
8	0	0	.01	0		0	158	152	132	154	152	152
9	0	0	0	0		0	156	153	132	154	152	153
10	0	0	0	0		0	155	153	132	82	152	71
11	0	0	0	0		0	155	153	131	75	151	0
12	0	0	0	0		0	156	153	132	155	152	0
13	0	.03	0	0		0	156	153	131	155	153	0
14	0	0	0	0		0	158	153	132	155	154	0
15	0	0	0	0		0	159	154	132	155	153	0
16	0	0	0	.01		0	156	154	129	155	153	0
17	0	0	0	.02		0	155	155	122	156	153	0
18	0	0	0	0		0	155	157	123	156	152	0
19	0	0	0	0		0	157	149	123	156	154	0
20	0	.02	0	0		0	157	150	124	156	153	0
21	0	0	0	0		0	155	152	143	156	153	0
22	.01	0	.02	0		0	155	152	159	157	153	0
23	.02	0	0	0		0	154	151	157	157	153	0
24	0	0	0	0		0	152	154	155	157	153	0
25	0	0	0	0		0	155	154	155	157	154	0
26	0	0	0	0		0	162	154	155	158	153	0
27	0	0	0	0		0	157	152	154	157	153	0
28	.06	0	.03	0		0	151	152	154	155	153	0
29	.01	0	.32	0		0	153	155	153	155	153	0
30	0	0	.38	0	---	0	155	158	153	155	153	0
31	0	---	.25	0	---	0	---	157	---	155	153	---
TOTAL	.10	.05	1.03	1.07	0	.02	3660	4748	4281	4667	4742	1442
MEAN	.003	.002	.033	.035	0	.0006	122	153	143	151	153	48.1
MAX	.06	.03	.38	.70	0	.02	162	158	159	158	155	153
MIN	0	0	0	0	0	0	0	148	122	75	151	0
AC-FT	.2	.10	2.0	2.1	0	.04	7260	9420	8490	9260	9410	2860
WTR YR 1988	TOTAL	23542.27	MEAN	64.3	MAX	162	MIN	0	AC-FT	46700		



## SAN JOAQUIN RIVER BASIN

11278300 CHERRY CREEK NEAR EARLY INTAKE, CA

LOCATION.--Lat 37°53'40", long 119°57'42", in NW 1/4 SE 1/4 sec.35, T.1 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 1.2 mi upstream from mouth, 1.3 mi north of Early Intake, and 10.3 mi southwest of Hetch Hetchy.

DRAINAGE AREA.--226 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,272.00 ft above National Geodetic Vertical Datum of 1929 (levels by city and county of San Francisco).

REMARKS.--Estimated daily discharges: Dec. 11 to Jan. 13. Records good except those for period of estimated daily discharges, which are fair. Flow regulated by Cherry Lake (station 11277200) 10 mi upstream and Lake Eleanor (station 11277500) 9.8 mi upstream. Diversion from Cherry Lake to Dion R. Holm powerplant began Aug. 1, 1960. Water is returned to creek 1.2 mi below station. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE (since diversion to Dion R. Holm powerplant).--28 years (water years 1961-88), 144 ft<sup>3</sup>/s, 104,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft<sup>3</sup>/s, Feb. 1, 1963, gage height, 14.50 ft, from rating curve extended above 4,600 ft<sup>3</sup>/s; minimum daily, 0.30 ft<sup>3</sup>/s, Apr. 5, 6, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 531 ft<sup>3</sup>/s, Apr. 6, gage height, 5.75 ft; minimum daily, 8.2 ft<sup>3</sup>/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	14	16	18	28	39	17	167	93	52	35	37
2	12	14	15	18	27	39	17	56	72	70	34	37
3	10	14	15	21	25	36	18	38	59	69	34	38
4	11	13	15	20	25	32	19	44	56	68	34	37
5	12	13	15	30	24	30	88	59	55	68	33	37
6	12	16	17	80	24	29	329	78	76	67	33	37
7	12	14	24	230	25	26	227	51	320	66	33	36
8	12	14	19	225	25	25	137	45	347	65	33	36
9	12	14	19	220	24	23	136	42	344	64	33	39
10	12	14	18	135	24	22	125	41	343	135	33	48
11	12	14	19	80	25	21	123	40	342	147	32	15
12	13	13	18	50	25	21	124	40	340	61	31	13
13	18	16	18	30	24	21	123	40	341	60	32	13
14	13	18	18	26	24	21	165	40	339	61	36	13
15	13	14	18	27	24	20	281	43	338	60	36	13
16	13	14	18	28	24	20	293	45	246	59	35	13
17	12	15	18	31	23	20	232	54	61	60	34	13
18	12	15	18	28	23	19	180	270	60	59	32	13
19	12	14	18	25	22	19	235	346	60	58	39	13
20	12	15	18	25	22	19	291	248	65	59	38	13
21	12	16	18	24	22	19	260	156	61	58	38	13
22	14	15	150	24	22	18	261	113	41	58	37	13
23	17	14	19	25	22	18	239	58	43	57	36	13
24	14	14	19	29	22	18	156	55	46	57	37	12
25	15	14	19	30	22	18	93	60	47	56	42	12
26	13	14	19	30	22	18	262	65	45	56	41	12
27	13	14	17	30	22	18	382	65	44	49	40	12
28	18	14	17	29	27	17	374	61	44	36	40	12
29	20	14	17	30	30	18	306	94	43	35	39	12
30	15	15	18	31	---	18	246	141	44	35	38	8.2
31	14	---	18	29	---	19	---	121	---	35	38	---
TOTAL	429	432	685	1658	698	701	5739	2776	4415	1940	1106	633.2
MEAN	13.8	14.4	22.1	53.5	24.1	22.6	191	89.5	147	62.6	35.7	21.1
MAX	29	18	150	230	30	39	382	346	347	147	42	48
MIN	10	13	15	18	22	17	17	38	41	35	31	8.2
AC-FT	851	857	1360	3290	1380	1390	11380	5510	8760	3850	2190	1260

CAL YR 1987 TOTAL 10990 MEAN 30.1 MAX 299 MIN 10 AC-FT 21800  
WTR YR 1988 TOTAL 21212.2 MEAN 58.0 MAX 382 MIN 8.2 AC-FT 42070

## SAN JOAQUIN RIVER BASIN

11278400 CHERRY CREEK BELOW DION R. HOLM POWERPLANT, NEAR MATHER, CA

LOCATION.--Lat 37°53'24", long 119°58'08", in NE 1/4 NW 1/4 sec.2, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 600 ft upstream from mouth, 0.5 mi downstream from powerplant, 0.8 mi northwest of Early Intake, and 6.2 mi west of Mather.

DRAINAGE AREA.--234 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1963 to current year. Prior to October 1965, published as "below Cherry powerhouse, near Mather."

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,133.50 ft above National Geodetic Vertical Datum of 1929 (levels by city and county of San Francisco).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Cherry Lake (station 11277200) 11 mi upstream and Lake Eleanor (station 11277500) 10 mi upstream. Flow diverted, at times, into Cherry Creek Canal 2 mi upstream from station for domestic use and to supplement flow to Hetch Hetchy aqueduct. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--25 years, 684 ft<sup>3</sup>/s, 495,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft<sup>3</sup>/s, Apr. 11, 1982, gage height, 15.36 ft, from rating curve extended above 4,400 ft<sup>3</sup>/s on basis of combined peak flow for Cherry Creek near Early Intake (station 11278300) and Dion R. Holm powerplant; minimum daily, 1.6 ft<sup>3</sup>/s, June 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,400 ft<sup>3</sup>/s, June 7, gage height, 8.91 ft; minimum daily, 15 ft<sup>3</sup>/s, Oct. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	36	17	19	156	46	609	555	795	976	681	784
2	200	17	18	286	244	49	229	791	790	994	713	766
3	82	16	19	43	192	45	262	766	973	996	687	613
4	163	16	19	474	293	40	672	793	967	996	699	576
5	197	16	18	763	348	37	711	791	963	996	653	547
6	198	20	20	708	414	35	972	831	975	993	476	740
7	200	19	32	963	397	31	871	512	1210	992	304	704
8	204	17	24	1080	586	30	813	438	1240	991	645	743
9	200	17	25	738	623	27	506	750	1240	994	693	745
10	83	16	23	612	674	26	412	747	1240	527	685	507
11	20	16	22	789	689	25	816	749	1250	625	703	417
12	199	17	20	486	681	25	875	727	1250	675	658	735
13	206	21	20	486	722	24	851	690	1240	899	470	743
14	197	24	23	658	505	24	885	602	1250	760	369	692
15	198	18	20	376	584	23	972	383	1250	769	621	703
16	197	17	20	198	750	23	582	740	1170	579	698	686
17	84	19	20	180	416	23	479	708	981	550	746	464
18	15	20	20	118	107	22	858	915	980	772	755	336
19	198	18	20	86	25	22	950	1010	985	809	767	662
20	196	18	20	112	25	22	997	922	989	781	534	623
21	196	21	20	127	25	21	897	750	984	816	455	742
22	198	19	29	181	25	21	923	393	968	776	711	735
23	203	18	28	355	26	93	734	749	973	605	749	770
24	85	18	22	383	88	22	513	724	973	499	730	619
25	19	17	20	465	61	20	774	715	976	684	729	499
26	199	16	21	540	32	20	984	708	970	726	805	726
27	217	16	19	604	25	20	1130	713	968	707	573	761
28	176	16	18	664	31	20	1140	567	970	634	432	769
29	194	16	22	903	37	20	1020	483	970	636	685	788
30	250	16	22	734	---	20	748	498	974	487	656	752
31	84	---	200	417	---	25	---	841	---	488	639	---
TOTAL	5076	551	841	14548	8781	901	23185	21561	31464	23732	19721	19947
MEAN	164	18.4	27.1	469	303	29.1	773	696	1049	766	636	665
MAX	250	36	200	1080	750	93	1140	1010	1250	996	805	788
MIN	15	16	17	19	25	20	229	383	790	487	304	336
AC-FT	10070	1090	1670	28860	17420	1790	45990	42770	62410	47070	39120	39560

CAL YR 1987 TOTAL 50879 MEAN 139 MAX 409 MIN 15 AC-FT 100900  
WTR YR 1988 TOTAL 170308 MEAN 465 MAX 1250 MIN 15 AC-FT 337800

## SAN JOAQUIN RIVER BASIN

11281000 SOUTH FORK TUOLUMNE RIVER NEAR OAKLAND RECREATION CAMP, CA

LOCATION.--Lat 37°49'18", long 120°00'43", in SE 1/4 SE 1/4 sec.29, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 75 ft downstream from highway bridge on Big Oak Flat Road, 0.5 mi southwest of Oakland Recreation Camp, and 0.6 mi upstream from Middle Tuolumne River.

DRAINAGE AREA.--87.0 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1923 to current year.

REVISED RECORDS.--WSP 1445: 1923, 1925(M), 1926-28, 1929-30(M), 1932(M), 1935-36(M), 1937-38, 1943(M), 1945(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,800 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Nov. 22, 1931, at site 50 ft upstream at same datum. Nov. 22, 1931, to July 19, 1977, at present site, datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. No diversion above station. One small recreation reservoir (capacity unknown) is located approximately 3.5 mi upstream. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--65 years, 97.4 ft<sup>3</sup>/s, 70,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,900 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.9 ft, from floodmarks, present datum, from rating curve extended above 3,300 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 9.08 and 11.9 ft; minimum, 0.3 ft<sup>3</sup>/s, Aug 23, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	0130	*151	*3.92				

Minimum daily, 1.4 ft<sup>3</sup>/s, Aug. 25 to Sept. 3, Sept. 8-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	10	11	15	28	85	53	74	41	9.3	2.8	1.4
2	3.1	10	12	16	26	71	54	72	34	8.8	2.5	1.4
3	3.1	11	12	21	23	66	57	68	29	8.4	2.4	1.4
4	3.4	11	12	46	23	59	51	67	26	8.1	2.3	3.0
5	4.8	10	12	94	23	57	57	63	26	7.8	2.4	2.7
6	3.8	14	17	91	24	56	64	62	26	7.8	2.3	2.1
7	3.2	14	47	46	25	54	64	61	29	7.7	2.3	1.7
8	3.3	13	25	38	25	54	66	60	28	7.6	2.3	1.4
9	3.4	12	21	33	25	68	58	60	26	7.7	7.6	1.4
10	3.4	11	21	30	27	59	63	62	23	7.6	7.7	1.4
11	3.5	10	21	40	28	49	63	71	22	7.5	2.1	1.4
12	3.6	9.8	19	39	30	34	62	77	21	7.4	2.0	1.4
13	3.8	12	13	30	31	25	57	75	20	7.4	2.0	1.5
14	4.0	28	12	26	31	41	77	69	19	7.3	2.0	1.5
15	4.1	16	16	28	31	41	70	65	18	7.0	2.0	1.5
16	4.0	13	17	31	32	40	66	63	17	2.2	2.0	1.5
17	3.9	14	16	39	32	38	67	66	17	1.8	2.0	1.5
18	3.8	18	14	37	32	50	63	60	14	1.7	2.0	1.5
19	3.8	16	14	24	29	43	76	42	15	3.0	1.8	1.6
20	3.8	16	13	24	28	38	108	47	15	3.9	1.7	1.7
21	3.7	17	13	24	28	52	80	45	15	3.9	1.6	1.7
22	4.1	16	16	24	29	49	75	42	15	2.6	1.5	2.1
23	8.1	15	21	24	31	52	69	38	19	3.1	1.5	2.7
24	9.0	14	16	27	32	59	61	35	16	3.2	1.5	2.3
25	7.8	13	13	30	33	62	75	32	13	2.9	1.4	2.2
26	6.2	12	15	33	34	72	90	29	13	2.8	1.4	2.2
27	5.8	11	16	34	35	76	106	27	12	2.7	1.4	2.2
28	15	12	18	36	64	67	99	28	11	4.6	1.4	2.2
29	23	11	18	36	73	61	91	57	10	5.0	1.4	2.7
30	15	11	17	35	---	59	87	46	9.9	3.9	1.4	2.1
31	12	---	15	32	---	54	---	45	---	3.2	1.4	---
TOTAL	182.5	400.8	523	1083	912	1691	2129	1708	599.9	167.9	70.1	55.4
MEAN	5.89	13.4	16.9	34.9	31.4	54.5	71.0	55.1	20.0	5.42	2.26	1.85
MAX	23	28	47	94	73	85	108	77	41	9.3	7.7	3.0
MIN	3.0	9.8	11	15	23	25	51	27	9.9	1.7	1.4	1.4
AC-FT	362	795	1040	2150	1810	3350	4220	3390	1190	333	139	110

CAL YR 1987 TOTAL 8264.0 MEAN 22.6 MAX 260 MIN 1.6 AC-FT 16390  
WTR YR 1988 TOTAL 9522.6 MEAN 26.0 MAX 108 MIN 1.4 AC-FT 18890

## SAN JOAQUIN RIVER BASIN

## 11282000 MIDDLE TUOLUMNE RIVER AT OAKLAND RECREATION CAMP, CA

LOCATION.--Lat 37°49'42", long 120°00'38", in SW 1/4 NW 1/4 sec.28, T.1 S., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 1,000 ft downstream from Oakland Recreation Camp, 0.8 mi upstream from South Fork Tuolumne River, and 2.7 mi east of Buck Meadows Post Office.

DRAINAGE AREA.--73.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1916 to current year. Monthly discharge only for October and November 1916, published in WSP 1315-A. Published as Middle Fork of Tuolumne River near Buck Meadows 1917-32 and as "near Buck Meadows" 1933-40.

REVISED RECORDS.--WSP 1395: 1919(M), 1938(M), 1951(P). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,800 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Feb. 22. Records good. No regulation but small diversion above station for irrigation. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--72 years, 78.1 ft<sup>3</sup>/s, 56,580 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,920 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 11.75 ft from flood profile, 11.05 ft from floodmarks inside gage well, from rating curve extended above 3,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1924, 1931, 1934, 1961, 1977, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 380 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 13	0445	*172	*3.12				

No flow Sept. 4-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.38	6.1	5.0	6.7	13	39	46	82	57	7.8	1.0	.01
2	.37	4.9	5.3	7.7	12	31	50	81	46	7.0	.84	.01
3	.37	5.6	5.4	11	10	32	56	76	39	6.5	.66	.01
4	.34	6.0	5.1	16	11	29	50	79	35	6.1	.61	.0
5	.22	5.2	5.3	35	11	28	57	74	34	5.7	.55	.0
6	.18	5.8	6.2	30	12	29	72	68	33	5.6	.43	.0
7	.18	6.6	14	20	12	28	77	64	34	5.3	.37	.0
8	.21	6.2	11	16	12	28	83	62	36	5.0	.34	.0
9	.37	5.4	9.4	15	12	30	73	66	33	4.8	.33	.0
10	.46	5.0	8.7	14	12	29	87	73	29	4.4	.33	.01
11	.56	4.7	9.2	17	13	25	92	99	27	4.0	.32	.01
12	.68	4.4	8.4	14	13	25	97	124	25	3.5	.29	.01
13	.78	4.9	4.8	14	14	25	91	131	24	3.2	.24	.01
14	1.1	9.6	3.9	12	14	25	96	123	22	3.0	.21	.01
15	1.4	8.6	6.9	13	14	24	85	121	19	2.8	.19	.01
16	1.5	6.3	8.3	15	14	23	88	124	18	2.5	.26	.01
17	1.5	6.3	7.3	27	14	22	82	113	16	1.9	.27	.01
18	1.7	8.0	6.0	15	14	23	79	97	15	1.7	.24	.01
19	1.8	8.1	6.6	11	13	24	80	92	14	1.5	.24	.01
20	1.8	7.5	5.9	12	14	28	83	86	15	1.1	.18	.01
21	1.6	7.5	6.1	12	14	32	72	83	17	.98	.10	.01
22	1.8	7.0	9.6	12	15	33	71	76	16	.85	.10	.01
23	2.6	6.9	11	12	16	34	61	67	13	.69	.09	.01
24	3.3	5.8	6.2	12	17	39	57	62	12	.76	.05	.01
25	3.7	5.6	5.9	13	17	44	71	55	12	.69	.06	.01
26	3.1	5.3	7.8	14	18	54	85	49	11	.67	.01	.01
27	2.3	4.4	7.2	14	20	64	100	44	12	1.2	.52	.01
28	3.4	4.9	9.0	15	29	60	99	42	10	4.2	.07	.01
29	12	4.7	8.4	16	36	54	97	72	8.8	4.2	.03	.01
30	12	4.6	7.7	16	---	53	101	62	8.2	2.3	.03	.01
31	8.1	---	6.2	15	---	48	---	65	---	1.4	.02	---
TOTAL	69.80	181.9	227.8	472.4	436	1062	2338	2512	691.0	101.34	8.98	0.24
MEAN	2.25	6.06	7.35	15.2	15.0	34.3	77.9	81.0	23.0	3.27	.29	.008
MAX	12	9.6	14	35	36	64	101	131	57	7.8	1.0	.01
MIN	.18	4.4	3.9	6.7	10	22	46	42	8.2	.67	.01	.00
AC-FT	138	361	452	937	865	2110	4640	4980	1370	201	18	.5

CAL YR 1987 TOTAL 6796.30 MEAN 18.6 MAX 154 MIN .05 AC-FT 13480  
WTR YR 1988 TOTAL 8101.46 MEAN 22.1 MAX 131 MIN .00 AC-FT 16070

## SAN JOAQUIN RIVER BASIN

11283250 CLAVEY RIVER NEAR LONG BARN, CA

LOCATION.--Lat 38°04'36", long 120°00'37", in NW 1/4 NW 1/4 sec.33, T.3 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 10 ft upstream from Forest Service road bridge, 0.4 mi downstream from Trout Creek, and 7.0 mi east of town of Long Barn.

DRAINAGE AREA.--48.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 5,160 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Periods of ice effect, Dec. 13, 14, 18-20, Dec. 22 to Jan. 1, Jan. 17-19, Feb. 4-6 and period of no gage height record, Aug. 3. Records good except those for periods of estimated discharge, which are fair. No storage or diversion above station. See schematic diagram of Tuolumne River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 418 ft<sup>3</sup>/s, May 15, 1987, gage height, 3.63 ft; minimum daily, 0.07 ft<sup>3</sup>/s, Sept. 9, 15-19, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 26	2315	*353	*3.38	May 17	0300	338	3.32

Minimum daily, 0.07 ft<sup>3</sup>/s, Sept. 9, 15-19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	4.9	7.4	27	35	115	114	147	85	8.2	1.4	.08
2	.15	4.8	8.1	29	32	98	129	135	76	7.6	1.2	.19
3	.15	6.8	9.3	44	31	106	140	134	70	6.4	1.0	.17
4	.14	5.7	9.8	45	29	104	110	138	68	5.9	.84	.24
5	.15	4.6	11	87	30	115	128	124	59	5.4	.86	.20
6	.15	6.2	20	94	31	113	149	116	52	5.2	.83	.14
7	.15	13	29	63	32	105	157	107	56	4.7	.77	.10
8	.17	9.6	21	39	39	115	153	105	61	4.8	.69	.09
9	.17	7.1	23	32	51	128	138	106	60	4.5	.66	.07
10	.18	5.5	60	35	56	102	154	119	51	4.0	.58	.10
11	.18	4.6	69	38	60	82	154	166	43	3.8	.51	.10
12	.28	3.9	40	32	66	71	150	189	40	3.5	.47	.09
13	.31	6.3	25	29	66	67	137	185	38	3.3	.45	.09
14	.29	13	30	28	62	72	164	176	36	3.1	.41	.08
15	.29	12	22	28	69	81	153	178	33	2.9	.35	.07
16	.28	9.5	17	28	67	73	151	184	29	2.6	.33	.07
17	.24	14	16	27	56	79	138	262	24	2.4	.32	.07
18	.23	32	17	27	52	90	130	165	23	2.0	.28	.07
19	.21	20	13	28	46	130	128	142	20	1.7	.24	.07
20	.21	16	12	30	56	142	136	140	23	1.5	.22	.09
21	.17	16	14	26	67	131	130	139	22	1.3	.21	.12
22	.61	20	25	28	71	115	130	133	17	1.3	.16	.09
23	1.5	17	45	32	80	144	109	124	14	1.1	.14	.09
24	1.2	13	39	50	77	156	128	119	13	2.6	.11	.09
25	1.4	11	33	59	81	163	168	107	15	40	.10	.12
26	.98	9.4	34	59	89	185	220	99	15	16	.14	.13
27	.83	10	30	51	108	179	239	81	13	7.7	.14	.11
28	3.5	9.7	32	48	146	152	212	80	11	4.5	.11	.11
29	22	8.4	31	47	134	139	188	145	10	3.9	.09	.10
30	13	7.8	29	42	---	133	180	116	9.1	3.2	.09	.09
31	6.9	---	24	37	---	111	---	106	---	2.4	.08	---
TOTAL	56.17	321.8	795.6	1269	1819	3596	4517	4267	1086.1	167.5	13.78	3.23
MEAN	1.81	10.7	25.7	40.9	62.7	116	151	138	36.2	5.40	.44	.11
MAX	22	32	69	94	146	185	239	262	85	40	1.4	.24
MIN	.14	3.9	7.4	26	29	67	109	80	9.1	1.1	.08	.07
AC-FT	111	638	1580	2520	3610	7130	8960	8460	2150	332	27	6.4

CAL YR 1987 TOTAL 13258.77 MEAN 36.3 MAX 277 MIN .14 AC-FT 26300  
WTR YR 1988 TOTAL 17912.18 MEAN 48.9 MAX 262 MIN .07 AC-FT 35530

## SAN JOAQUIN RIVER BASIN

11283350 REED CREEK NEAR LONG BARN, CA

LOCATION.--Lat 38°00'17", long 120°01'16", in NW 1/4 NE 1/4 sec.29, T.2 N., R.18 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on left bank 1.0 mi upstream from Niagara Creek and 8.7 mi southeast of town of Long Barn.

DRAINAGE AREA.--27.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 4,575 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1987, at datum 1.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 3, 6, 7, 26-29, Dec. 5-9, 12-15, 18. Records good except those for periods of estimated discharge, which are fair. No storage or diversion above station. See schematic diagram of Tuolumne River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 222 ft<sup>3</sup>/s, Feb. 13, 1987, gage height, 3.77 ft, present datum; minimum daily, 0.25 ft<sup>3</sup>/s, Sept. 9, 10, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 175 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 28	0030	*111	*3.33				
Minimum daily, 0.25 ft <sup>3</sup> /s, Sept. 9, 10.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.48	2.2	3.3	5.9	15	50	32	59	20	4.5	.91	.43
2	.47	2.0	3.6	6.2	14	43	32	54	18	4.1	.84	.37
3	.46	2.7	3.2	13	14	42	32	51	17	3.9	.77	.49
4	.46	2.0	2.9	17	13	42	29	48	16	3.7	.70	.51
5	.46	1.9	3.3	31	14	43	31	43	16	3.6	.71	.43
6	.46	2.8	6.0	28	14	42	33	44	17	3.4	.69	.34
7	.47	3.8	9.2	21	15	41	33	50	18	3.3	.74	.30
8	.48	2.4	8.0	17	15	44	32	50	17	3.1	.73	.26
9	.50	2.1	9.4	15	18	43	30	44	16	3.0	.65	.25
10	.53	1.9	11	15	19	36	30	46	15	2.8	.60	.25
11	.55	1.8	12	16	20	32	30	40	14	2.7	.57	.27
12	.88	1.8	7.1	14	21	29	29	39	13	2.6	.57	.27
13	1.1	4.1	5.5	13	21	27	28	36	13	2.5	.58	.27
14	.85	6.2	6.4	13	21	28	45	34	11	2.5	.61	.27
15	.77	3.2	5.9	13	22	28	40	33	11	2.4	.63	.26
16	.74	2.6	5.4	13	22	26	40	34	10	2.3	.62	.27
17	.71	4.6	5.0	13	20	26	38	59	9.5	2.1	.55	.27
18	.69	5.4	4.9	12	20	28	34	42	9.0	1.9	.52	.27
19	.68	3.4	4.5	11	19	31	42	34	8.4	1.7	.47	.30
20	.68	2.8	4.4	11	20	34	44	30	8.4	1.6	.42	.32
21	.66	3.3	4.6	12	22	34	40	27	8.8	1.6	.40	.35
22	1.8	3.6	12	12	22	34	41	25	8.0	1.5	.42	.44
23	4.3	3.0	9.3	13	24	39	36	23	7.3	1.4	.42	.50
24	2.1	2.8	7.1	14	24	41	43	22	7.0	1.4	.38	.49
25	2.1	2.6	6.6	15	24	46	59	20	7.1	1.3	.35	.45
26	1.6	2.5	6.4	16	26	53	75	19	7.7	1.2	.35	.46
27	1.4	2.6	5.7	16	32	49	92	18	6.6	1.2	.38	.45
28	4.3	2.3	6.0	17	58	43	96	19	6.0	1.1	.40	.44
29	9.5	2.4	6.3	17	59	39	79	36	5.5	1.1	.36	.39
30	4.0	2.3	5.9	16	---	36	76	25	5.0	.99	.38	.36
31	2.4	---	5.7	15	---	33	---	22	---	.95	.56	---
TOTAL	46.58	87.1	196.6	461.1	648	1162	1321	1126	346.3	71.44	17.28	10.73
MEAN	1.50	2.90	6.34	14.9	22.3	37.5	44.0	36.3	11.5	2.30	.56	.36
MAX	9.5	6.2	12	31	59	53	96	59	20	4.5	.91	.51
MIN	.46	1.8	2.9	5.9	13	26	28	18	5.0	.95	.35	.25
AC-FT	92	173	390	915	1290	2300	2620	2230	687	142	34	21

CAL YR 1987 TOTAL 4268.44 MEAN 11.7 MAX 107 MIN .44 AC-FT 8470  
WTR YR 1988 TOTAL 5494.13 MEAN 15.0 MAX 96 MIN .25 AC-FT 10900

## SAN JOAQUIN RIVER BASIN

11283500 CLAVEY RIVER NEAR BUCK MEADOWS, CA

LOCATION.--Lat 37°54'02", long 120°04'15", in SW 1/4 NE 1/4 sec.35, T.1 N., R.17 E., Tuolumne County, Hydrologic Unit 18040009, Stanislaus National Forest, on right bank 300 ft upstream from Forest Service Road bridge, 1.7 mi downstream from Quilty Creek, and 6 mi north of Buck Meadows Post Office.

DRAINAGE AREA.--144 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1959 to September 1983, October 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,374.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Mar. 1-17, Apr. 4-28. Records good except those for periods of estimated discharge, which are fair. No storage or diversion above station. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--26 years (water years 1960-83, 1987-88), 270 ft<sup>3</sup>/s, 195,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,400 ft<sup>3</sup>/s Jan. 13, 1980, gage height, 21.47 ft, from rating curve extended above 2,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 21.40 ft; minimum daily, 1.2 ft<sup>3</sup>/s Sept. 11, 12, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 27	0315	*458	*6.41				
Minimum daily, 2.6 ft <sup>3</sup> /s, Sept. 5, 7-9.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	17	19	36	80	290	169	226	119	21	6.2	2.8
2	4.4	15	22	37	73	210	185	199	109	19	5.4	2.9
3	4.3	14	21	72	66	220	222	186	104	18	5.1	2.8
4	4.4	16	22	97	66	210	170	189	98	17	4.9	2.7
5	4.4	15	23	209	63	230	190	174	89	16	4.9	2.6
6	4.3	18	37	161	67	230	210	167	78	16	4.8	2.7
7	4.4	20	91	123	70	220	222	157	85	15	4.7	2.6
8	4.5	24	56	101	74	230	220	158	89	15	4.7	2.6
9	4.6	20	50	89	91	240	190	162	85	14	4.5	2.6
10	4.9	17	70	86	104	210	200	164	78	13	4.4	2.7
11	5.0	15	89	108	113	170	220	205	70	13	4.1	2.7
12	5.2	14	63	86	120	150	210	257	65	12	4.0	2.8
13	5.4	17	38	75	123	140	200	252	60	11	4.0	2.8
14	6.0	31	29	67	120	150	240	235	56	11	4.0	2.8
15	5.9	29	37	71	128	160	230	230	50	11	4.1	2.9
16	5.8	24	36	71	134	150	220	234	47	11	4.1	3.0
17	5.6	24	33	88	117	160	200	349	44	10	4.1	3.0
18	5.5	42	28	79	109	179	180	254	41	9.3	3.9	3.0
19	5.4	37	29	63	97	203	200	196	38	8.4	3.7	3.0
20	5.3	33	25	66	102	215	210	183	38	7.7	3.5	3.2
21	5.3	33	26	63	119	218	200	182	39	7.4	3.4	3.3
22	5.6	31	54	61	131	196	200	174	36	7.2	3.3	3.6
23	14	32	59	66	151	220	170	157	32	6.8	3.3	3.8
24	14	27	50	80	160	253	200	148	31	6.7	3.3	3.9
25	13	24	40	99	175	251	250	134	29	18	3.2	3.8
26	11	21	44	107	198	276	400	125	30	27	3.1	3.8
27	9.3	18	39	102	213	283	350	109	27	18	3.0	3.9
28	15	18	43	98	277	236	320	102	25	12	3.0	3.9
29	34	18	40	98	295	198	315	185	24	9.5	2.9	3.8
30	39	17	39	96	---	195	287	165	22	8.0	2.9	3.6
31	23	---	31	87	---	176	---	140	---	7.0	2.8	---
TOTAL	282.9	681	1283	2742	3636	6469	6780	5798	1738	396.0	123.3	93.6
MEAN	9.13	22.7	41.4	88.5	125	209	226	187	57.9	12.8	3.98	3.12
MAX	39	42	91	209	295	290	400	349	119	27	6.2	3.9
MIN	4.3	14	19	36	63	140	169	102	22	6.7	2.8	2.6
AC-FT	561	1350	2540	5440	7210	12830	13450	11500	3450	785	245	186

CAL YR 1987 TOTAL 25338.9 MEAN 69.4 MAX 524 MIN 4.3 AC-FT 50260  
WTR YR 1988 TOTAL 30022.8 MEAN 82.0 MAX 400 MIN 2.6 AC-FT 59550

## SAN JOAQUIN RIVER BASIN

11284400 BIG CREEK ABOVE WHITES GULCH, NEAR GROVELAND, CA

LOCATION.--Lat 37°50'31", long 120°11'02", in SW 1/4 NE 1/4 sec.23, T.1 S., R.16 E., Tuolumne County, Hydrologic Unit 18040009, on right bank 500 ft upstream from Whites Gulch and 2.5 mi east of Groveland.

DRAINAGE AREA.--16.4 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1969 to current year.

REVISED RECORDS.--WDR CA-85-3: 1980-84(P).

GAGE.--Water-stage recorder. Datum of gage is 2,561.79 ft above National Geodetic Vertical Datum of 1929 (levels by Boise-Cascade Corp.).

REMARKS.--No estimated daily discharges. Records good. No storage or diversion above station. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--19 years, 9.62 ft<sup>3</sup>/s, 6,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 7.03 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 6.51 ft; no flow many days in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1964 reached a stage of 6.4 ft from floodmarks, discharge, 1,850 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	0130	*19	*2.58				

No flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.0	.0	.0	.29	2.1	.07	.62	.09	.0	.0	.0
2	.0	.0	.0	.0	.28	2.3	.08	.55	.07	.0	.0	.0
3	.0	.0	.0	.0	.25	1.3	.08	.51	.05	.0	.0	.0
4	.0	.0	.0	.14	.24	.94	.09	.45	.05	.0	.0	.0
5	.0	.0	.0	1.9	.23	.77	.08	.40	.04	.0	.0	.0
6	.0	.0	.0	1.2	.22	.64	.08	.51	.04	.0	.0	.0
7	.0	.0	.0	.59	.22	.58	.08	.48	.04	.0	.0	.0
8	.0	.0	.0	.60	.22	.51	.07	.43	.04	.0	.0	.0
9	.0	.0	.0	.58	.22	.42	.07	.38	.04	.0	.0	.0
10	.0	.0	.0	.39	.22	.38	.06	.33	.03	.0	.0	.0
11	.0	.0	.0	.47	.22	.35	.06	.31	.03	.0	.0	.0
12	.0	.0	.0	.45	.21	.34	.05	.26	.02	.0	.0	.0
13	.0	.0	.0	.33	.21	.30	.04	.22	.02	.0	.0	.0
14	.0	.0	.0	.26	.19	.28	.44	.19	.02	.0	.0	.0
15	.0	.0	.0	.47	.19	.27	.61	.18	.01	.0	.0	.0
16	.0	.0	.0	1.6	.19	.25	.38	.22	.01	.0	.0	.0
17	.0	.0	.0	9.6	.17	.26	.29	.51	.01	.0	.0	.0
18	.0	.0	.0	4.9	.17	.26	.24	.42	.01	.0	.0	.0
19	.0	.0	.0	2.4	.16	.24	2.2	.29	.01	.0	.0	.0
20	.0	.0	.0	1.4	.15	.21	12	.21	.01	.0	.0	.0
21	.0	.0	.0	.99	.15	.20	6.6	.16	.01	.0	.0	.0
22	.0	.0	.0	.80	.15	.19	3.2	.13	.0	.0	.0	.0
23	.0	.0	.0	.66	.15	.18	5.1	.11	.0	.0	.0	.0
24	.0	.0	.0	.57	.15	.17	4.0	.08	.0	.0	.0	.0
25	.0	.0	.0	.49	.16	.17	2.2	.07	.0	.0	.0	.0
26	.0	.0	.0	.45	.17	.14	1.5	.06	.0	.0	.0	.0
27	.0	.0	.0	.41	.16	.15	1.2	.05	.0	.0	.0	.0
28	.0	.0	.0	.38	.32	.17	.96	.06	.0	.0	.0	.0
29	.0	.0	.0	.34	.63	.17	.84	.24	.0	.0	.0	.0
30	.0	.0	.0	.33	---	.10	.72	.17	.0	.0	.0	.0
31	.0	---	.0	.30	---	.07	---	.13	---	.0	.0	---
TOTAL	0.0	0.0	0.0	33.00	6.29	14.41	43.39	8.73	0.65	0.0	0.0	0.0
MEAN	.00	.00	.00	1.06	.22	.46	1.45	.28	.022	.00	.00	.00
MAX	.00	.00	.00	9.6	.63	2.3	12	.62	.09	.00	.00	.00
MIN	.00	.00	.00	.00	.15	.07	.04	.05	.00	.00	.00	.00
AC-FT	.0	.0	.0	65	12	29	86	17	1.3	.0	.0	.0

CAL YR 1987 TOTAL 342.67 MEAN .94 MAX 69 MIN .00 AC-FT 680  
WTR YR 1988 TOTAL 106.47 MEAN .29 MAX 12 MIN .00 AC-FT 211



## SAN JOAQUIN RIVER BASIN

11287500 DON PEDRO RESERVOIR NEAR LA GRANGE, CA

LOCATION.--Lat 37°42'06", long 120°25'16", in NE 1/4 SW 1/4 sec.3, T.3 S., R.14 E., Tuolumne County, Hydrologic Unit 18040009, on left end of New Don Pedro Dam on Tuolumne River, 500 ft downstream from Mexican Gulch, and 3.4 mi northeast of La Grange.

DRAINAGE AREA.--1,533 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1923 to current year. Yearend contents only 1923-24 and October 1924 to September 1930 monthend contents, published in WSP 1315-A.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Turlock Irrigation District). Prior to Feb. 1, 1941, nonrecording gage at site 1.5 mi upstream at same datum. Feb. 2, 1941, to Nov. 3, 1970, water-stage recorder at site 1.5 mi upstream at same datum. Nov. 4, 1970, to Apr. 26, 1972, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam completed June 23, 1971. Storage began Nov. 3, 1970. Total capacity, 2,030,000 acre-ft at elevation 830.0 ft, top of uncontrolled spillway, of which 309,000 acre-ft below elevation 600.0 ft, mutually agreed-upon minimum, is not available for release. Water passes through powerplant at dam and down Tuolumne River to La Grange Dam, 2.5 mi downstream, where it is diverted into Turlock and Modesto Canals (stations 11289500 and 11289000) for irrigation. This reservoir is operated jointly by Turlock and Modesto Irrigation Districts. Prior to June 1971, reservoir was formed by a concrete gravity-type dam completed Jan. 1, 1923, capacity, 290,400 acre-ft. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Tuolumne River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,025,000 acre-ft, Aug. 4-6, 13, 1983, elevation, 829.6 ft; minimum, 29,200 acre-ft, Sept. 1-3, 5, 1934; minimum elevation, 475.0 ft, Sept. 1, 2, 1934. Minimum since reservoir first filled, 302,600 acre-ft, Oct. 14, 15, 1977, elevation, 598.2 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,007,000 acre-ft, July 6, elevation, 728.8 ft; minimum, 872,400 acre-ft, Dec. 24-27, elevation, 710.4 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Modesto and Turlock Irrigation Districts, dated August 1970)

550	158,700	650	517,400	770	1,359,000
570	212,900	680	679,000	800	1,669,000
590	274,800	710	869,700	830	2,030,000
620	384,100	740	1,095,000		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	930500	909600	875900	874500	941400	983000	915300	931200	961300	1002000	934800	916000
2	929000	908200	875900	875200	942900	983700	913200	933400	960600	1002000	934800	915300
3	927600	906100	875900	875900	945100	983700	913200	934800	960600	1003000	934800	914600
4	927600	904600	875900	877300	947300	984500	912500	937000	962000	1005000	934800	913900
5	925400	902500	875900	880000	949500	985200	911800	939200	963500	1006000	934100	912500
6	923200	901100	875200	882100	951700	986000	911000	942200	964300	1007000	934800	911000
7	922500	900400	875200	884900	953200	986700	911000	943600	967200	1006000	935500	911800
8	921800	900400	875900	887700	955400	986700	911000	945100	970200	1005000	934800	911000
9	921100	899000	875200	889800	957600	986000	910300	946600	972500	1004000	934800	911000
10	921100	898300	875200	891900	959800	986000	908900	948000	977000	1003000	934800	911800
11	920400	897600	875200	893300	962000	985200	906100	948800	980700	999600	934800	911800
12	919600	895400	875200	895400	965000	986000	905300	950200	985200	998100	935500	911000
13	918200	894700	875200	896900	967200	986000	905300	951700	987500	996600	936300	911000
14	917500	893300	874500	898300	968700	985200	906100	953200	989800	995100	936300	911800
15	917500	893300	873800	900400	971000	982200	906800	953900	992000	992800	936300	911800
16	916800	891900	873800	903200	972500	977000	906800	955400	994300	989800	935500	913200
17	916000	889800	873100	906800	974700	971700	907500	956900	995100	985200	934100	914600
18	916000	889100	873100	908900	975500	967200	907500	957600	996600	980700	931900	915300
19	915300	887000	873100	911000	976200	964300	908200	958300	996600	976200	930500	916000
20	914600	885600	873100	913200	976200	961300	910300	957600	997400	972500	929700	916800
21	913900	884900	873100	914600	977000	956100	911800	956900	998100	970200	929000	918200
22	913200	884900	873100	917500	977000	950200	913900	957600	995800	966500	929700	919600
23	912500	882800	873100	919600	977700	945100	915300	957600	995100	964300	929000	920400
24	912500	880700	872400	921800	978500	940700	916800	957600	994300	961300	928300	921800
25	912500	880000	872400	924700	978500	936300	918200	957600	995800	956900	926800	922500
26	911800	879300	872400	926800	979200	933400	918900	957600	998900	953200	924700	924000
27	910300	879300	872400	929700	980000	931200	921100	957600	999600	949500	924000	925400
28	910300	878600	873800	931900	981500	926800	924000	958300	1000000	945800	923200	926800
29	909600	878000	873800	934800	982200	923200	926800	959800	1003000	941400	922500	928300
30	909600	876600	874500	937000	---	919600	929700	961300	1003000	937700	919600	930500
31	909600	---	874500	939200	---	916000	---	961300	---	936300	917500	---
MAX	930500	909600	875900	939200	982200	986700	929700	961300	1003000	1007000	936300	930500
MIN	909600	876600	872400	874500	941400	916000	905300	931200	960600	936300	917500	911000
a	715.7	711.0	710.7	719.8	725.6	716.6	718.5	722.8	728.3	719.4	716.8	718.6
b	-23000	-33000	-2100	+64700	+43000	-66200	+13700	+31600	+41700	-66700	-18800	+13000

CAL YR 1987 b -643500

WTR YR 1988 b -2100

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11289000 MODESTO CANAL NEAR LA GRANGE, CA

LOCATION.--Lat 37°40'21", long 120°28'26", in NE 1/4 SW 1/4 sec.18, T.3 S., R.14 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 0.9 mi northwest of La Grange and 1.7 mi downstream from intake at La Grange Dam. Prior to Apr. 27, 1988, at site 1.1 mi upstream.

PERIOD OF RECORD.--April 1903 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1315-A: 1904-9 (monthly figures only).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 267.47 ft above National Geodetic Vertical Datum of 1929 (levels by Modesto Irrigation District). See WSP 1930 for history of changes prior to March 1932. March 1932 to Apr. 27, 1988, at site 1.1 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 3 to Feb. 2, Apr. 20 to May 2. Records good except those for periods of estimated discharges, which are fair. Canal diverts from right bank of Tuolumne River at La Grange Dam for irrigation in Modesto and Waterford Irrigation Districts. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--85 years, 415 ft<sup>3</sup>/s, 300,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,820 ft<sup>3</sup>/s, July 1, 1935; no flow at times most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	915	32	100	24	.50	477	332	20	993	982	286	468
2	852	158	157	24	25	435	618	135	1070	413	274	369
3	676	152	35	19	49	394	345	384	776	337	295	399
4	80	92	37	.50	38	316	490	93	294	102	299	425
5	946	116	32	.50	30	33	668	122	539	568	357	475
6	852	59	33	.50	30	29	540	129	418	804	104	468
7	652	41	29	.50	33	263	446	100	104	1010	113	175
8	419	36	46	.50	23	409	406	114	627	961	330	566
9	603	60	30	.50	22	456	530	163	760	847	235	514
10	132	64	30	.50	23	574	626	567	88	915	314	468
11	80	35	30	.50	23	604	964	572	102	1040	225	718
12	655	51	30	.50	23	143	765	461	97	712	201	624
13	596	44	28	.50	27	85	573	461	607	771	186	734
14	634	37	265	.50	32	619	415	315	565	796	134	602
15	405	30	218	.50	28	598	602	559	524	1100	409	325
16	402	46	91	.50	34	570	358	452	540	1270	495	124
17	52	65	36	.50	29	575	283	400	664	1270	726	2.3
18	31	79	92	.50	27	513	437	791	487	1450	780	2.3
19	473	84	35	.50	26	101	550	577	380	1780	813	94
20	358	80	32	.50	24	69	.0	809	519	1720	506	5.2
21	371	35	64	.50	24	1000	.0	623	578	1330	411	48
22	406	28	64	.50	28	1510	.0	552	832	1350	321	129
23	377	184	62	.50	20	1500	.0	581	919	1240	484	309
24	30	122	34	.50	6.2	1540	.0	490	870	1280	633	112
25	30	142	31	.50	21	1520	.0	475	216	1360	704	118
26	495	33	28	.50	31	1530	.0	744	182	1270	725	9.8
27	454	32	28	.50	31	1390	.0	859	710	1220	503	1.0
28	401	27	28	.50	26	1030	.0	238	577	1120	399	1.0
29	345	32	27	.50	20	554	.0	101	307	1140	606	.89
30	221	217	25	.50	---	514	24	101	859	1220	684	.89
31	41	---	26	.50	---	987	---	708	---	607	359	---
TOTAL	12984	2213	1803	81.00	753.70	20338	9972.0	12696	16204	31985	12911	8287.38
MEAN	419	73.8	58.2	2.61	26.0	656	332	410	540	1032	416	276
MAX	946	217	265	24	49	1540	964	859	1070	1780	813	734
MIN	30	27	25	.50	.50	29	.00	20	88	102	104	.89
AC-FT	25750	4390	3580	161	1490	40340	19780	25180	32140	63440	25610	16440

CAL YR 1987 TOTAL 149836.41 MEAN 411 MAX 1520 MIN .00 AC-FT 297200  
WTR YR 1988 TOTAL 130228.08 MEAN 356 MAX 1780 MIN .00 AC-FT 258300

## SAN JOAQUIN RIVER BASIN

11289500 TURLOCK CANAL NEAR LA GRANGE, CA

LOCATION.--Lat 37°39'49", long 120°26'23", in NW 1/4 NW 1/4 sec.21, T.3 S., R.14 E., Stanislaus County, Hydrologic Unit 18040002, on right bank 3,460 ft downstream from intake at La Grange Dam and 1.2 mi east of La Grange.

PERIOD OF RECORD.--October 1898 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1315-A: 1899-1908 (monthly figures only). WSP 1445: 1917-20, 1922.

GAGE.--Electromagnetic flow meter and concrete control. Datum of gage is 274.98 ft above National Geodetic Vertical Datum of 1929 (levels by Turlock Irrigation District). See WSP 1930 for history of changes prior to Apr. 17, 1924. Prior to May 17, 1984, water-stage recorder at site 0.2 mi upstream at datum 2.72 ft higher.

REMARKS.--No estimated daily discharges. Records good. Canal diverts from left bank of Tuolumne River at La Grange Dam for irrigation in Turlock Irrigation District and to supply town of La Grange. Capacity of canal increased in March 1980 and in March 1984. During autumn and winter some unmeasured flow is diverted from canal at tunnel 0.3 mi upstream from gage, passed through La Grange powerplant, and returned to river. See schematic diagram of Tuolumne River basin.

AVERAGE DISCHARGE.--90 years, 644 ft<sup>3</sup>/s, 466,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 3,400 ft<sup>3</sup>/s several days in May 1984; no diversion for irrigation during some periods in some years. Prior to 1939, unmeasured small discharge during winter called zero. No flow Jan. 27, 1984, to Mar. 14, 1984, when canal was drained for construction and installation of electromagnetic flow meter and many days during February 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	54	121	2.4	128	73	649	75	301	1320	928	1350
2	118	630	483	6.2	312	59	851	59	411	1130	500	841
3	29	670	782	7.5	108	250	513	57	172	378	408	632
4	1	789	504	12	85	899	609	37	216	274	480	567
5	274	683	103	12	24	1080	671	37	8.7	631	346	821
6	197	622	91	13	.0	145	866	78	188	726	5.0	770
7	1.0	309	31	3.2	.0	1.0	831	68	249	1190	1.8	348
8	31	64	10	18	36	10	786	80	263	1010	372	364
9	1.0	497	27	20	.0	24	928	111	326	1070	505	110
10	1.0	628	39	9.6	.0	1.0	1150	95	273	1050	533	4.7
11	7.4	60	197	8.2	.0	1.0	1090	346	177	1130	199	2.3
12	27	696	340	15	.0	1.0	247	175	104	1020	162	20
13	4.3	694	331	26	.0	162	139	59	640	950	3.7	113
14	1.0	302	326	14	.0	94	75	56	700	965	1.2	30
15	1.0	44	315	20	.0	1040	82	63	496	1010	350	3.8
16	1.0	692	264	20	.0	2650	564	87	267	1340	711	1.7
17	1.0	834	85	8.9	.0	2370	524	392	247	1650	934	2.4
18	1.0	609	1.0	13	.0	2410	612	205	534	2100	883	1.0
19	8.6	672	1.0	116	.0	1860	607	514	797	1810	961	3.6
20	1.0	746	42	20	.0	1590	733	1080	606	1420	333	2.8
21	27	423	1.0	150	.0	2240	510	799	527	1380	84	1.0
22	47	30	11	38	.0	1680	136	57	1670	1480	329	1.0
23	37	793	30	143	.0	1370	121	615	1050	955	553	4.2
24	53	510	253	123	.0	1300	91	535	1220	739	676	1.0
25	33	451	345	99	.0	1340	120	413	350	1580	994	1.0
26	6.9	66	345	155	.0	887	382	274	8.0	1570	1360	1.0
27	8.9	80	345	384	.0	76	541	321	533	1570	743	1.0
28	22	72	33	424	.0	1520	501	22	548	1470	228	1.0
29	22	80	4.1	154	55	1590	172	73	272	1630	902	1.0
30	28	620	19	31	---	1440	66	21	1070	1370	1380	1.0
31	45	---	13	81	---	1450	---	99	---	478	1300	---
TOTAL	1254.1	13420	5492.1	2147.0	748.0	29613.0	15167	6903	14223.7	36396	17165.7	6001.5
MEAN	40.5	447	177	69.3	25.8	955	506	223	474	1174	554	200
MAX	274	834	782	424	312	2650	1150	1080	1670	2100	1380	1350
MIN	1.0	30	1.0	2.4	.00	1.0	66	21	8.0	274	1.2	1.0
AC-FT	2490	26620	10890	4260	1480	58740	30080	13690	28210	72190	34050	11900

CAL YR 1987 TOTAL 254498.9 MEAN 697 MAX 2550 MIN 1.0 AC-FT 504800  
WTR YR 1988 TOTAL 148531.1 MEAN 406 MAX 2650 MIN .00 AC-FT 294600

## SAN JOAQUIN RIVER BASIN

11289650 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA

LOCATION.--Lat 37°39'59", long 120°26'28", in NW 1/4 NW 1/4 sec.21, T.3 S., R.14 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 0.5 mi downstream from La Grange Dam and 1.1 mi east of La Grange.

DRAINAGE AREA.--1,538 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 170.19 ft above National Geodetic Vertical Datum of 1929 (levels by Turlock Irrigation District).

REMARKS.--No estimated daily discharges. Records good. Flow diverted into Modesto Canal (station 11289000) and Turlock Canal (station 11289500) at La Grange Dam. Flow regulated by Don Pedro powerplant, Don Pedro Reservoir (station 11287500), 4.5 mi upstream, Hetch Hetchy Reservoir (station 11275500), Cherry Lake (station 11277200), and Lake Eleanor (station 11277500). Tuolumne Canal (station 11297500) diverts water from the Stanislaus River basin into the Tuolumne River basin for power, irrigation, and domestic supply in the vicinity of Sonora, upstream from station. Diversion through Hetch Hetchy aqueduct to San Francisco began Oct. 19, 1934; an average of 443 ft<sup>3</sup>/s was diverted during the current year. See schematic diagram of Tuolumne River basin. For records of combined discharge of river and Modesto and Turlock canals, see following page.

AVERAGE DISCHARGE (River only).--18 years, 1,026 ft<sup>3</sup>/s, 743,300 acre-ft/yr.  
(Combined river and canals).--18 years, 2,322 ft<sup>3</sup>/s, 1,682,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 10,400 ft<sup>3</sup>/s, Apr. 24, 1983, gage height, 15.09 ft; no flow for several days during September and October 1977.  
Combined flow, maximum daily discharge, 13,800 ft<sup>3</sup>/s, May 26, 1983; minimum daily, 0.45 ft<sup>3</sup>/s, Nov. 2, 1970.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 690 ft<sup>3</sup>/s, Jan. 14, gage height, 4.97 ft; minimum daily, 8.1 ft<sup>3</sup>/s, May 14-17.  
Combined flow, maximum daily discharge, 3,610 ft<sup>3</sup>/s, July 19; minimum daily, 17 ft<sup>3</sup>/s, Sept. 27-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	128	215	257	126	116	97	114	96	17	18	17	15
2	123	216	216	123	117	104	114	67	16	18	17	16
3	122	210	210	123	117	111	114	67	16	16	17	16
4	121	208	210	148	117	111	114	20	16	16	17	15
5	120	208	208	185	117	111	114	9.2	15	17	17	18
6	120	208	208	277	117	111	111	9.0	15	18	14	21
7	120	209	206	290	118	110	114	9.0	16	18	15	21
8	120	209	207	184	116	111	114	9.0	17	18	15	21
9	120	209	206	143	115	113	115	9.0	17	18	16	18
10	123	206	206	123	115	113	115	9.0	16	18	15	14
11	123	205	206	122	115	113	167	8.7	16	18	15	12
12	122	208	208	127	115	113	588	8.6	15	17	16	14
13	166	210	208	196	116	132	573	8.3	16	18	16	15
14	117	210	209	198	116	141	564	8.1	16	17	16	15
15	136	209	210	126	116	111	565	8.1	15	17	16	12
16	211	209	189	123	115	111	164	8.1	15	18	15	14
17	209	210	186	123	117	110	114	8.1	16	18	20	16
18	208	210	191	123	117	109	112	9.5	16	17	18	15
19	207	210	188	123	115	108	113	12	16	17	17	14
20	208	210	188	123	107	108	117	14	16	17	16	13
21	207	210	186	149	107	110	155	16	16	17	15	16
22	207	209	186	123	107	118	567	13	16	17	15	16
23	207	210	187	122	110	118	572	14	16	17	15	15
24	206	210	188	121	111	117	568	16	16	17	14	15
25	206	210	188	120	105	115	567	16	19	17	15	15
26	207	209	187	120	101	115	570	16	25	16	15	14
27	207	210	188	120	100	114	166	16	19	16	15	15
28	211	208	188	119	100	114	111	15	19	17	14	15
29	213	209	187	117	97	113	111	16	17	17	15	15
30	213	210	187	117	---	113	111	16	18	17	16	36
31	215	---	186	185	---	113	---	16	---	16	15	---
TOTAL	5223	6284	6175	4519	3252	3508	7714	567.7	499	533	489	487
MEAN	168	209	199	146	112	113	257	18.3	16.6	17.2	15.8	16.2
MAX	215	216	257	290	118	141	588	96	25	18	20	36
MIN	117	205	186	117	97	97	111	8.1	15	16	14	12
AC-FT	10360	12460	12250	8960	6450	6960	15300	1130	990	1060	970	966

CAL YR 1987 TOTAL 81335.0 MEAN 223 MAX 1310 MIN 7.6 AC-FT 161300  
WTR YR 1988 TOTAL 39250.7 MEAN 107 MAX 588 MIN 8.1 AC-FT 77850

## SAN JOAQUIN RIVER BASIN

11289651 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF TUOLUMNE RIVER, MODESTO CANAL NEAR LA GRANGE, AND TURLOCK CANAL NEAR LA GRANGE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

## MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1260	301	478	152	244	647	1090	191	1310	2320	1230	1830
2	1090	1000	856	153	454	598	1580	261	1500	1560	791	1230
3	827	1030	1030	149	274	755	972	508	964	731	720	1050
4	202	1090	751	160	240	1330	1210	150	526	392	796	1010
5	1340	1010	343	197	171	1220	1450	168	563	1220	720	1310
6	1170	889	332	290	147	285	1520	216	621	1550	123	1260
7	773	559	266	294	151	374	1390	177	369	2220	130	544
8	570	309	263	202	175	530	1310	203	907	1990	717	951
9	724	766	263	163	137	593	1570	283	1100	1930	756	642
10	256	898	275	133	138	688	1890	671	377	1980	862	487
11	210	300	433	131	138	718	2220	928	295	2190	439	732
12	804	955	578	142	138	257	1600	645	216	1750	379	658
13	766	948	567	222	143	379	1280	528	1260	1740	206	862
14	752	549	800	212	148	854	1050	379	1280	1780	151	647
15	542	283	743	146	144	1750	1250	630	1030	2130	775	341
16	614	947	544	143	149	3330	1090	547	822	2630	1220	140
17	262	1110	307	132	146	3050	921	800	927	2940	1680	21
18	240	898	284	136	144	3030	1160	1010	1040	3570	1680	18
19	689	966	224	239	141	2070	1270	1100	1190	3610	1790	112
20	567	1040	262	143	131	1770	850	1900	1140	3160	855	21
21	605	668	251	299	131	3350	665	1440	1120	2730	510	65
22	660	267	261	161	135	3310	703	622	2520	2850	665	146
23	621	1190	279	265	130	2990	693	1210	1980	2210	1050	328
24	289	842	475	244	117	2960	659	1040	2110	2040	1320	128
25	269	803	564	219	126	2970	687	904	585	2960	1710	134
26	709	308	560	275	132	2530	952	1030	215	2860	2100	25
27	670	322	561	504	131	1580	707	1200	1260	2810	1260	17
28	634	307	249	543	126	2660	612	275	1140	2610	641	17
29	580	321	218	271	172	2260	283	190	596	2790	1520	17
30	462	1050	231	148	---	2070	201	138	1950	2610	2080	38
31	301	---	225	266	---	2550	---	823	---	1100	1670	---
TOTAL	19458	21926	13473	6734	4753	53458	32835	20167	30913	68963	30546	14781
MEAN	628	731	435	217	164	1724	1094	651	1030	2225	985	493
MAX	1340	1190	1030	543	454	3350	2220	1900	2520	3610	2100	1830
MIN	202	267	218	131	117	257	201	138	215	392	123	17
AC-FT	38590	43490	26720	13360	9430	106000	65130	40000	61320	136800	60590	29320
CAL YR 1987	TOTAL 485718	MEAN 1331	MAX 3680	MIN 47	AC-FT 963400							
WTR YR 1988	TOTAL 318007	MEAN 869	MAX 3610	MIN 17	AC-FT 630800							

## SAN JOAQUIN RIVER BASIN

11289650 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1970 to current year.

INSTRUMENTATION.--Temperature recorder since November 1970.

REMARKS.--Interruptions in record were due to malfunction of recording instrument.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 29.0 °C, Sept. 27, Oct. 15, 1977; minimum recorded, 6.0 °C, Feb. 6-8, 10, 1971.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 21.5 °C, May 15, 20, 21, 23; minimum recorded, 9.5 °C, Dec. 25, 26, Mar. 2, 11, 16, 17, 28.

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	14.5	12.5	12.5	12.0	12.0	11.5	10.5	10.0	11.0	10.5	11.5	10.0
2	13.5	12.0	12.5	11.5	12.0	11.5	10.5	10.0	11.0	10.5	11.0	9.5
3	14.0	12.0	12.0	11.5	12.0	11.5	10.5	10.5	11.0	10.0	11.5	10.0
4	14.0	12.0	12.0	11.5	12.0	11.5	11.0	10.5	11.0	10.0	11.5	10.0
5	14.0	12.5	12.5	12.0	11.5	11.5	11.5	11.0	11.0	10.0	12.0	10.5
6	13.5	12.0	12.0	12.0	11.5	11.5	11.5	11.0	11.0	10.0	12.0	10.5
7	13.5	12.0	12.5	11.5	11.5	11.0	11.5	11.0	11.0	10.0	12.0	10.5
8	13.5	12.0	12.5	11.5	11.5	11.0	11.5	11.0	11.5	10.0	12.0	10.5
9	13.0	12.0	12.5	12.0	11.5	11.0	11.5	11.0	11.5	10.5	12.0	10.0
10	13.0	12.0	12.5	11.5	12.0	11.0	11.5	11.5	11.5	10.5	11.0	10.0
11	13.5	12.0	12.5	11.5	11.5	11.0	12.0	11.5	11.5	10.5	11.0	9.5
12	14.0	12.5	12.5	12.0	11.5	10.5	11.5	11.0	12.0	10.5	11.5	10.0
13	14.5	12.0	12.0	12.0	10.5	10.0	11.0	10.5	12.0	10.5	12.0	10.0
14	13.0	12.0	12.5	11.5	11.0	10.0	11.0	10.5	11.5	10.5	11.5	10.5
15	13.5	12.0	12.0	11.5	11.0	10.5	11.5	11.0	11.5	10.5	11.5	10.0
16	13.0	12.0	12.0	11.5	11.0	11.0	11.0	11.0	11.5	10.5	12.0	9.5
17	12.5	12.0	12.0	12.0	11.0	11.0	11.0	10.5	11.5	10.0	11.5	9.5
18	13.0	12.0	12.5	12.0	11.0	10.5	10.5	10.0	11.5	10.0	11.5	10.0
19	13.0	12.0	12.5	11.5	11.0	11.0	11.0	10.0	11.0	10.0	12.0	10.0
20	12.5	12.0	12.0	11.5	11.0	10.5	10.5	10.0	11.0	10.0	12.0	10.0
21	12.5	12.0	12.0	12.0	11.0	10.5	10.5	10.0	11.5	10.0	11.5	10.0
22	12.0	12.0	12.0	11.5	11.5	11.0	11.0	10.0	11.5	10.0	12.0	10.0
23	12.5	12.0	12.0	11.5	11.0	10.5	11.0	10.0	11.5	10.5	12.0	10.0
24	12.5	12.0	12.0	11.5	10.5	10.0	11.0	10.0	12.0	10.5	12.0	10.0
25	13.0	12.0	12.0	11.5	10.0	9.5	11.5	10.5	12.0	10.5	12.0	10.0
26	13.5	12.0	11.5	11.0	10.5	9.5	11.5	10.5	12.0	11.0	12.0	10.0
27	12.0	12.0	11.5	11.0	10.5	10.0	11.5	10.5	12.0	11.0	11.5	10.0
28	12.5	12.0	11.5	11.0	11.0	10.5	11.5	11.0	12.5	11.0	12.0	9.5
29	12.5	12.0	11.5	11.0	11.0	10.5	12.0	11.0	12.0	11.5	12.0	10.0
30	12.0	11.5	11.5	11.0	11.5	10.5	12.0	11.0	---	---	12.0	10.0
31	12.0	12.0	---	---	11.0	10.5	11.5	10.5	---	---	12.0	10.0
MONTH	14.5	11.5	12.5	11.0	12.0	9.5	12.0	10.0	12.5	10.0	12.0	9.5

## SAN JOAQUIN RIVER BASIN

11289650 TUOLUMNE RIVER BELOW LA GRANGE DAM, NEAR LA GRANGE, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	12.0	10.0	14.0	11.5			---	---				
2	12.0	10.0	14.5	12.0			---	---				
3	11.5	10.0	14.5	12.0			---	---				
4	12.0	10.5	17.0	11.5			---	---				
5	12.0	10.0	16.5	13.5			---	---				
6	12.0	10.0	17.0	14.0			---	---				
7	12.0	10.0	15.5	14.0			---	---				
8	12.0	10.0	18.0	13.0			---	---				
9	12.5	10.0	19.0	14.5			20.5	16.5				
10	12.0	10.5	20.5	15.5			---	---				
11	12.5	10.5	21.0	16.5			---	---				
12	11.0	10.5	20.5	16.5			---	---				
13	11.0	10.0	20.0	16.5			---	---				
14	11.0	10.5	21.0	16.0			---	---				
15	11.0	10.5	21.5	17.0			---	---				
16	11.5	10.5	19.0	16.0			---	---				
17	12.5	10.5	19.0	14.5			---	---				
18	12.5	11.0	20.0	16.0			---	---				
19	11.0	10.5	21.0	15.5			---	---				
20	12.0	10.5	21.5	16.5			---	---				
21	12.5	10.5	21.5	16.5			---	---				
22	11.5	10.5	21.0	17.0			---	---				
23	11.0	10.5	21.5	16.5			---	---				
24	11.5	10.5	20.5	16.5			---	---				
25	11.5	11.0	20.0	16.0			---	---				
26	12.0	11.0	19.0	16.0			---	---				
27	13.0	11.0	20.0	15.5			---	---				
28	13.0	11.0	---	---			---	---				
29	13.0	11.0	---	---			---	---				
30	13.5	11.0	---	---			---	---				
31	---	---	---	---			---	---				
MONTH	13.5	10.0	---	---			---	---				

## SAN JOAQUIN RIVER BASIN

## 11290000 TUOLUMNE RIVER AT MODESTO, CA

LOCATION.--Lat 37°37'38", long 120°59'11", in SE 1/4 SW 1/4 sec.33, T.3 S., R.9 E., Stanislaus County, Hydrologic Unit 18040002, on left bank at bridge on Ninth Street in Modesto and 0.2 mi downstream from Dry Creek.

DRAINAGE AREA.--1,884 mi<sup>2</sup>.

PERIOD OF RECORD.--1878-84, 1891-94, 1897 (gage heights only), January 1895 to December 1896, April 1940 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

GAGE.--Water-stage recorder, crest-stage gage and concrete control. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Modesto Irrigation District). Prior to July 11, 1947, at site 1,700 ft downstream at same datum; July 11, 1947, to Nov. 16, 1953, at site 1,000 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Aug. 9-18. Records good. Flow regulated by reservoirs and powerplants above station. In addition to diversions into Modesto and Turlock Canals (stations 11289000 and 11289500), there are diversions for irrigation of about 1,300 acres between station above La Grange Dam and at Modesto. See REMARKS for station 11289650 Tuolumne River below La Grange Dam. See schematic diagram of Tuolumne River basin. Monthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

AVERAGE DISCHARGE.--48 years (water years 1896, 1941-88), 1,434 ft<sup>3</sup>/s, 1,039,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (water years 1895-96, 1941-88).--Maximum discharge observed, 57,000 ft<sup>3</sup>/s, Dec. 9, 1950, elevation, 69.19 ft; minimum, 56 ft<sup>3</sup>/s, Aug. 6, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,150 ft<sup>3</sup>/s, Jan. 18, elevation, 41.32 ft; minimum daily, 64 ft<sup>3</sup>/s, Aug. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	306	336	298	266	280	235	204	134	97	96	93
2	182	295	338	270	245	251	228	192	126	99	109	87
3	223	296	316	256	238	238	237	185	122	89	114	73
4	228	301	336	251	237	236	257	178	124	83	98	81
5	240	295	314	251	237	230	243	179	113	106	96	102
6	231	294	305	281	234	227	253	167	119	98	109	97
7	236	287	308	323	228	226	236	154	128	98	112	111
8	224	288	317	376	231	220	244	170	128	97	123	99
9	232	289	309	311	242	232	245	164	134	94	124	87
10	270	296	305	275	241	234	232	150	125	89	121	99
11	243	297	303	251	237	231	236	139	112	95	125	115
12	262	293	296	250	233	226	285	140	111	99	120	117
13	256	300	292	248	224	223	580	127	113	89	122	116
14	274	298	294	265	221	227	673	126	110	79	132	125
15	288	296	300	288	221	244	683	134	125	95	139	123
16	263	298	308	298	222	241	620	134	105	83	125	137
17	271	331	296	334	226	232	344	142	117	95	130	127
18	268	329	285	826	223	242	243	132	104	106	117	106
19	280	318	280	540	222	243	264	125	102	105	108	109
20	354	320	279	329	223	260	241	129	104	92	99	126
21	324	313	277	282	219	249	218	128	96	97	90	129
22	308	309	277	273	218	229	320	118	100	111	98	118
23	309	309	279	272	216	236	618	116	111	98	84	115
24	299	311	276	254	213	233	630	125	93	106	67	115
25	285	315	277	247	215	232	635	123	95	121	64	116
26	282	313	277	243	221	261	640	122	93	112	71	112
27	290	311	277	240	222	247	579	125	99	97	74	119
28	304	308	321	237	237	248	412	118	112	89	80	124
29	327	306	316	235	262	238	255	128	113	87	92	120
30	308	319	326	249	---	238	215	146	96	114	100	118
31	305	---	316	248	---	249	---	138	---	95	92	---
TOTAL	8349	9141	9336	9301	6674	7403	11101	4458	3364	3015	3231	3316
MEAN	269	305	301	300	230	239	370	144	112	97.3	104	111
MAX	354	331	338	826	266	280	683	204	134	121	139	137
MIN	182	287	276	235	213	220	215	116	93	79	64	73
AC-FT	16560	18130	18520	18450	13240	14680	22020	8840	6670	5980	6410	6580

CAL YR 1987 TOTAL 150668 MEAN 413 MAX 3190 MIN 151 AC-FT 298800  
WTR YR 1988 TOTAL 78689 MEAN 215 MAX 826 MIN 64 AC-FT 156100



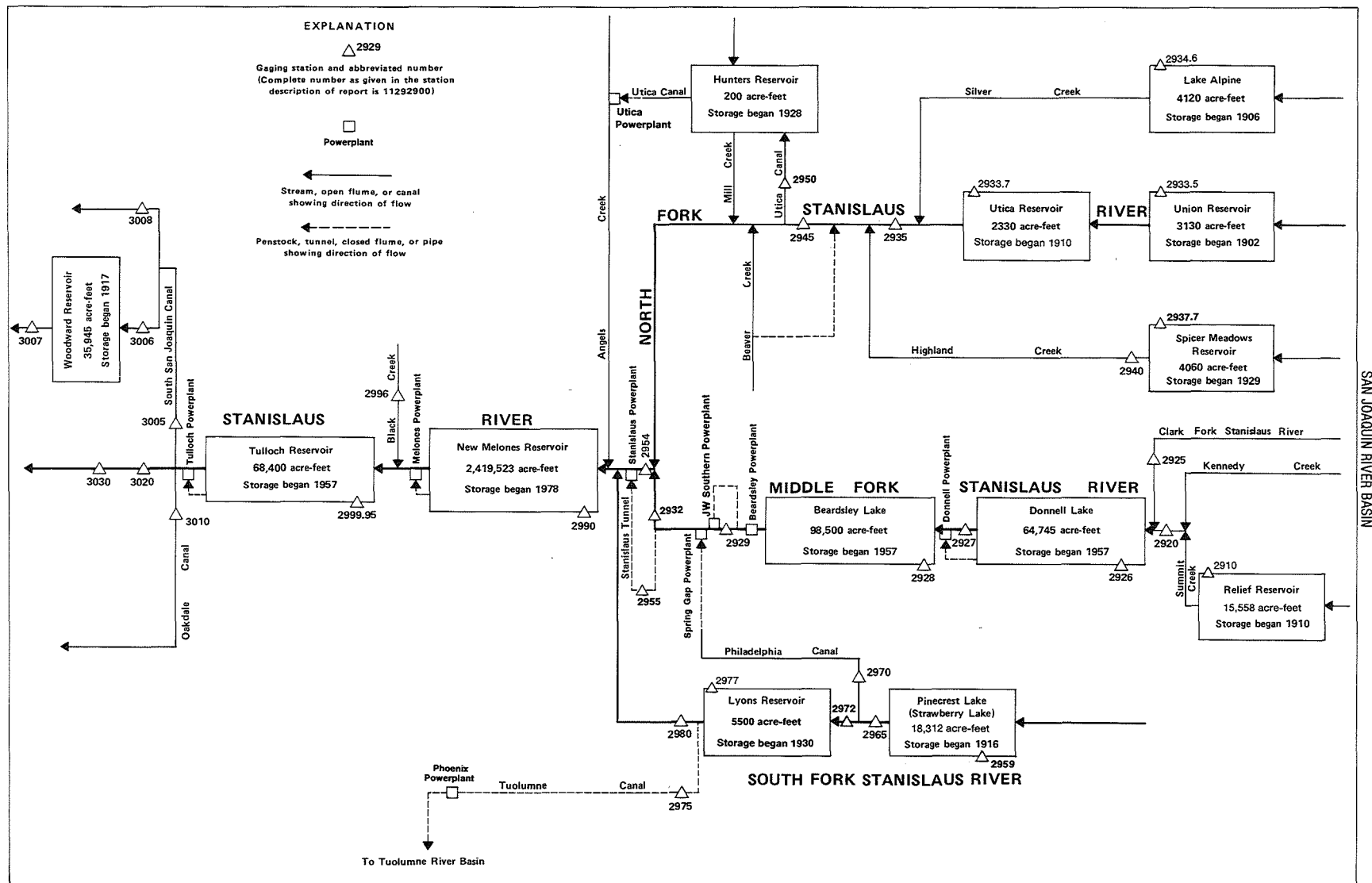


Figure 34.--Schematic diagram showing diversions and storage in Stanislaus River basin.

## SAN JOAQUIN RIVER BASIN

## 11291000 RELIEF RESERVOIR NEAR BAKER STATION, CA

LOCATION.--Lat 38°16'52", long 119°43'57", in NW 1/4 SW 1/4 sec.13, T.5 N., R.20 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on upstream side of dam, 200 ft from left abutment of dam, 2.2 mi south of Kennedy Meadows, 3.6 mi southeast of Baker Station, and 7.0 mi southeast of Dardanelle.

DRAINAGE AREA.--24.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in files of U.S. Geological Survey.

GAGE.--Nonrecording gage, observed approximately weekly in the summer months. Elevation of gage is 7,340 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete-faced, rockfill dam completed in 1910. Usable capacity, 15,558 acre-ft between elevations 7,198.63 ft, invert of outlet, and 7,338 ft, top of flashboards in spillway. The spillway crest is at an elevation of 7,330 ft, or gage sloping distance of 13.7 ft. Figures given herein, including extremes, represent total contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram for Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

Capacity table (sloping distance, in feet, and contents, in acre-ft)  
(Based on survey by Pacific Gas & Electric Co. in 1942)

160	0	60	6,259
140	55	40	9,197
120	579	20	12,639
100	1,863	4	15,726
80	3,815		

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	8879	---
2	---	2988	---	---	2004	---	---	9660	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	5084	---	---	---	---	---
5	2485	---	---	---	---	---	---	---	---	13375	---	---
6	---	---	---	---	---	---	---	---	---	---	---	3930
7	---	---	1052	---	---	2988	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	7724	---
9	---	3132	---	---	2216	---	---	10325	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	1462	---	---	6523	---	---	11826	---	---
12	---	---	---	---	---	---	---	---	---	---	---	3297
13	---	---	---	---	---	---	---	---	14130	---	---	---
14	---	---	793	---	---	3081	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	6808	---
16	---	1785	---	---	---	---	---	12933	---	---	6624	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	1863	---	---	7767	---	---	---	---	---
19	2440	---	---	---	2262	---	---	---	---	---	---	2342
20	---	---	---	---	---	---	---	---	13878	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	5780	---
23	---	1531	---	---	---	---	---	14130	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	1951	---	---	8561	---	---	9745	---	---
26	2567	---	---	---	---	---	---	---	---	---	---	2306
27	---	---	---	---	---	---	---	---	13633	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	4842	---
30	---	1258	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	14130	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11292000 MIDDLE FORK STANISLAUS RIVER AT KENNEDY MEADOWS, NEAR DARDANELLE, CA

LOCATION.--Lat 38°17'51", long 119°44'25", in SW 1/4 NE 1/4 sec.11, T.5 N., R.20 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank at upper end of Kennedy Meadows, 1.3 mi upstream from Deadman Creek, 1.6 mi downstream from Relief Reservoir, and 5.8 mi southwest of Dardanelle.

DRAINAGE AREA.--47.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1938 to current year. Records for water year 1946 incomplete, yearly estimate published in WSP 1315-A. Prior to October 1960, published as "at Kennedy Meadows."

REVISED RECORDS.--WSP 1315-A: 1939(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,326.3 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 18, 20, 25, 26, 31, Jan. 1, 6, 7, 12, 13, 18, Feb. 1-3. Low and medium flow regulated by Relief Reservoir (station 11291000) 1.6 mi upstream. No diversion upstream from station. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--(unadjusted) 50 years, 135 ft<sup>3</sup>/s, 97,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,700 ft<sup>3</sup>/s, Nov. 20, 1950, gage height, 6.66 ft; maximum gage height, 6.67 ft, May 29, 1983; minimum daily, 7.1 ft<sup>3</sup>/s, Jan. 14, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 368 ft<sup>3</sup>/s, May 22, gage height, 4.08 ft; minimum daily, 12 ft<sup>3</sup>/s, Jan. 18, 19, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	20	31	13	15	24	34	47	175	148	101	82
2	15	19	31	13	15	23	35	43	199	145	100	82
3	15	18	31	13	15	24	36	41	232	143	100	80
4	15	17	31	14	15	24	34	40	266	141	99	79
5	15	22	30	15	15	26	35	39	213	138	98	78
6	15	24	31	13	15	26	40	37	157	134	98	77
7	15	23	32	13	14	26	47	36	135	132	97	77
8	15	21	31	13	15	28	50	33	128	130	96	76
9	14	94	32	13	16	28	47	32	131	128	94	76
10	14	151	33	13	16	26	52	34	134	127	94	75
11	14	150	33	13	16	24	58	46	150	125	94	74
12	16	147	29	13	18	24	58	75	163	123	93	73
13	16	149	28	13	18	23	57	110	196	122	91	72
14	15	146	25	13	19	22	58	109	223	120	90	72
15	15	141	16	14	20	22	52	122	228	118	90	71
16	15	95	15	13	19	21	47	141	228	116	89	70
17	15	57	15	14	18	21	47	112	206	115	88	70
18	15	57	14	12	18	23	47	92	188	113	87	69
19	15	56	14	12	17	25	46	124	197	112	87	41
20	14	55	14	13	18	27	45	242	215	110	86	16
21	14	55	14	13	18	29	41	309	212	109	86	16
22	17	54	15	12	19	30	40	326	192	108	86	15
23	20	43	15	13	20	32	39	306	179	108	85	15
24	17	33	15	14	20	35	41	314	179	112	84	15
25	16	33	15	15	22	40	43	299	197	113	84	14
26	16	30	15	15	23	46	47	287	185	111	84	14
27	16	33	15	15	26	48	54	240	172	108	84	14
28	24	32	14	15	26	43	54	240	163	106	83	14
29	23	31	14	15	24	39	53	265	157	104	83	14
30	22	31	13	15	---	37	53	200	152	104	82	14
31	21	---	13	15	---	32	---	168	---	103	82	---
TOTAL	504	1837	674	420	530	898	1390	4509	5562	3726	2795	1555
MEAN	16.3	61.2	21.7	13.5	18.3	29.0	46.3	145	185	120	90.2	51.8
MAX	24	151	33	15	26	48	58	326	266	148	101	82
MIN	14	17	13	12	14	21	34	32	128	103	82	14
AC-FT	1000	3640	1340	833	1050	1780	2760	8940	11030	7390	5540	3080

CAL YR 1987 TOTAL 24592.0 MEAN 67.4 MAX 547 MIN 9.6 AC-FT 48780  
WTR YR 1988 TOTAL 24400 MEAN 66.7 MAX 326 MIN 12 AC-FT 48400

## SAN JOAQUIN RIVER BASIN

11292500 CLARK FORK STANISLAUS RIVER NEAR DARDANELLE, CA

LOCATION.--Lat 38°21'50", long 119°52'13", in NE 1/4 NE 1/4 sec.22, T.6 N., R.19 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.5 mi upstream from mouth and 2.6 mi northwest of Dardanelle.

DRAINAGE AREA.--67.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,507.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Estimated daily discharges: Periods with ice effect, Nov. 25-30, Dec. 12-18, Dec. 25 to Jan. 23, and Feb. 1-8. Records good except those for estimated daily discharges, which are fair. No regulation or diversion above station. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--38 years, 155 ft<sup>3</sup>/s, 112,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,350 ft<sup>3</sup>/s, Nov. 20, 1950, gage height, 11.88 ft, from rating curve extended above 1,300 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 9.8 ft<sup>3</sup>/s, Sept. 11-15, 26-30, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 15	2200	*469	*4.64				

Minimum daily, 13 ft<sup>3</sup>/s, for many days in September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	20	23	25	24	50	86	113	173	56	21	17
2	15	22	23	28	23	48	98	108	181	52	21	16
3	15	23	22	31	25	48	104	110	201	50	21	15
4	15	23	22	36	26	51	91	112	194	47	20	14
5	15	24	22	46	27	55	99	105	166	45	23	13
6	15	29	26	37	29	57	123	98	141	44	21	13
7	15	25	27	28	30	56	138	94	134	42	20	13
8	15	23	32	31	32	60	138	91	132	40	21	13
9	16	22	29	33	32	67	130	92	131	38	20	13
10	16	22	40	35	34	58	154	109	128	37	19	14
11	16	21	33	31	34	56	172	164	131	35	20	13
12	16	21	29	24	37	54	177	231	132	33	19	13
13	17	27	27	24	38	52	162	273	139	33	19	14
14	16	26	27	27	38	54	150	280	150	32	19	14
15	16	21	28	32	40	54	130	323	154	31	19	13
16	16	24	30	30	40	51	124	316	152	30	18	13
17	16	26	29	27	38	52	125	255	141	28	18	13
18	16	26	27	21	37	57	120	234	133	27	17	13
19	16	25	29	22	36	65	115	239	128	26	17	13
20	16	24	34	22	37	72	109	254	121	25	16	14
21	16	24	33	24	39	75	101	291	117	25	16	15
22	18	24	46	26	40	70	98	294	106	25	16	15
23	24	22	32	28	43	82	91	296	96	25	16	14
24	21	23	27	29	44	88	95	293	89	26	16	14
25	19	22	29	28	48	99	103	281	93	28	16	14
26	18	22	31	27	52	118	113	257	86	29	16	13
27	18	22	26	27	57	122	123	230	75	26	16	13
28	27	22	25	28	56	106	125	222	69	24	15	13
29	29	21	33	28	51	100	130	213	63	23	16	13
30	23	22	28	27	---	98	135	182	59	23	20	13
31	21	---	26	26	---	86	---	172	---	23	21	---
TOTAL	547	698	895	888	1087	2161	3659	6332	3815	1028	573	411
MEAN	17.6	23.3	28.9	28.6	37.5	69.7	122	204	127	33.2	18.5	13.7
MAX	29	29	46	46	57	122	177	323	201	56	23	17
MIN	15	20	22	21	23	48	86	91	59	23	15	13
AC-FT	1080	1380	1780	1760	2160	4290	7260	12560	7570	2040	1140	815
CAL YR 1987	TOTAL	22706	MEAN 62.2	MAX 426	MIN 15	AC-FT 45040						
WTR YR 1988	TOTAL	22094	MEAN 60.4	MAX 323	MIN 13	AC-FT 43820						

## SAN JOAQUIN RIVER BASIN

11292600 DONNELL LAKE NEAR DARDANELLE, CA

LOCATION.--Lat 38°19'46", long 119°57'37" unsurveyed, T.6 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank in hoist house of Donnell Dam on Middle Fork Stanislaus River, 1.2 mi downstream from Niagara Creek, and 6.9 mi west of Dardanelle.

DRAINAGE AREA.--230 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1957 to current year. Prior to October 1960, published as Donnell's Reservoir near Dardanelle.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4.84 ft above National Geodetic Vertical Datum of 1929 (levels by Oakdale and South San Joaquin Irrigation Districts).

REMARKS.--Lake is formed by concrete arch-type dam completed in 1957. Usable capacity, 64,745 acre-ft, between gage heights 4,720.0 ft, minimum operating head, and 4,917.0 ft, top of spillway gates. Lake is for power and conservation storage. Water passes through a 7.2-mi tunnel to a powerplant and down the Middle Fork Stanislaus River to Beardsley Lake (station 11292800). Records, including extremes, represent total contents at 2400 hours, of which 2,150 acre-ft is below minimum operating head. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 64,900 acre-ft, May 8, 1963, gage height, 4,917.3 ft; minimum since reservoir first filled, 2,220 acre-ft, Apr. 15, 1983, gage height, 4,720.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 57,400 acre-ft, June 5, gage height, 4,899.2 ft; minimum, 5,990 acre-ft, Aug. 28, gage height, 4,740.7 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated Oct. 1, 1956)

4,720	2,150	4,740	5,830	4,780	16,200	4,850	38,700
4,725	2,850	4,750	8,220	4,790	19,100	4,880	49,800
4,730	3,730	4,760	10,800	4,800	22,100	4,917.3	64,900
4,735	4,730	4,770	13,400	4,820	28,400		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7870	8870	13800	17100	21100	15100	19900	42400	54100	48200	18600	6730
2	7900	8970	13900	17200	21200	15400	20400	43000	54600	47400	17900	6920
3	7920	9050	14000	17300	21300	15800	21100	43300	55000	46500	17100	7090
4	7920	9130	14100	17500	21400	16100	21300	43000	56300	45600	16400	7290
5	7950	9200	14200	17700	21600	16500	22000	42700	57400	44600	15600	7460
6	7970	9330	14400	17900	21700	16900	22700	42300	57300	43700	15800	7630
7	7970	9410	14500	18000	21800	16800	23600	42400	57100	42700	16000	7770
8	8000	9480	14700	18100	22000	16800	24500	43000	56900	41700	15400	7950
9	8020	9610	14800	18200	22100	16800	25300	42700	56300	40700	14600	8100
10	8020	9950	15000	18300	22300	16700	26200	42600	55700	39700	13800	8270
11	8040	10300	15200	18500	22500	16500	27200	43400	55200	38700	13200	8420
12	8070	10500	15300	18600	22700	16300	28200	44200	54700	37600	12900	8570
13	8100	10900	15400	18700	22400	16600	29100	44700	54300	36600	12600	8720
14	8120	11300	15500	18800	21200	16500	30100	45500	54000	35500	12300	8870
15	8140	11500	15600	18900	20000	16400	30900	47000	53700	34400	12000	9020
16	8170	11800	15700	19000	18800	16200	31600	47700	53400	33300	11300	9180
17	8170	12000	15800	19200	17300	16000	32400	48100	53000	32200	10700	9330
18	8190	12200	15800	19300	16300	16200	33100	48300	53000	31100	10200	9480
19	8220	12300	15900	19300	15100	16600	33900	48100	53000	30000	9640	9610
20	8220	12500	16000	19400	15200	17100	34600	48200	53000	28900	9820	9690
21	8240	12700	16100	19500	15500	17100	35200	48600	52600	27800	10000	9720
22	8270	12800	16300	19600	15200	17100	35800	49100	52100	26600	9230	9770
23	8340	13000	16400	19800	14900	17200	36400	49500	51400	25500	8570	9820
24	8390	13100	16400	19900	14600	17300	37000	50400	50900	24300	7850	9840
25	8420	13200	16500	20000	14400	17600	37700	51300	51000	23200	7040	9900
26	8440	13300	16600	20200	14000	18400	38500	52000	51800	22000	6260	9920
27	8470	13400	16700	20300	13900	19300	39300	52200	51500	20800	6100	9950
28	8540	13400	16800	20500	14300	19500	40100	52500	50700	19600	5990	10000
29	8670	13600	16900	20700	14700	19700	40900	52900	49900	18800	6150	10000
30	8750	13700	16900	20800	---	19800	41700	53600	49100	19000	6340	10100
31	8800	---	17000	20900	---	19800	---	53900	---	19200	6550	---
MAX	8800	13700	17000	20900	22700	19800	41700	53900	57400	48200	18600	10100
MIN	7870	8870	13800	17100	13900	15100	19900	42300	49100	18800	5990	6730
a	4752.3	4770.8	4782.8	4796.3	4774.5	4792.4	4858.4	4890.5	4878.1	4790.5	4743.1	4757.2
b	+1000	+4900	+3300	+3900	-6200	+5100	+21900	+12200	-4800	-29900	-12600	+3550

CAL YR 1987 b +4100

WTR YR 1988 b +2300

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11292700 MIDDLE FORK STANISLAUS RIVER AT HELLS HALF ACRE BRIDGE, NEAR PINECREST, CA

LOCATION.--Lat 38°14'50", long 120°02'01", in NW 1/4 NE 1/4 sec.31, T.5 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, on left bank 200 ft upstream from Donnell powerplant, 800 ft downstream from Hells Half Acre bridge, 1.1 mi upstream from Cow Creek, and 4.7 mi northwest of Pinecrest.

DRAINAGE AREA.--287 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1956 to current year. Prior to October 1965, published as Middle Fork Stanislaus River at Hells Half Acre bridge.

GAGE.--Water-stage recorder. Datum of gage is 3,418.31 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Aug. 9, 1961, at site 1,600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Relief Reservoir since 1909, capacity, 15,600 acre-ft, by Donnell Lake (station 11292600), and by diversion around station through Donnell powerplant. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--32 years, 268 ft<sup>3</sup>/s, 194,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft<sup>3</sup>/s, Dec. 24, 1964, gage height, 13.64 ft in gage well, 14.2 ft outside, from floodmarks, from rating curve extended above 5,200 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 12.20 ft; minimum daily, 3.3 ft<sup>3</sup>/s, Nov. 9, 10, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1905, 23 ft, Dec. 23, 1955, from floodmarks, at present site, discharge, 26,600 ft<sup>3</sup>/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 134 ft<sup>3</sup>/s, Apr. 27, gage height, 4.00 ft; minimum daily, 17 ft<sup>3</sup>/s, Nov. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	33	28	35	54	99	75	90	39	27	21	20
2	32	21	28	35	53	91	76	84	37	26	20	20
3	32	17	27	47	51	97	79	74	36	26	20	20
4	32	22	26	57	51	95	74	71	35	25	20	20
5	32	24	26	88	50	99	75	69	35	25	20	20
6	32	25	29	76	50	101	81	69	35	25	20	20
7	32	24	41	61	51	98	85	68	37	24	19	20
8	32	24	36	56	53	99	84	68	37	24	19	20
9	32	24	38	52	56	106	76	70	35	24	19	20
10	32	24	45	54	59	96	78	66	33	23	19	20
11	32	23	40	59	62	88	80	65	31	22	19	20
12	34	23	36	52	65	83	78	66	30	22	19	20
13	33	27	34	49	66	80	77	66	29	22	20	21
14	32	29	33	48	65	80	98	63	28	22	20	21
15	32	26	32	50	68	82	92	61	27	21	20	21
16	32	26	33	49	69	78	92	61	26	26	20	21
17	32	28	33	48	64	76	86	82	25	26	19	21
18	32	28	32	46	62	79	81	66	24	26	19	21
19	32	27	32	44	59	87	91	58	23	25	19	21
20	32	28	32	44	60	91	95	54	24	25	19	21
21	32	29	32	44	64	94	87	51	24	24	19	22
22	33	28	49	46	67	91	84	48	23	24	19	22
23	34	27	41	48	71	96	79	45	22	24	19	22
24	33	26	37	53	71	107	91	42	21	24	18	22
25	32	26	41	56	73	106	101	40	27	24	18	22
26	32	26	35	57	76	115	113	38	28	23	18	22
27	32	26	34	57	85	119	118	37	25	22	19	22
28	35	26	36	58	99	105	110	37	24	22	19	22
29	36	26	38	58	97	97	101	54	28	21	19	22
30	34	26	35	59	---	95	97	45	28	21	19	21
31	33	---	35	56	---	88	---	43	---	21	19	---
TOTAL	1009	769	1074	1642	1871	2918	2634	1851	876	736	597	627
MEAN	32.5	25.6	34.6	53.0	64.5	94.1	87.8	59.7	29.2	23.7	19.3	20.9
MAX	36	33	49	88	99	119	118	90	39	27	21	22
MIN	32	17	26	35	50	76	74	37	21	21	18	20
AC-FT	2000	1530	2130	3260	3710	5790	5220	3670	1740	1460	1180	1240
CAL YR 1987	TOTAL	19879	MEAN 54.5	MAX 201	MIN 17	AC-FT 39430						
WTR YR 1988	TOTAL	16604	MEAN 45.4	MAX 119	MIN 17	AC-FT 32930						

## SAN JOAQUIN RIVER BASIN

11292800 BEARDSLEY LAKE NEAR STRAWBERRY, CA

LOCATION.--Lat 38°12'17", long 120°04'31", in SE 1/4 NW 1/4 sec.14, T.4 N., R.17 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, in hoist house of Beardsley Dam on Middle Fork Stanislaus River, 2.4 mi upstream from Spring Gap powerplant, 3.9 mi west of Strawberry, and 4.7 mi west of Pinecrest.

DRAINAGE AREA.--309 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1957 to current year. Prior to October 1960, published as Lake Hartley near Strawberry.  
REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7.84 ft above National Geodetic Vertical Datum of 1929 (levels by Oakdale and South San Joaquin Irrigation Districts).

REMARKS.--Estimated daily contents Dec. 11 to Feb. 17. Reservoir is formed by rockfill, earth-core dam completed in 1957. Capacity, 98,500 acre-ft between gage heights 3,145.0 ft, tunnel invert, and 3,398.0 ft, top of spillway gates. No dead storage. Reservoir is used for power and conservation storage. Water passes through Beardsley powerplant, is diverted at Beardsley afterbay to J. W. Southern powerplant at Sand Bar Flat on the Middle Fork Stanislaus River, and diverted again at Spring Gap to Stanislaus powerplant at the head of New Melones Reservoir (station 11299000). Records, including extremes, represent contents at 2400 hours. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 98,700 acre-ft, June 27, 1957, gage height, 3,398.2 ft; minimum since reservoir first filled, 3 acre-ft, Sept. 23, 1976, gage height, 3,154.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 45,800 acre-ft, July 29, gage height, 3,314.6 ft; minimum, 15,600 acre-ft, Feb. 9-11, gage height, unknown.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., from table dated Oct. 3, 1956)

3,154	2	3,200	2,370	3,290	33,100
3,160	41	3,210	3,790	3,320	48,800
3,170	267	3,220	5,720	3,350	66,400
3,180	693	3,240	11,600	3,370	79,200
3,190	1,370	3,260	19,500	3,398	98,500

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27700	19700	17400	16000	15800	23800	26800	23400	34000	36300	43500	29900
2	27300	19600	17300	16000	15800	23400	26700	23300	33700	36600	43400	29000
3	26800	19600	17200	16000	15800	23000	26500	23800	33500	37000	43200	28400
4	26400	19400	17200	16000	15700	22600	26700	24700	32600	37400	43200	27800
5	26000	19400	17100	16100	15700	22200	26500	25500	31600	37700	43100	27300
6	25600	19300	17000	16100	15700	21800	26400	26400	31600	38000	42000	26700
7	25200	19200	17000	16100	15700	21900	26200	26900	31700	38400	41000	26300
8	24800	19100	16900	16200	15700	22000	26100	26900	31700	38800	40800	26300
9	24400	19000	16900	16200	15600	22200	26000	27700	32100	39100	40800	26200
10	23900	18900	16800	16200	15600	22400	25800	28300	32400	39400	40700	26100
11	23500	18800	16800	16200	15600	22600	25700	28300	32800	39800	40500	25900
12	23100	18800	16700	16200	15700	22700	25500	28700	33100	40100	40500	25900
13	22700	18700	16700	16200	16200	22300	25300	29500	33500	40500	39500	25700
14	22200	18600	16600	16100	17500	22400	25200	30100	33900	40800	38500	25700
15	21800	18600	16600	16100	18800	22600	25200	30100	34300	41100	38300	25600
16	21300	18500	16500	16100	20200	22900	25000	31000	34600	41400	38200	25500
17	20800	18400	16500	16100	21600	23300	24900	31800	35000	41800	38000	25300
18	20600	18300	16500	16100	22900	23300	24800	31900	34900	42100	37700	25200
19	20500	18300	16400	16000	23800	23200	24700	32600	34800	42500	37400	25200
20	20500	18200	16400	16000	23500	23100	24600	33200	34800	42800	36400	25100
21	20400	18100	16300	16000	23100	23500	24400	33800	35100	43200	35300	25000
22	20400	18100	16300	15900	23100	23800	24400	34400	35500	43600	35300	24800
23	20300	18000	16300	15900	23300	24200	24200	34900	35800	43900	35100	24800
24	20200	17900	16300	15900	23500	24600	24100	35000	36200	44300	35000	24700
25	20200	17800	16300	15900	23500	25000	23900	34700	36000	44600	35000	24700
26	20100	17700	16200	15900	24100	24900	23900	34600	35000	45000	34900	24500
27	20100	17600	16200	15900	24400	24800	23800	34700	34900	45300	34300	24400
28	20000	17600	16200	15800	24400	25200	23700	34800	35200	45700	33600	24300
29	19900	17500	16100	15800	24100	25600	23600	35000	35600	45800	32600	23700
30	19900	17500	16100	15800	---	25900	23500	34400	35900	44700	31600	23200
31	19800	---	16100	15800	---	26500	---	34200	---	43700	30700	---
MAX	27700	19700	17400	16200	24400	26500	26800	35000	36200	45800	43500	29900
MIN	19800	17500	16100	15800	15600	21800	23500	23300	31600	36300	30700	23200
a	3260.8	3255.2	---	---	3270.6	3275.9	3269.4	3292.2	3295.6	3310.6	3285.0	3268.6
b	-8300	-2300	-1400	-300	+8300	+2400	-3000	+10700	+1700	+7800	-13000	-7500

CAL YR 1987 b -15800

WTR YR 1988 b -4900

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

## 11292900 MIDDLE FORK STANISLAUS RIVER BELOW BEARDSLEY DAM, CA

LOCATION.--Lat 38°11'36", long 120°05'53", in NW 1/4 NW 1/4 sec.22, T.4 N., R.17 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.5 mi downstream from Beardsley Afterbay Dam, 1.5 mi downstream from Beardsley Dam, and 5.7 mi west of Pinecrest.

DRAINAGE AREA.--316 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1956 to current year.

REVISED RECORDS.--WSP 1930; Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,044.7 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Records good. Diversion from Beardsley Afterbay Dam, 0.5 mi upstream, to J.W. Southern powerplant, at Sand Bar Flat 3 mi downstream, began May 31, 1986. Flow regulated by Relief Reservoir, capacity, 15,600 acre-ft, Donnell Lake since April 1957 (station 11292600), and by Beardsley Lake since January 1957 (station 11292800). See schematic diagram of Stanislaus River basin. For records of combined discharge for river and powerplant, see following page.

COOPERATION.--Records of diversion to J.W. Southern powerplant provided by Oakdale-South San Joaquin Irrigation Districts.

AVERAGE DISCHARGE (includes diversion to J.W. Southern powerplant).--31 years (water years 1958-88), 655 ft<sup>3</sup>/s, 474,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,080 ft<sup>3</sup>/s, May 30, 1983, gage height, 12.30 ft; minimum daily, 3.0 ft<sup>3</sup>/s, Oct. 10, 11, 1958.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 151 ft<sup>3</sup>/s, Feb. 25, gage height, 3.96 ft; minimum daily, 33 ft<sup>3</sup>/s, Oct. 20.  
Combined flow, maximum daily discharge, 530 ft<sup>3</sup>/s, July 29, 31; minimum daily, 33 ft<sup>3</sup>/s, Oct. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	63	62	56	67	144	147	146	61	64	57	58
2	66	63	61	56	67	143	147	118	61	63	56	58
3	65	63	61	57	67	143	147	82	61	63	57	57
4	65	63	62	57	67	143	147	69	61	63	57	58
5	65	63	63	58	67	143	147	69	61	63	57	58
6	65	62	64	59	67	143	146	68	61	63	56	58
7	66	62	66	58	66	143	147	67	61	63	56	57
8	65	62	65	58	66	143	147	68	61	62	56	57
9	65	62	65	58	66	144	147	64	61	62	56	58
10	65	61	65	58	66	143	147	62	61	60	56	57
11	66	60	65	58	66	143	146	59	60	62	56	58
12	66	61	62	58	66	148	146	60	60	62	56	58
13	65	61	62	60	66	148	146	60	59	63	56	59
14	66	63	62	61	66	147	147	60	60	63	56	58
15	65	59	61	61	66	147	147	59	60	62	56	58
16	65	61	58	63	64	147	148	62	57	62	56	59
17	67	60	58	60	67	147	147	61	58	62	56	60
18	62	59	58	62	70	146	146	61	60	62	56	57
19	56	60	57	65	66	146	147	60	59	62	54	59
20	33	61	57	66	64	146	146	59	58	60	53	59
21	64	61	56	66	64	146	146	59	58	60	53	58
22	63	61	57	66	63	146	146	58	58	60	53	59
23	64	60	57	66	62	147	146	59	58	60	53	58
24	64	60	56	66	79	147	146	61	58	60	54	58
25	64	60	56	66	135	146	146	60	57	59	57	59
26	64	62	56	66	142	146	146	61	61	59	57	59
27	64	63	56	67	142	146	146	61	61	59	57	60
28	64	62	57	67	143	147	146	62	64	59	57	58
29	65	60	58	67	144	147	146	62	64	60	57	57
30	64	62	57	67	---	147	146	62	64	59	57	58
31	64	---	57	67	---	147	---	61	---	60	57	---
TOTAL	1967	1840	1857	1920	2301	4509	4395	2080	1804	1901	1731	1745
MEAN	63.5	61.3	59.9	61.9	79.3	145	147	67.1	60.1	61.3	55.8	58.2
MAX	67	63	66	67	144	148	148	146	64	64	57	60
MIN	33	59	56	56	62	143	146	58	57	59	53	57
AC-FT	3900	3650	3680	3810	4560	8940	8720	4130	3580	3770	3430	3460

CAL YR 1987 TOTAL 32372 MEAN 88.7 MAX 159 MIN 33 AC-FT 64210  
WTR YR 1988 TOTAL 28050 MEAN 76.6 MAX 148 MIN 33 AC-FT 55640



## SAN JOAQUIN RIVER BASIN

## 11292901 MIDDLE FORK STANISLAUS RIVER BELOW BEARDSLEY DAM, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF MIDDLE FORK STANISLAUS RIVER AND  
J. W. SOUTHERN POWERPLANT BELOW BEARDSLEY DAM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265	63	62	56	67	234	147	146	476	483	520	398
2	266	63	61	56	67	233	147	118	476	482	516	398
3	265	63	61	57	67	233	147	82	476	482	517	294
4	265	63	62	57	67	233	147	69	476	482	517	248
5	265	63	63	58	67	233	147	69	469	482	517	248
6	265	62	64	59	67	233	146	68	461	496	516	231
7	266	62	66	58	66	233	147	67	461	503	506	175
8	265	62	65	58	66	233	147	68	461	502	506	57
9	265	62	65	58	66	234	147	64	461	502	506	58
10	265	61	65	58	66	233	147	62	461	500	506	57
11	266	60	65	58	66	210	146	59	460	502	506	58
12	266	61	62	58	66	248	146	60	460	502	506	58
13	265	61	62	60	66	215	146	60	459	506	506	59
14	266	63	62	61	66	237	147	60	460	513	506	58
15	265	59	61	61	66	147	147	67	475	512	506	58
16	302	61	58	63	64	147	148	62	473	512	503	59
17	317	60	58	60	67	147	147	99	478	512	501	60
18	90	59	58	62	135	146	146	406	479	505	501	57
19	56	60	57	65	262	146	147	405	478	494	499	59
20	33	61	57	66	244	146	146	404	477	495	498	59
21	64	61	56	66	244	146	146	404	477	495	498	58
22	63	61	57	66	243	146	146	403	477	489	498	59
23	64	60	57	66	242	147	146	404	477	515	488	58
24	64	60	56	66	259	147	146	388	477	518	489	58
25	64	60	56	66	235	146	146	480	362	519	492	59
26	64	62	56	66	189	146	146	481	480	519	492	59
27	64	63	56	67	142	146	146	191	461	526	492	60
28	64	62	57	67	143	147	146	480	483	529	492	58
29	65	60	58	67	189	147	146	477	483	530	487	248
30	64	62	57	67	---	147	146	477	483	529	482	265
31	64	---	57	67	---	147	---	476	---	530	457	---
TOTAL	5482	1840	1857	1920	3654	5733	4395	7156	14037	15666	15526	3731
MEAN	177	61.3	59.9	61.9	126	185	146	231	468	505	501	124
MAX	317	63	66	67	262	248	148	481	483	530	520	398
MIN	33	59	56	56	64	146	146	59	362	482	457	57
AC-FT	10870	3650	3680	3810	7250	11370	8720	14190	27840	31070	30800	7400
CAL YR 1987	TOTAL	82768	MEAN	227	MAX	535	MIN	33	AC-FT	164200		
WTR YR 1988	TOTAL	80997	MEAN	221	MAX	530	MIN	33	AC-FT	160700		

## SAN JOAQUIN RIVER BASIN

## 11293200 MIDDLE FORK STANISLAUS RIVER BELOW SAND BAR DIVERSION DAM, CA

LOCATION.--Lat 38°10'59", long 120°09'28", in NW 1/4 SE 1/4 sec.24, T.4 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank 100 ft downstream from Sand Bar Diversion Dam and 8.5 mi west of Strawberry.

DRAINAGE AREA.--332 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1970, 1971, and 1976-85 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and sharp-crested weir since February 1986. Elevation of gage is 2,700 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 70 ft<sup>3</sup>/s. Flow regulated by Relief Reservoir and Donnell and Beardsley Lakes (stations 11291000, 11292600, and 11292800). Most of the water is diverted at Sand Bar Diversion Dam for use at Stanislaus powerplant. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	---	29	29	28	28	28	53	57	54	55	54
2	53	---	35	29	28	28	28	54	61	54	55	53
3	55	---	29	30	27	28	28	54	63	53	55	53
4	54	---	29	29	27	28	27	53	62	53	55	53
5	53	---	33	29	27	28	28	53	57	53	55	53
6	53	---	29	29	27	28	28	53	54	54	55	55
7	53	---	29	28	27	28	30	53	55	53	54	56
8	52	---	29	31	27	28	28	53	55	53	54	56
9	52	---	29	29	27	28	28	53	56	53	54	55
10	53	---	28	28	27	27	28	52	59	52	54	54
11	53	---	27	29	29	27	28	52	57	52	54	54
12	53	---	28	28	28	28	29	53	57	54	54	53
13	53	---	27	28	29	28	28	53	60	54	54	53
14	53	---	28	28	31	28	28	53	56	54	54	53
15	53	---	28	28	28	28	28	52	55	55	34	53
16	54	---	28	29	27	28	27	52	53	55	21	54
17	54	---	28	28	27	28	28	55	54	55	21	55
18	---	---	28	27	29	28	28	56	54	67	20	54
19	---	---	28	33	28	28	28	54	54	59	43	54
20	---	---	27	29	27	28	28	53	54	58	55	53
21	29	---	27	28	28	28	28	54	53	59	54	53
22	33	---	28	27	28	28	28	55	54	55	54	54
23	---	---	30	27	28	28	28	53	54	56	53	54
24	---	30	32	28	28	28	28	54	53	56	53	54
25	---	28	35	28	---	28	28	58	54	55	52	54
26	---	28	39	28	28	29	29	63	54	56	53	54
27	---	28	37	27	30	28	29	64	55	53	53	54
28	---	28	33	27	30	28	28	62	54	54	53	54
29	---	27	31	27	28	28	28	61	55	56	53	---
30	---	27	30	27	---	28	38	58	54	56	53	56
31	---	---	29	27	---	27	---	57	---	55	54	---
TOTAL	---	---	927	879	---	866	853	1703	1673	1706	1541	---
MEAN	---	---	29.9	28.4	---	27.9	28.4	54.9	55.8	55.0	49.7	---
MAX	---	---	39	33	---	29	38	64	63	67	55	---
MIN	---	---	27	27	---	27	27	52	53	52	20	---
AC-FT	---	---	1840	1740	---	1720	1690	3380	3320	3380	3060	---

## SAN JOAQUIN RIVER BASIN

11293350 UNION RESERVOIR NEAR BIG MEADOWS, CA

LOCATION.--Lat 38°25'50", long 119°59'47", unsurveyed, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, at outlet structure on upstream face of Union Dam on North Fork Stanislaus River and 6.4 mi east of Big Meadows.

DRAINAGE AREA.--13.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in the files of U.S. Geological Survey.

GAGE.--Nonrecording gage, observed approximately weekly in the summer months. Datum of gage is 6,823.4 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete and rock dam completed in 1902. Usable capacity, 3,130 acre-ft between gage heights -1.9 ft, invert of outlet, and 26.9 ft, crest of spillway. Figures given here represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram for Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co. in 1954)

0	4	20	1,756
5	81	25	2,754
10	359	27.6	3,283
15	938		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	2935	---
2	---	173	---	---	---	---	---	3130	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	3130	---	---	---	---	---
5	376	---	---	---	---	---	---	---	---	3130	---	---
6	---	---	---	---	---	---	---	---	---	---	2724	1409
7	---	---	53	---	---	1774	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	2828	---
9	---	123	---	---	---	---	---	3130	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	3130	---	---	2999	---	---
12	341	---	---	---	---	---	---	---	---	---	---	1055
13	---	---	---	---	---	---	---	---	3130	---	---	---
14	---	---	---	---	---	2125	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	3108	---	2579	---
16	---	87	---	---	---	---	---	3130	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	2978	2417	---
19	---	---	---	---	---	---	---	---	---	---	---	709
20	---	---	---	---	---	---	---	---	3130	---	---	---
21	271	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	2744	---	---	---	---	2260	---
23	---	116	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	3130	---	---	2956	---	---
26	225	---	---	---	---	---	---	---	---	---	---	385
27	---	---	---	---	---	---	---	---	3130	---	---	---
28	---	---	---	---	---	3130	---	---	---	---	---	---
29	---	---	---	---	1376	---	---	---	---	---	1846	---
30	---	81	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	3130	---	---	---	---

## SAN JOAQUIN RIVER BASIN

## 11293370 UTICA RESERVOIR NEAR BIG MEADOWS, CA

LOCATION.--Lat 38°26'26", long 120°00'08", unsurveyed, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, at outlet structure on upstream face of Utica Dam on North Fork Stanislaus River, 1.2 mi upstream from Silver Creek, 2.6 mi southeast of Bear Valley, and 6.2 mi west of Big Meadows.

DRAINAGE AREA.--15.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in the files of U.S. Geological Survey.

GAGE.--Nonrecording gage, observed approximately weekly in the summer months. Datum of gage is 6,776.75 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete and rock dam completed in 1910. Usable capacity, 2,334 acre-ft between gage heights 0.7 ft, invert of outlet, and 42.5 ft, crest of spillway. Figures given here represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram for Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas and Electric Co. in 1954)

0.7	0	30	356
10	19	35	858
20	65	40	1,763
25	127	43	2,456

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	888	---	---	---	---	---	1917	---
2	---	424	---	---	---	---	---	2334	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	2334	---	---	---	---	---
5	832	---	---	---	---	---	---	---	---	2215	---	---
6	---	---	---	---	---	---	---	---	---	---	1807	1534
7	---	---	119	---	---	1617	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	1785	---
9	---	343	---	---	1006	---	---	2334	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	2334	---	---	2120	---	---
12	577	---	---	---	---	---	---	---	---	---	---	1497
13	---	---	---	---	---	---	---	---	2334	---	---	---
14	---	---	---	---	---	1659	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	2358	---	1700	---
16	---	270	---	---	---	---	---	2334	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	2053	1596	---
19	617	---	---	---	1190	---	---	---	---	---	---	1575
20	---	---	---	---	---	---	---	---	2334	---	---	---
21	---	---	264	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	1873	---	---	---	---	1494	---
23	---	6	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	2334	---	---	1983	---	---
26	538	---	---	---	---	---	---	---	---	---	---	1659
27	---	---	---	---	---	---	---	---	2334	---	---	---
28	---	---	---	---	---	2334	---	---	---	---	---	---
29	---	---	---	---	1455	---	---	---	---	---	1494	---
30	---	44	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	2334	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11293460 LAKE ALPINE NEAR BIG MEADOWS, CA

LOCATION.--Lat 38°28'17", long 120°00'10", in NE 1/4 SW 1/4 sec.9, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, at outlet structure on upstream face of Lake Alpine Dam on Silver Creek and 7.2 mi northeast of Big Meadows.

DRAINAGE AREA.--5.34 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1986 to current year. Unpublished records for water years 1981-86 available in the files of U.S. Geological Survey.

GAGE.--Nonrecording gage, observed approximately weekly in the summer months. Datum of gage is 7,260.07 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed on natural lake by concrete and rock dam completed in 1906. Usable capacity, 4,117 acre-ft between gage heights 0.0 ft, invert of outlet, and 42.07 ft, crest of spillway. Figures given here represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram for Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas and Electric Co. in 1948)

0	0	25	1,564
5	41	30	2,229
10	208	35	2,962
15	533	40	3,765
20	990	43	4,279

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	3934	---
2	---	1848	---	---	---	---	---	3133	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	940	---	---	---	---	---
5	2369	---	---	---	---	---	---	---	---	4071	---	---
6	---	---	---	---	---	---	---	---	---	---	---	3715
7	---	---	1564	---	---	533	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	3866	---
9	---	1822	---	---	---	---	---	3354	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	1954	---	---	4054	---	---
12	2442	---	---	---	---	---	---	---	---	---	---	3648
13	---	---	---	---	---	---	---	---	4117	---	---	---
14	---	---	---	---	---	632	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	4140	---	3816	---
16	---	1835	---	---	---	---	---	3850	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	3968	3799	---
19	2201	---	---	---	---	---	---	---	---	---	---	3484
20	---	---	---	---	---	---	---	---	4117	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	757	---	---	---	---	3782	---
23	---	1822	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	2736	---	---	3968	---	---
26	1981	---	---	---	---	---	---	---	---	---	---	3306
27	---	---	---	---	---	---	---	---	4117	---	---	---
28	---	---	---	---	---	852	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	3748	---
30	---	1692	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	4117	---	---	---	---

LOCATION.--Lat 38°26'22", long 120°00'53", unsurveyed, T.7 N., R.18 E., Alpine County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 270 ft downstream from Silver Creek and 5.6 mi northeast of Big Meadows.

PERIOD OF RECORD.--October 1952 to November 1987 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 6,677.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Low and medium flow regulated by Union and Utica Reservoirs and Lake Alpine (stations 11293350, 11293370, and 11293460). No diversion upstream from station. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--35 years, 82.3 ft<sup>3</sup>/s, 59,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,780 ft<sup>3</sup>/s, Dec. 24, 1964, gage height, 11.16 ft, from floodmarks, from rating curve extended above 700 ft<sup>3</sup>/s; minimum daily, 0.19 ft<sup>3</sup>/s, Oct. 14, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 20, 1950, reached a stage of 11.17 ft, from Pacific Gas & Electric Co. recorder chart, discharge, 2,790 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33 ft<sup>3</sup>/s, Oct. 28, 29, gage height, 3.39 ft; minimum daily, 12 ft<sup>3</sup>/s, Oct. 31, Nov. 1.

[illegible]

## SAN JOAQUIN RIVER BASIN

11293600 NORTH FORK STANISLAUS RIVER BELOW DIVERSION DAM, NEAR BIG MEADOW, CA

LOCATION.--Lat 38°26'04", long 120°01'04", unsurveyed, T.7 N., R.18 E., Calaveras County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.3 mile downstream from diversion dam and 5.6 miles northeast of Big Meadow.

DRAINAGE AREA.--28.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to September 1988.

GAGE.--Water-stage recorder, crest-stage gage and artificial control. Elevation of gage is 6,640 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Dec. 13, 24-26, 28, 29 and Feb. 19. Records good. Low and medium flow regulated by Union and Utica Reservoirs and Lake Alpine (stations 11293350, 11293370, and 11293460). Flow diverted from North Fork Stanislaus River diversion dam, 0.3 mi upstream, to New Spicer Meadows Reservoir beginning Oct. 21, 1987. See schematic diagram of Stanislaus River basin.

EXTREMES FOR Current Year.--Maximum discharge, 171 ft<sup>3</sup>/s, Apr. 7, 1988, gage height, 4.29 ft; minimum daily, 3.8 ft<sup>3</sup>/s, July 29, 1988.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	14	16	12	16	23	61	79	43	5.5	8.3	24
2	25	14	16	12	16	22	75	63	38	5.5	16	26
3	25	14	17	12	16	26	94	58	34	5.5	16	26
4	25	14	16	12	15	30	75	63	31	5.6	16	26
5	24	14	16	17	15	38	80	58	29	5.7	17	26
6	24	13	20	17	16	36	107	51	26	5.6	12	26
7	25	13	21	15	17	35	128	50	29	5.5	5.1	26
8	25	13	19	14	21	45	117	51	28	5.5	5.0	27
9	24	13	22	15	24	46	89	48	26	5.5	4.7	27
10	24	13	32	20	25	29	98	49	23	5.4	14	27
11	24	13	28	18	26	24	114	76	21	5.4	28	27
12	22	12	21	16	31	20	112	112	20	5.4	28	27
13	20	15	14	15	29	21	105	116	16	5.5	28	27
14	20	14	6.0	15	28	27	121	101	15	5.5	28	27
15	19	12	5.7	15	31	29	106	102	13	5.5	31	27
16	17	16	5.9	15	29	24	98	107	12	5.6	34	27
17	17	23	5.6	15	22	27	89	109	9.9	5.5	33	27
18	17	15	5.8	14	21	40	85	88	8.8	5.5	33	27
19	16	20	6.0	13	17	47	93	71	8.2	6.6	33	27
20	14	28	6.0	14	19	45	102	66	8.9	6.5	33	27
21	10	30	8.5	14	25	42	89	68	10	6.6	33	27
22	16	29	22	15	27	41	84	69	8.4	6.6	31	27
23	13	17	18	18	27	58	78	70	7.4	6.4	28	27
24	12	6.2	16	22	27	51	96	68	6.9	6.7	28	27
25	11	15	14	24	31	51	114	58	8.7	6.7	28	27
26	12	14	13	23	35	55	126	52	6.4	4.0	26	26
27	17	14	12	19	39	64	130	46	6.0	4.1	22	26
28	14	14	12	19	43	86	117	42	5.7	4.0	22	26
29	14	14	12	18	30	82	106	60	5.6	3.8	22	26
30	14	14	12	17	---	85	100	55	5.5	3.9	22	26
31	15	---	10	16	---	67	---	48	---	3.9	22	---
TOTAL	580	470.2	448.5	501	718	1316	2989	2154	510.4	169.0	707.1	796
MEAN	18.7	15.7	14.5	16.2	24.8	42.5	99.6	69.5	17.0	5.45	22.8	26.5
MAX	25	30	32	24	43	86	130	116	43	6.7	34	27
MIN	10	6.2	5.6	12	15	20	61	42	5.5	3.8	4.7	24
AC-FT	1150	933	890	994	1420	2610	5930	4270	1010	335	1400	1580
a	305											

WTR YR 1988 TOTAL 11359.2 MEAN 31.0 MAX 130 MIN 3.8 AC-FT 22530

a Diversion, in acre-feet, through North Fork Stanislaus River diversion tunnel, to New Spicer Meadows Reservoir, provided by Pacific Gas & Electric Co.

## SAN JOAQUIN RIVER BASIN

11294000 HIGHLAND CREEK BELOW SPICER MEADOWS RESERVOIR, CA

LOCATION.--Lat 38°23'24", long 120°00'22", in SW 1/4 NW 1/4 sec.9, T.6 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 1,800 ft downstream from Spicer Meadows Reservoir dam, 5.2 mi upstream from mouth, and 6.3 mi east of Big Meadow.

DRAINAGE AREA.--42.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1952 to current year.

REVISED RECORDS.--WSP 1930: 1953.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 6,340 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1952 to November 1986, at site 900 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Periods of ice effect, Jan. 5-23, Feb. 2, 3. Records fair except those for periods of estimated discharge, which are poor. Low and medium flows regulated by Spicer Meadows Reservoir 1,800 ft upstream, capacity, 4,060 acre-ft. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--36 years, 125 ft<sup>3</sup>/s, 90,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,860 ft<sup>3</sup>/s, Jan. 31, 1963, gage height, 11.88 ft, site and datum then in use, from rating curve extended above 1,200 ft<sup>3</sup>/s; no flow some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 20, 1950, reached a stage of 11.50 ft, site and datum then in use, from Pacific Gas & Electric Co. recorder chart, discharge, 8,800 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 448 ft<sup>3</sup>/s, May 12, gage height, 3.90 ft; minimum daily, 0.53 ft<sup>3</sup>/s, Nov. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.3	3.3	10	30	126	118	185	93	37	24	3.0
2	1.1	.53	3.1	10	24	124	119	155	101	37	20	3.1
3	1.2	1.3	3.0	12	21	121	122	90	92	37	20	3.1
4	1.2	1.4	2.5	13	23	118	121	87	92	37	20	3.0
5	.92	1.4	5.1	19	23	117	120	110	71	37	11	3.0
6	.93	1.4	9.6	14	24	117	122	110	59	34	5.9	2.9
7	1.6	1.3	23	13	26	116	175	110	71	32	5.8	3.0
8	2.5	1.3	19	16	33	116	242	109	70	31	6.4	3.1
9	3.2	1.2	16	17	41	118	237	105	66	31	5.5	3.3
10	3.4	1.0	26	17	47	119	202	68	54	30	3.8	3.3
11	3.2	1.0	35	14	52	117	175	84	43	30	3.8	3.3
12	3.3	1.0	26	12	38	114	212	309	53	27	3.5	3.2
13	3.1	1.8	14	12	17	112	256	261	49	25	3.6	3.4
14	2.7	1.4	8.0	13	18	110	256	190	47	28	4.1	3.2
15	3.4	1.3	6.1	16	19	109	225	210	48	28	3.8	3.1
16	3.6	1.3	13	16	20	106	180	268	50	28	3.6	3.4
17	3.0	1.6	19	15	20	104	166	286	42	28	3.5	3.5
18	1.8	1.4	7.4	11	23	103	167	227	37	27	3.1	3.4
19	1.4	1.4	4.0	11	24	104	169	165	37	27	3.4	3.4
20	2.5	1.7	5.9	12	28	108	170	140	37	26	4.1	3.3
21	2.6	1.8	7.4	12	37	89	139	185	37	26	4.1	3.2
22	2.9	1.9	16	13	38	35	123	211	37	26	3.6	3.1
23	3.1	2.3	22	16	39	37	123	153	36	26	4.0	2.7
24	3.0	2.5	18	30	29	68	123	143	37	27	4.4	1.9
25	2.9	2.6	13	36	13	240	149	151	38	26	4.4	1.4
26	2.7	2.7	12	39	58	243	179	124	38	26	4.3	1.7
27	2.6	3.0	11	37	126	231	185	91	38	25	4.3	2.3
28	3.2	3.2	12	37	127	228	194	100	38	25	4.3	1.9
29	3.0	3.3	13	38	126	201	190	160	38	25	4.2	1.6
30	2.4	3.2	11	36	---	157	187	91	37	25	4.2	1.4
31	2.1	---	11	33	---	133	---	85	---	24	3.6	---
TOTAL	75.65	52.53	395.4	600	1144	3941	5146	4763	1586	898	204.3	85.2
MEAN	2.44	1.75	12.8	19.4	39.4	127	172	154	52.9	29.0	6.59	2.84
MAX	3.6	3.3	35	39	127	243	256	309	101	37	24	3.5
MIN	.92	.53	2.5	10	13	35	118	68	36	24	3.1	1.4
AC-FT	150	104	784	1190	2270	7820	10210	9450	3150	1780	405	169
CAL YR 1987	TOTAL	19062.18	MEAN	52.2	MAX	600	MIN	.53	AC-FT	37810		
WTR YR 1988	TOTAL	18891.08	MEAN	51.6	MAX	309	MIN	.53	AC-FT	37470		



## SAN JOAQUIN RIVER BASIN

11294500 NORTH FORK STANISLAUS RIVER NEAR AVERY, CA

LOCATION.--Lat 38°14'38", long 120°17'24", in SW 1/4 NE 1/4 sec.35, T.5 N., R.15 E., Calaveras County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 700 ft upstream from intake of Utica Canal, 3.3 mi upstream from Beaver Creek, and 5.1 mi northeast of Avery.

DRAINAGE AREA.--163 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1914 to September 1925, November 1928 to current year. Yearly discharge only for some years, published in WSP 1315-A.

REVISED RECORDS.--WSP 1215: 1938(M). WSP 1515: 1915(M), 1932(M), 1936(M), 1938, 1940(M).

GAGE.--Water-stage recorder. Datum of gage is 3,388.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to September 1922, nonrecording gage at same site at datum 0.05 ft lower.

REMARKS.--No estimated daily discharges. Low and medium flows regulated by Union and Utica Reservoirs, Lake Alpine (stations 11293350, 11293370, and 11293460) and Spicer Meadows Reservoir, capacity, 4,060 acre-ft. No upstream diversions during current year. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--71 years, 427 ft<sup>3</sup>/s, 309,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft<sup>3</sup>/s, Jan. 31, 1963, gage height, 15.00 ft, from floodmarks, from rating curve extended above 14,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 13.8 ft; minimum daily, 5.5 ft<sup>3</sup>/s, Dec. 6, 7, 1929.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 854 ft<sup>3</sup>/s, Apr. 26, gage height, 4.47 ft; minimum daily, 12 ft<sup>3</sup>/s, Aug. 10, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	18	23	40	96	350	334	497	189	52	29	27
2	26	17	26	39	84	307	363	433	202	51	28	28
3	25	18	26	59	82	322	413	351	174	50	37	30
4	25	17	27	82	82	317	366	312	166	49	37	29
5	25	16	26	133	80	333	386	324	158	49	37	29
6	24	17	32	125	84	344	467	313	126	48	34	28
7	24	17	84	100	86	323	551	308	138	47	25	28
8	24	17	68	89	97	331	633	315	151	44	18	28
9	24	16	64	80	117	387	556	309	139	44	13	29
10	25	15	93	90	134	312	555	289	122	43	12	29
11	26	15	100	105	154	276	547	280	109	42	12	29
12	27	15	79	85	168	253	555	522	92	41	27	28
13	28	18	49	78	143	241	600	624	106	39	32	29
14	24	31	51	74	128	250	716	486	90	36	34	29
15	23	27	34	77	141	269	653	476	88	37	32	30
16	22	19	27	78	151	247	547	523	86	39	35	30
17	20	19	26	75	122	243	475	628	85	38	38	30
18	20	35	34	68	123	273	451	530	72	37	38	30
19	20	25	30	68	106	333	524	395	67	36	37	30
20	19	23	21	64	114	354	572	332	67	36	37	31
21	18	39	20	66	134	364	490	330	68	37	38	32
22	16	39	50	70	153	288	429	378	67	36	38	31
23	23	37	77	79	170	314	392	336	61	36	36	31
24	24	29	60	99	166	386	479	286	60	36	32	30
25	20	20	51	116	166	507	583	285	67	39	32	30
26	17	14	49	120	169	637	692	265	74	37	32	29
27	16	21	42	114	301	618	735	214	62	34	32	29
28	24	20	43	110	393	561	673	191	58	31	27	29
29	27	20	44	111	373	519	617	297	55	30	27	29
30	28	20	44	111	---	476	564	275	54	30	27	29
31	19	---	36	102	---	395	---	193	---	29	27	---
TOTAL	709	654	1436	2707	4317	11130	15918	11297	3053	1233	940	880
MEAN	22.9	21.8	46.3	87.3	149	359	531	364	102	39.8	30.3	29.3
MAX	28	39	100	133	393	637	735	628	202	52	38	32
MIN	16	14	20	39	80	241	334	191	54	29	12	27
AC-FT	1410	1300	2850	5370	8560	22080	31570	22410	6060	2450	1860	1750

CAL YR 1987 TOTAL 48421.8 MEAN 133 MAX 968 MIN 8.8 AC-FT 96040  
WTR YR 1988 TOTAL 54274 MEAN 148 MAX 735 MIN 12 AC-FT 107700

LOCATION.--Lat 38°14'25", long 120°17'25", in NW 1/4 SE 1/4 sec.35, T.5 N., R.15 E., Calaveras County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 1,100 ft downstream from diversion dam on North Fork Stanislaus River and 5 mi northeast of Avery.

GAGE.--Water-stage recorder and wood control. Elevation of gage is 3,370 ft above National Geodetic Vertical Datum of 1929, from topographic map.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 92 ft<sup>3</sup>/s, May 25, 1988; minimum daily, 6.3 ft<sup>3</sup>/s, Sept. 19, 1986.

[illegible]

## SAN JOAQUIN RIVER BASIN

11295400 STANISLAUS RIVER NEAR HATHAWAY PINES, CA

LOCATION.--Lat 38°08'29", long 120°22'19", in NW 1/4 SW 1/4 sec.6, T.3 N., R.15 E., Calaveras County, Hydrologic Unit 18040010, on right bank 1,000 ft upstream from Stanislaus powerplant and 3.6 mi south of Hathaway Pines.

DRAINAGE AREA.--629 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1967 to current year.

REVISED RECORDS.--WDR CA-80-3: 1979.

GAGE.--Water-stage recorder. Datum of gage is 1,077.21 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.). Prior to Oct. 1, 1982, published at datum 47.21 ft higher.

REMARKS.--No estimated daily discharges. Records good. Many diversions above station for hydroelectric powerplants. Small diversions for domestic water supply. Stanislaus tunnel diverts from left bank of Middle Fork Stanislaus River 13.7 mi upstream from station in SE 1/4 sec.24, T.4 N., R.16 E., to Stanislaus powerplant 1,000 ft downstream from station. See schematic diagram of Stanislaus River basin. For records of combined discharge of river and tunnel, see following page.

COOPERATION.--Records of diversion to Stanislaus powerplant were provided by Pacific Gas & Electric Co.

AVERAGE DISCHARGE.--River only: 21 years, 896 ft<sup>3</sup>/s, 649,200 acre-ft/yr.  
Combined river and powerplant: 21 years, 1,350 ft<sup>3</sup>/s, 978,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 46,200 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 23.5 ft, from outside highwater mark, from rating curve extended above 10,000 ft<sup>3</sup>/s on basis of computation of peak flow over a weir; minimum daily, 9.4 ft<sup>3</sup>/s, Aug. 7, 1977.  
Combined flow, maximum discharge, 46,700 ft<sup>3</sup>/s, Feb. 19, 1986; minimum daily, 27 ft<sup>3</sup>/s, July 20, 1977.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 820 ft<sup>3</sup>/s, Apr. 27, gage height, 9.01 ft; minimum daily, 36 ft<sup>3</sup>/s, Aug. 18, 19.  
Combined flow, maximum discharge, 1,010 ft<sup>3</sup>/s, Apr. 27; minimum daily, 40 ft<sup>3</sup>/s, Oct. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	85	45	59	104	480	320	519	193	73	60	61
2	59	84	50	58	93	396	325	466	191	73	60	60
3	58	82	50	80	84	384	369	395	194	73	60	60
4	60	82	48	128	83	369	343	336	170	70	61	60
5	58	82	49	209	81	375	340	339	161	71	61	60
6	57	82	50	204	83	381	395	339	135	73	61	60
7	57	82	85	144	84	360	474	330	125	73	61	62
8	57	82	78	126	85	359	563	345	146	74	61	60
9	57	82	68	108	105	409	503	338	139	73	65	62
10	57	82	71	96	127	346	496	315	132	70	66	61
11	57	79	89	139	157	295	476	290	115	70	66	60
12	58	78	85	108	173	265	481	427	103	68	65	60
13	59	83	94	93	170	244	544	616	94	68	62	58
14	59	94	83	86	148	244	684	484	98	67	62	58
15	59	90	84	94	152	299	655	454	98	67	62	58
16	59	84	75	102	167	246	523	481	88	67	41	58
17	59	87	58	129	152	258	446	590	82	67	37	61
18	67	91	49	104	133	252	421	530	82	70	36	60
19	76	88	49	98	124	392	479	427	78	77	36	60
20	89	89	49	84	117	422	593	340	76	70	58	61
21	63	95	47	79	130	432	527	313	76	74	62	61
22	40	89	66	79	159	381	445	356	75	71	62	61
23	68	87	89	80	176	368	410	335	82	71	62	61
24	87	63	59	87	178	464	457	279	79	69	62	61
25	85	49	55	110	191	471	562	276	85	67	61	62
26	81	47	65	130	180	612	668	260	74	67	61	64
27	80	46	66	126	280	596	733	222	80	66	61	64
28	86	45	76	119	409	534	668	196	74	64	61	64
29	99	45	83	126	437	498	617	271	73	64	61	96
30	91	55	72	133	---	454	555	292	73	63	61	61
31	88	---	65	116	---	382	---	203	---	60	61	---
TOTAL	2090	2309	2052	3434	4562	11968	15072	11364	3271	2150	1816	1855
MEAN	67.4	77.0	66.2	111	157	386	502	367	109	69.4	58.6	61.8
MAX	99	95	94	209	437	612	733	616	194	77	66	96
MIN	40	45	45	58	81	244	320	196	73	60	36	58
AC-FT	4150	4580	4070	6810	9050	23740	29900	22540	6490	4260	3600	3680
CAL YR 1987	TOTAL	63150	MEAN 173	MAX 1060	MIN 40	AC-FT 125300						
WTR YR 1988	TOTAL	61943	MEAN 169	MAX 733	MIN 36	AC-FT 122900						

## SAN JOAQUIN RIVER BASIN

11295401 STANISLAUS RIVER NEAR HATHAWAY PINES, CA--Continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF STANISLAUS RIVER AND STANISLAUS TUNNEL AT OUTLET,  
NEAR HATHAWAY PINES, CA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

## MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	311	85	85	121	215	761	498	679	704	580	562	504
2	302	84	148	116	202	672	507	605	701	583	561	509
3	283	82	153	150	193	661	554	502	703	583	561	431
4	291	82	143	198	193	650	522	421	679	579	562	368
5	292	82	120	282	188	655	513	425	670	581	562	367
6	296	82	125	280	193	662	555	423	644	578	562	341
7	299	82	165	216	195	649	652	417	634	574	558	311
8	298	82	157	188	192	641	744	433	655	576	554	115
9	298	82	147	175	212	689	679	430	648	574	558	117
10	294	82	162	166	233	621	677	394	642	569	559	116
11	298	79	170	209	263	565	660	367	624	566	559	115
12	299	78	164	180	283	537	659	505	612	568	557	105
13	300	83	168	170	280	516	687	696	604	580	554	103
14	300	94	158	159	228	516	822	564	606	580	551	103
15	300	90	158	165	236	488	796	540	607	581	557	98
16	304	84	147	174	249	396	662	589	598	579	555	103
17	297	87	128	226	232	406	586	690	591	569	551	116
18	183	91	118	186	227	402	559	939	591	585	550	110
19	77	88	116	193	452	545	616	860	587	593	539	100
20	89	89	116	187	394	578	735	772	586	585	539	101
21	63	95	114	184	395	597	667	740	586	587	539	101
22	40	116	141	191	426	543	584	784	584	584	536	101
23	68	123	175	191	437	531	553	764	593	582	536	101
24	87	99	118	198	451	636	597	744	588	573	538	101
25	85	86	95	224	465	653	700	791	594	572	536	102
26	81	85	111	245	303	794	817	777	582	568	537	104
27	80	82	115	241	407	787	926	737	582	570	536	102
28	86	82	133	231	541	722	860	710	585	568	533	104
29	99	82	163	242	708	687	807	784	578	570	530	266
30	91	92	132	249	---	642	738	803	578	570	527	380
31	88	---	124	228	---	559	---	714	---	565	517	---
TOTAL	6279	2630	4269	6165	8993	18761	19932	19599	18536	17872	16976	5695
MEAN	203	87.7	138	199	310	605	664	632	618	577	548	190
MAX	311	123	175	282	708	794	926	939	704	593	562	509
MIN	40	78	85	116	188	396	498	367	578	565	517	98
AC-FT	12450	5220	8470	12230	17840	37210	39540	38870	36770	35450	33670	11300
CAL YR 1987	TOTAL	147588	MEAN	404	MAX	1250	MIN	40	AC-FT	292700		
WTR YR 1988	TOTAL	145707	MEAN	398	MAX	939	MIN	40	AC-FT	289000		

## SAN JOAQUIN RIVER BASIN

11295900 PINECREST LAKE AT PINECREST, CA

LOCATION.--Lat 38°11'59", long 119°59'11", in NE 1/4 SW 1/4 sec.15, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on south side of intake tower, 400 ft upstream from dam on South Fork Stanislaus River, and 0.7 mi north of Pinecrest.

DRAINAGE AREA.--26.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1981-85 available in files of U.S. Geological Survey.

GAGE.--Nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete-faced, rockfill dam, completed in 1916; storage began in 1916.

Capacity, 18,312 acre-ft between elevations 5,498.7 ft, outlet drain, and 5,617.5 ft, top of flash boards in spillway. Released water flows down South Fork Stanislaus River to diversion dam for Philadelphia Canal (station 11297000) for use at Spring Gap powerplant on Middle Fork Stanislaus River. Figures given here, including extremes, represent total contents. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 18,312 acre-ft, many days during May to July most years, elevation, 5,617.5 ft; minimum, 3,388 acre-ft, Feb. 13, 1988, elevation, 5,553.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 18,312 acre-ft, May 28 to June 19, elevation, 5,617.5 ft; minimum, 3,388 acre-ft, Feb. 13, elevation, 5,548.7 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated 1938 provided by Pacific Gas & Electric Co.)

5,498.7	0	5,520.0	792	5,550.0	3,534	5,580.0	8,576
5,500.0	53	5,530.0	1,558	5,560.0	4,738	5,600.0	13,537
5,510.0	278	5,540.0	2,475	5,570.0	6,395	5,617.5	18,312

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10172	7105	6914	4994	4094	4448	8599	15246	18312	17897	16074	15060
2	9929	7084	6767	4965	3998	4535	8833	15379	18312	17809	16048	14875
3	9783	7084	6600	4951	3915	4611	9068	15512	18312	17635	16021	14822
4	9591	7191	6395	4937	3856	4698	9233	15592	18312	17548	15994	14633
5	9447	7234	6314	4937	3798	4789	9376	15646	18312	17519	15940	14558
6	9281	7191	6234	5037	3694	4869	9663	15646	18312	17490	15913	14453
7	9115	7191	6156	5037	3613	4965	10001	15673	18312	17433	15887	14347
8	8950	7212	6117	5080	3556	5095	10245	15673	18312	17347	15860	14216
9	8739	7234	6059	5037	3511	5231	10540	15780	18312	17290	15833	14085
10	8530	7234	6040	5008	3443	5309	10887	15860	18312	17233	15806	14033
11	8322	7234	6021	4994	3421	5438	11162	16021	18312	17176	15753	13928
12	8117	7234	6002	4994	3399	5555	11464	16398	18312	17148	15726	13824
13	7982	7234	5909	4979	3388	5572	11716	16811	18312	17063	15699	13719
14	7825	7298	5818	4965	3399	5606	12046	17319	18312	16979	15673	13589
15	7648	7342	5764	4951	3421	5640	12301	17722	18312	16923	15646	13511
16	7494	7385	5710	4937	3443	5675	12556	18163	18312	16811	15619	13407
17	7342	7320	5555	4924	3443	5728	12762	18282	18312	16783	15592	13303
18	7234	7385	5487	4910	3466	5818	12890	18282	18312	16728	15566	13200
19	7169	7385	5407	4882	3511	5946	13045	18282	18312	16645	15539	13148
20	7020	7320	5277	4855	3568	6117	13278	18282	18282	16535	15512	13019
21	7020	7255	5200	4842	3636	6254	13485	18282	18252	16371	15486	12942
22	6999	7277	5155	4611	3659	6375	13641	18282	18222	16209	15459	12813
23	6956	7277	5140	4510	3775	6539	13719	18282	18163	16209	15432	12736
24	6935	7234	5140	4473	3868	6746	13850	18282	18074	16209	15406	12608
25	6914	7191	5125	4461	3939	6999	13980	18282	18074	16182	15379	12505
26	6893	7148	5125	4399	3998	7385	14242	18282	18163	16182	15352	12403
27	6872	7105	5110	4349	4130	7714	14505	18282	18193	16155	15326	12275
28	6893	7020	5095	4300	4142	7915	14663	18312	18104	16128	15299	12199
29	7126	6999	5082	4263	4374	8140	14875	18312	18074	16128	15273	12097
30	7126	6977	5066	4215	---	8322	15087	18312	17986	16101	15273	11995
31	7105	---	5008	4154	---	8460	---	18312	---	16074	15246	---
MAX	10172	7385	6914	5080	4374	8460	15087	18312	18312	17897	16074	15060
MIN	6872	6977	5008	4154	3388	4448	8599	15246	17986	16074	15246	11995
a	5573.4	5572.8	5562.0	5555.3	5557.1	5579.5	5605.9	5617.5	5616.4	5609.6	5606.5	5594.0
b	-3287	-128	-1969	-854	+220	+4126	+6587	+3225	-326	-1912	-828	-3251

CAL YR 1987 MAX 18312 MIN 3939 b +708

WTR YR 1988 MAX 18312 MIN 3388 b +1603

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

LOCATION.--Lat 38°11'51", long 120°00'27", in SW 1/4 SW 1/4 sec.16, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 0.4 mi downstream from bridge on State Highway 108 at Strawberry, 0.6 mi downstream from Herring Creek, and 1.2 mi downstream from Pinecrest Lake.

PERIOD OF RECORD.--October 1911 to January 1917, August 1938 to current year. Monthly discharge only for October 1913 and yearly estimates for 1912-13. published in WSP 1315-A. Published as "near Confidence" 1911-13.

GAGE.--Water-stage recorder. Datum of gage is 5,235.1 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). October 1911 to January 1917, nonrecording gage at site 1 mi downstream at different datum.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,900 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 9.25 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow at bridge 0.3 mi downstream from station; minimum, 1.3 ft<sup>3</sup>/s, Nov. 22, 23, 1946.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	8.7	54	29	61	29	47	55	146	60	12	69
2	89	6.6	86	29	60	28	53	59	140	61	12	69
3	89	6.6	85	30	60	28	56	70	144	60	12	69
4	88	6.6	68	30	59	29	45	76	142	59	12	69
5	88	6.6	57	34	59	31	54	70	111	52	12	68
6	87	6.9	58	33	59	33	70	72	82	34	12	48
7	87	6.9	59	31	59	27	77	74	82	35	12	55
8	87	6.9	58	31	58	25	74	74	78	34	12	55
9	89	6.9	59	30	59	29	69	76	89	34	12	55
10	90	6.9	60	31	58	24	79	88	86	33	12	55
11	89	6.3	60	31	60	22	81	108	85	33	12	54
12	90	5.8	59	30	61	21	79	109	80	35	12	54
13	89	6.1	59	30	48	19	72	116	81	36	12	54
14	88	6.1	59	29	36	20	72	121	80	36	12	54
15	87	5.8	59	29	36	21	62	135	75	35	12	54
16	59	18	58	30	37	20	62	213	69	25	12	54
17	43	27	58	30	32	20	60	334	61	29	12	53
18	43	28	58	41	22	24	59	265	57	61	11	53
19	43	28	57	55	14	32	56	258	60	61	11	53
20	29	28	57	54	12	37	53	280	60	61	11	53
21	9.2	28	55	59	14	38	47	301	61	60	11	53
22	12	28	47	63	15	37	44	291	65	34	11	52
23	12	28	39	62	20	47	41	264	68	13	11	52
24	11	28	23	62	24	54	42	250	68	13	11	52
25	10	27	17	63	27	60	54	205	80	14	11	52
26	10	27	19	63	29	71	107	185	75	12	11	52
27	10	28	27	62	32	70	104	151	69	12	11	52
28	11	28	30	61	35	59	72	153	66	10	11	52
29	11	28	30	61	31	54	68	238	52	12	11	51
30	11	28	30	61	---	53	67	167	57	12	11	47
31	11	---	29	61	---	45	---	158	---	12	49	---
TOTAL	1662.2	506.7	1574	1345	1177	1107	1926	5016	2469	1078	396	1663
MEAN	53.6	16.9	50.8	43.4	40.6	35.7	64.2	162	82.3	34.8	12.8	55.4
MAX	90	28	86	63	61	71	107	334	146	61	49	69
MIN	9.2	5.8	17	29	12	19	41	55	52	10	11	47
AC-FT	3300	1010	3120	2670	2330	2200	3820	9950	4900	2140	785	3300
CAL YR 1987	TOTAL 18467.1	MEAN 50.6	MAX 502	MIN 3.7	AC-FT 36630							
WTR YR 1988	TOTAL 19919.9	MEAN 54.4	MAX 334	MIN 5.8	AC-FT 39510							

## SAN JOAQUIN RIVER BASIN

11297000 PHILADELPHIA CANAL NEAR STRAWBERRY, CA

LOCATION.--Lat 38°10'42", long 120°02'44", in NW 1/4 NW 1/4 sec.30, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on right bank 250 ft downstream from diversion dam on South Fork Stanislaus River, and 2.8 mi southwest of Strawberry.

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,960 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Estimated daily discharges: June 25-30, July 25 to Sept. 12. Canal diverts from right bank of South Fork Stanislaus River for power development at Spring Gap powerplant of Pacific Gas & Electric Co.; tailrace empties into Middle Fork Stanislaus River. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--49 years, 42.5 ft<sup>3</sup>/s, 30,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 66 ft<sup>3</sup>/s, June 16, 1984; no flow at times in some years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	.57	22	26	58	3.3	41	48	58	52	4.5	60
2	50	.21	60	24	58	.31	46	50	58	54	4.5	61
3	50	.21	60	25	57	.24	49	57	58	52	3.8	61
4	50	.21	45	26	57	.21	39	60	59	51	3.8	60
5	49	.21	32	28	56	.21	33	57	58	46	3.8	60
6	49	.21	32	28	56	.22	31	58	58	26	3.8	43
7	48	.21	32	28	56	12	44	60	59	27	3.8	53
8	48	.21	32	28	55	20	43	60	59	27	3.6	49
9	49	.21	33	27	56	25	40	60	60	26	3.4	47
10	50	.21	34	27	55	21	47	59	60	26	3.2	50
11	51	.21	34	28	57	17	51	59	59	26	3.2	55
12	51	.42	34	28	58	14	35	58	59	27	3.0	55
13	51	.66	33	27	47	13	.40	59	59	29	3.0	56
14	50	.67	33	27	32	14	.21	59	59	29	2.8	56
15	49	.67	33	27	33	16	.21	59	59	28	3.0	56
16	22	.62	33	28	34	15	.21	59	58	17	2.8	55
17	1.8	.56	33	28	30	15	.21	59	52	21	2.7	55
18	1.8	.62	33	35	20	18	.21	59	50	53	2.7	55
19	25	.56	32	50	10	22	.21	58	53	54	2.6	55
20	26	.65	32	51	6.9	26	.21	58	51	53	2.4	54
21	.21	.67	30	55	8.9	30	.21	59	56	53	2.4	54
22	.63	.67	31	60	10	30	.21	59	61	37	2.2	54
23	.97	.67	33	60	6.8	37	.21	58	60	5.4	2.4	54
24	.97	.67	22	60	.21	42	.21	58	60	5.1	2.4	54
25	.97	.45	31	60	.21	44	.21	57	60	5.4	2.4	54
26	.97	.26	26	60	.34	52	30	59	58	.00	2.2	54
27	.97	.21	26	60	.41	57	57	59	60	.00	2.2	54
28	.97	.21	27	59	.31	52	57	59	58	.00	2.2	53
29	.97	.28	27	58	.31	47	57	58	48	4.5	2.2	52
30	.97	.25	27	59	---	47	58	57	49	4.5	2.0	49
31	.97	---	28	59	---	40	---	58	---	4.5	34	---
TOTAL	832.17	12.44	1020	1246	919.39	730.49	760.92	1797	1716	843.40	123.0	1628
MEAN	26.8	.41	32.9	40.2	31.7	23.6	25.4	58.0	57.2	27.2	3.97	54.3
MAX	51	.67	60	60	58	57	58	60	61	54	34	61
MIN	.21	.21	22	24	.21	.21	.21	48	48	.00	2.0	43
AC-FT	1650	25	2020	2470	1820	1450	1510	3560	3400	1670	244	3230

CAL YR 1987 TOTAL 9073.27 MEAN 24.9 MAX 63 MIN .21 AC-FT 18000  
WTR YR 1988 TOTAL 11628.81 MEAN 31.8 MAX 61 MIN .00 AC-FT 23070

## SAN JOAQUIN RIVER BASIN

11297200 SOUTH FORK STANISLAUS RIVER NEAR STRAWBERRY, CA

LOCATION.--Lat 38°10'40", long 120°02'45", in NW 1/4 NW 1/4 sec.30, T.4 N., R.18 E., Tuolumne County, Hydrologic Unit 18040010, on right bank 400 ft downstream from diversion dam and 2.8 mi southwest of Strawberry.

DRAINAGE AREA.--48.5 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1970, 1976-85 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Elevation of gage is 4,915 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 50 ft<sup>3</sup>/s. Flow regulated by Pinecrest Lake (station 11295900). Most of the water is diverted at diversion dam 400 ft upstream to Philadelphia Canal (station 11297000). See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	9.1	28	7.5	5.2	26	5.3	8.0	---	7.6	7.6	11
2	39	6.4	29	6.9	5.1	27	5.4	8.2	---	7.7	7.4	8.2
3	39	6.0	28	8.3	5.3	28	7.1	12	---	7.6	7.5	7.7
4	39	5.9	27	8.6	5.2	28	5.1	17	---	7.5	7.6	7.7
5	39	6.0	28	10	5.2	30	17	13	49	7.6	7.6	7.6
6	39	6.6	30	8.3	5.2	31	36	14	25	7.7	7.5	7.8
7	39	6.3	30	6.0	5.1	17	31	15	23	7.7	7.4	7.6
8	39	6.2	29	5.0	5.1	6.4	31	14	20	7.7	7.4	7.2
9	40	6.0	28	5.0	5.2	5.7	27	17	29	7.6	7.5	7.2
10	40	6.0	29	5.5	5.2	5.1	31	26	26	7.5	7.5	7.2
11	39	5.8	28	5.6	5.3	5.1	29	44	26	7.5	7.5	7.2
12	40	4.4	28	5.3	5.3	6.3	40	45	21	7.5	7.5	7.2
13	39	5.2	28	5.1	5.3	7.0	---	---	22	7.5	7.4	7.3
14	39	4.8	28	5.1	5.1	6.4	---	---	21	7.4	7.4	7.4
15	39	4.6	28	5.4	5.1	5.6	---	---	17	7.4	7.5	7.3
16	39	14	28	5.5	5.0	5.1	---	---	12	8.0	7.4	7.2
17	40	28	27	4.8	5.0	5.1	---	---	8.9	8.0	7.4	7.2
18	40	28	27	6.6	5.1	5.7	---	---	7.9	8.0	7.7	7.2
19	19	28	28	7.1	5.2	8.9	---	---	8.6	7.3	7.9	7.2
20	9.9	28	27	4.9	5.2	11	48	---	8.9	7.4	7.8	7.2
21	8.0	28	27	5.6	5.0	9.2	42	---	8.0	7.5	7.7	7.4
22	12	28	20	5.6	5.2	5.1	40	---	8.5	7.4	7.7	7.3
23	11	28	9.5	5.3	12	7.7	37	---	8.7	7.7	7.7	7.2
24	11	27	5.8	5.4	23	11	38	---	8.5	7.8	7.4	7.2
25	9.4	27	12	5.6	26	13	46	---	19	9.3	7.4	7.2
26	9.1	28	7.7	6.4	27	18	---	---	16	12	7.2	7.2
27	9.1	29	7.5	6.2	29	16	41	---	10	12	7.4	7.2
28	10	28	7.5	5.4	34	8.0	16	---	8.0	10	7.6	7.2
29	10	28	7.5	5.3	30	5.8	13	---	11	7.9	7.5	7.1
30	9.4	28	7.5	5.2	---	5.4	11	---	7.6	7.7	7.5	7.3
31	9.2	---	7.5	5.1	---	5.1	---	---	---	7.4	11	---
TOTAL	844.1	494.3	682.5	187.6	294.6	374.7	---	---	---	248.9	236.6	223.9
MEAN	27.2	16.5	22.0	6.05	10.2	12.1	---	---	---	8.03	7.63	7.46
MAX	40	29	30	10	34	31	---	---	---	12	11	11
MIN	8.0	4.4	5.8	4.8	5.0	5.1	---	---	---	7.3	7.2	7.1
AC-FT	1670	980	1350	372	584	743	---	---	---	494	469	444



## SAN JOAQUIN RIVER BASIN

11297500 TUOLUMNE CANAL NEAR LONG BARN, CA

LOCATION.--Lat 38°05'35", long 120°10'03", in SE 1/4 SW 1/4 sec.24, T.3 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank 300 ft downstream from intake, 350 ft downstream from Lyons Reservoir on South Fork Stanislaus River, 2 mi west of Long Barn, and 15 mi northeast of Sonora.

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,110.0 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to June 1938, at site 200 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Canal diverts from left bank of South Fork Stanislaus River into Tuolumne River basin for power and domestic supply in vicinity of Sonora. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--51 years, 28.6 ft<sup>3</sup>/s, 20,720 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 59 ft<sup>3</sup>/s, May 11, 1975; no flow at times in some years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	21	22	28	22	21	22	18	45	30	33	33
2	31	2.2	22	28	22	21	22	17	44	30	34	33
3	30	5.9	22	28	22	20	22	16	45	30	34	33
4	30	11	22	25	22	20	22	16	45	30	34	33
5	30	.00	22	24	22	20	22	16	46	30	33	33
6	30	16	22	23	22	20	22	16	46	30	33	33
7	30	36	22	22	22	20	22	16	46	30	33	33
8	30	35	22	22	22	20	22	16	34	30	33	33
9	31	3.6	22	22	22	20	23	16	25	30	33	33
10	30	.00	22	22	22	20	23	16	25	30	33	33
11	30	.00	22	22	22	20	23	16	25	31	33	33
12	29	.00	22	22	22	20	23	16	24	32	33	33
13	28	20	22	22	22	20	23	15	24	32	33	33
14	26	35	22	22	22	20	24	15	24	32	33	33
15	25	35	22	22	22	20	23	15	24	32	33	33
16	25	28	22	24	22	20	23	15	24	32	33	33
17	25	23	22	26	21	20	23	15	23	32	33	33
18	25	23	22	24	21	20	22	15	24	33	33	33
19	25	22	22	22	21	20	22	15	24	32	33	33
20	23	22	22	22	21	20	21	26	24	32	33	33
21	22	22	22	22	21	20	20	34	24	32	33	33
22	22	22	22	22	21	21	20	38	24	32	33	33
23	22	22	22	22	21	21	20	45	24	33	33	33
24	22	22	22	22	21	21	20	47	24	32	33	33
25	22	22	22	22	21	21	19	48	27	32	33	33
26	22	22	22	22	21	21	18	47	29	32	33	33
27	22	22	22	22	20	21	18	47	29	32	33	33
28	22	22	22	22	20	21	18	47	29	32	33	33
29	21	22	26	22	21	21	18	47	29	32	33	33
30	21	22	29	22	---	21	18	47	29	32	33	32
31	21	---	29	22	---	21	---	46	---	32	33	---
TOTAL	802	558.70	700	714	623	632	638	819	909	973	1026	989
MEAN	25.9	18.6	22.6	23.0	21.5	20.4	21.3	26.4	30.3	31.4	33.1	33.0
MAX	31	36	29	28	22	21	24	48	46	33	34	33
MIN	21	.00	22	22	20	20	18	15	23	30	33	32
AC-FT	1590	1110	1390	1420	1240	1250	1270	1620	1800	1930	2040	1960

CAL YR 1987 TOTAL 10049.70 MEAN 27.5 MAX 48 MIN .00 AC-FT 19930  
WTR YR 1988 TOTAL 9383.70 MEAN 25.6 MAX 48 MIN .00 AC-FT 18610

## SAN JOAQUIN RIVER BASIN

## 11297700 LYONS RESERVOIR NEAR LONG BARN, CA

LOCATION.--Lat 38°05'38", long 120°09'59", in SW 1/4 NE 1/4 sec.24, T.3 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, on upstream side of dam near radial spill gates and 1.6 mi west of Long Barn.

DRAINAGE AREA.--66.8 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for 1981-85 water years are available in files of U.S. Geological Survey.

GAGE.--Nonrecording gage read three times weekly. Datum of gage is 4,134 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete arch dam completed in 1930; storage began in 1930. Usable capacity, 5,504 acre-ft between gage heights 0.0 ft, invert of outlet, and 86.0 ft, top of spillway gates. Dead storage, 4 acre-ft. Part of the released water is diverted to Tuolumne Canal (station 11297500) near the base of the dam. Figures given here, including extremes, represent total contents. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 6,274 acre-ft, May 29, 1988, gage height, 90.3 ft; minimum, 847 acre-ft, Apr. 7, 1988, gage height, 41.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 6,274 acre-ft, May 29, gage height, 90.3 ft; minimum, 847 acre-ft, Apr. 7, gage height, 41.4 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co. in 1930)

20.0	210	60.0	2,070
25.0	309	70.0	3,153
30.0	437	80.0	4,541
40.0	786	90.0	6,219
50.0	1,299	92.5	6,680

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	1593	---	---	2183	6237	5543	3917	2154
2	---	2107	1939	---	---	1299	919	2173	6237	5508	---	---
3	2116	2125	---	---	1570	---	883	---	6237	5456	3807	2051
4	2125	2097	1967	1847	---	1382	852	2154	6237	5405	---	1995
5	---	---	---	---	1532	1443	---	---	6237	---	3683	---
6	2163	2107	1976	1948	1497	1483	---	2144	6219	5303	---	---
7	---	2051	---	---	1477	---	847	2144	6164	---	3561	1822
8	2183	1986	2051	1957	---	---	919	2144	6128	5201	---	---
9	---	1948	---	1930	1409	1532	874	---	6110	5150	3457	1715
10	2223	1948	---	1913	---	---	---	2144	6110	5099	---	1647
11	---	1967	2107	---	1361	1483	901	---	6128	5051	3340	---
12	2263	1967	2116	1939	---	1429	---	2243	6128	---	---	1540
13	---	1976	---	---	---	1416	988	2303	6128	4944	3226	---
14	2303	1913	2135	1922	1293	---	---	---	6110	---	---	1449
15	---	---	---	---	1269	---	1180	2501	6110	4831	---	---
16	2353	1806	2163	1913	---	1349	1275	---	6110	4768	3055	1388
17	2385	---	---	---	1226	---	1342	3177	6074	---	3000	1342
18	---	1789	2183	1872	---	1293	1409	3587	6037	---	2936	1287
19	2448	---	2193	---	1191	1269	---	3931	5982	4616	---	---
20	2416	---	---	1872	1153	---	1624	4346	5946	---	2820	---
21	---	1831	2213	---	1125	1226	---	4768	5910	4511	2762	1186
22	2353	---	---	1855	1097	1202	1773	5184	5893	---	---	1159
23	---	---	---	1814	---	---	1839	5525	5858	---	2649	1125
24	2313	1863	2223	---	1069	1141	1897	5928	5823	4346	---	1091
25	2313	---	---	1731	---	---	1957	6110	5788	4301	2543	1064
26	---	1880	---	---	1091	1102	---	6237	5753	4227	---	---
27	2233	---	---	---	1125	---	2154	6255	5735	4182	---	---
28	---	1897	---	1647	1159	---	---	6237	5683	---	2374	972
29	2193	---	---	---	1208	1054	2203	6274	---	4093	---	---
30	---	1922	---	1616	---	---	2193	6255	5596	---	2263	938
31	2144	---	1976	---	---	988	---	6255	---	3974	---	---

## SAN JOAQUIN RIVER BASIN

11298000 SOUTH FORK STANISLAUS RIVER NEAR LONG BARN, CA

LOCATION.--Lat 38°05'33", long 120°10'04", in NE 1/4 NW 1/4 sec.25, T.3 N., R.16 E., Tuolumne County, Hydrologic Unit 18040010, Stanislaus National Forest, on left bank 600 ft downstream from Lyons Dam, 1.9 mi west of Long Barn, and 15 mi northeast of Sonora.

DRAINAGE AREA.--66.9 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.--WSP 1215: 1938(M).

GAGE.--Water-stage recorder and masonry control. Datum of gage is 4,073.4 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Flow regulated by Lyons Reservoir (station 11297700) 600 ft upstream and Pinecrest Lake (station 11295900). Tuolumne Canal (station 11297500) diverts at Lyons Dam. For other diversions, see schematic diagram of Stanislaus River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--51 years, 84.6 ft<sup>3</sup>/s, 61,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,900 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 9.3 ft, from rating curve extended above 2,400 ft<sup>3</sup>/s, on basis of computation of peak flow over Lyons Dam; no flow at times in 1937-39, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 174 ft<sup>3</sup>/s, May 29, gage height, 2.70 ft; minimum daily, 1.8 ft<sup>3</sup>/s, July 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.1	2.1	3.0	2.5	2.6	2.4	2.5	50	2.7	2.6	2.5
2	2.1	3.1	2.1	3.0	2.5	2.5	2.3	2.5	43	2.5	2.5	2.5
3	2.1	2.8	2.1	3.0	2.5	2.5	2.5	2.5	42	2.5	2.5	2.5
4	2.2	2.2	2.1	2.8	2.5	2.5	2.6	2.5	40	2.5	2.5	2.5
5	2.2	2.7	2.1	2.6	2.5	2.5	2.5	2.5	27	2.5	2.5	2.5
6	2.2	2.5	2.2	2.5	2.5	2.5	2.5	2.5	5.0	2.5	2.5	2.5
7	2.2	2.2	2.2	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.5	2.5
8	2.1	2.2	2.2	2.5	2.5	2.4	2.5	2.5	2.6	2.5	2.4	2.5
9	2.0	3.2	2.1	2.6	2.5	2.3	2.5	2.5	2.7	2.5	2.4	2.5
10	2.1	3.0	2.1	2.7	2.5	2.4	2.7	2.5	2.7	2.5	2.5	2.5
11	2.1	2.7	2.1	2.7	2.5	2.5	2.6	2.5	2.6	2.5	2.5	2.5
12	2.1	2.7	2.1	2.7	2.5	2.5	2.6	2.5	2.5	2.5	2.5	2.5
13	2.1	2.7	2.2	2.7	2.5	2.5	2.6	2.5	2.5	2.5	2.5	2.5
14	2.1	2.3	2.1	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
15	2.1	2.3	2.1	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.5	2.5
16	2.1	2.3	2.1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4
17	2.1	2.3	2.1	2.5	2.5	2.4	2.5	2.6	2.5	2.5	2.5	2.4
18	2.1	2.2	2.1	2.5	2.5	2.4	2.5	2.5	2.5	2.5	2.5	2.5
19	2.1	2.0	2.1	2.4	2.5	2.5	2.6	2.5	2.5	2.5	2.5	2.4
20	2.1	2.1	2.1	2.5	2.5	2.5	2.6	2.5	2.5	2.5	2.5	2.4
21	2.1	2.1	2.1	2.5	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.3
22	2.1	2.1	2.2	2.5	2.5	2.5	2.6	2.5	2.5	2.4	2.6	2.3
23	2.2	2.1	2.1	2.5	2.5	2.5	2.6	6.7	2.5	1.8	2.6	2.5
24	2.1	2.1	2.3	2.5	2.5	2.4	2.5	16	2.5	2.1	2.5	2.6
25	2.1	2.1	2.5	2.5	2.5	2.5	2.5	17	2.5	2.5	2.5	2.5
26	2.1	2.1	2.5	2.5	2.5	2.5	2.5	60	2.5	2.5	2.5	2.5
27	2.1	2.1	2.4	2.5	2.5	2.5	2.5	59	2.5	2.5	2.5	2.5
28	2.2	2.1	2.4	2.5	2.5	2.5	2.5	48	2.5	2.5	2.5	2.5
29	2.1	2.1	2.4	2.5	2.5	2.5	2.5	133	2.5	2.5	2.5	2.4
30	2.1	2.1	2.3	2.5	---	2.5	2.5	86	2.6	2.7	2.5	2.4
31	2.1	---	2.5	2.5	---	2.5	---	64	---	2.6	2.5	---
TOTAL	65.6	70.6	68.1	80.3	72.5	76.9	75.5	544.7	267.7	76.8	77.6	74.1
MEAN	2.12	2.35	2.20	2.59	2.50	2.48	2.52	17.6	8.92	2.48	2.50	2.47
MAX	2.2	3.2	2.5	3.0	2.5	2.6	2.7	133	50	2.7	2.6	2.6
MIN	2.0	2.0	2.1	2.4	2.5	2.3	2.3	2.4	2.5	1.8	2.4	2.3
AC-FT	130	140	135	159	144	153	150	1080	531	152	154	147

CAL YR 1987 TOTAL 1370.0 MEAN 3.75 MAX 208 MIN 1.9 AC-FT 2720  
WTR YR 1988 TOTAL 1550.4 MEAN 4.24 MAX 133 MIN 1.8 AC-FT 3080

## SAN JOAQUIN RIVER BASIN

## 11299000 NEW MELONES RESERVOIR NEAR SONORA, CA

LOCATION.--Lat 37°57'02", long 120°30'49", in NW 1/4 SE 1/4 sec.11, T.1 N., R.13 E., Calaveras County, Hydrologic Unit 18040010, at right abutment of New Melones Dam on Stanislaus River, 0.1 mi downstream from the old Melones Dam, and 7.6 mi southwest of Sonora.

DRAINAGE AREA.--904 mi<sup>2</sup>.

PERIOD OF RECORD.--1926 (year-end contents only, published in WSP 1315-A), June 1927 to current year. Prior to October 1970, published as Melones Reservoir at Melones Dam. October 1970 to September 1978, published as Melones Lake near Sonora.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 28, 1961, nonrecording gage, and Mar. 1, 1961, to Nov. 26, 1978, water-stage recorder at site on left side of old Melones Dam, at same datum.

REMARKS.--Reservoir is formed by earth- and rockfill dam completed in November 1978. Dam is downstream from the original concrete dam which was completed in December 1926. Usable capacity 2,420,000 acre-ft between elevations 543.0 ft, invert entrance to outlet tunnel, and 1,088.0 ft, gross pool elevation. No dead storage. When elevation is above 808.0 ft, water is released through a powerplant to Tulloch Reservoir where it is used for irrigation. Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Stanislaus River basin.

COOPERATION.--Records were provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,400,000 acre-ft, July 8-10, 1983, elevation, 1,086.42 ft; minimum since reservoir first filled in July 1983, 988,500 acre-ft, Sept. 29, 1988, elevation, 940.83 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,455,000 acre-ft, Nov. 18, elevation, 998.21 ft; minimum, 988,500 acre-ft, Sept. 29, elevation, 940.83 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, dated September 1978)

700	53,900	760	160,500	880	611,500	1,000	1,471,000
710	66,950	780	212,300	900	723,000	1,020	1,662,000
720	81,800	800	272,800	920	846,500	1,040	1,867,000
730	98,530	820	342,400	940	982,600	1,060	2,087,000
740	117,200	840	421,800	960	1,132,000	1,088	2,420,000
750	137,800	860	511,200	980	1,295,000		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1443000	1451000	1449000	1428000	1443000	1444000	1381000	1357000	1278000	1205000	1121000	1050000
2	1443000	1451000	1449000	1428000	1444000	1443000	1380000	1354000	1277000	1203000	1117000	1046000
3	1443000	1452000	1449000	1429000	1444000	1443000	1377000	1351000	1274000	1201000	1114000	1044000
4	1444000	1452000	1449000	1430000	1445000	1443000	1375000	1348000	1272000	1199000	1111000	1040000
5	1445000	1452000	1448000	1431000	1446000	1442000	1373000	1344000	1270000	1197000	1110000	1037000
6	1445000	1452000	1449000	1432000	1446000	1442000	1372000	1340000	1268000	1194000	1107000	1035000
7	1445000	1452000	1449000	1433000	1447000	1442000	1370000	1337000	1267000	1192000	1106000	1032000
8	1445000	1452000	1450000	1431000	1445000	1441000	1369000	1334000	1267000	1190000	1105000	1029000
9	1446000	1453000	1449000	1431000	1446000	1440000	1369000	1330000	1265000	1188000	1103000	1028000
10	1446000	1453000	1450000	1432000	1446000	1440000	1368000	1326000	1263000	1186000	1101000	1026000
11	1447000	1453000	1449000	1433000	1446000	1439000	1367000	1323000	1260000	1184000	1100000	1023000
12	1447000	1453000	1450000	1433000	1447000	1437000	1365000	1320000	1258000	1181000	1098000	1020000
13	1448000	1453000	1450000	1434000	1448000	1436000	1363000	1318000	1256000	1180000	1096000	1017000
14	1448000	1453000	1450000	1433000	1448000	1435000	1362000	1317000	1252000	1178000	1095000	1015000
15	1449000	1453000	1449000	1434000	1447000	1432000	1362000	1315000	1249000	1177000	1094000	1012000
16	1449000	1454000	1449000	1435000	1448000	1430000	1361000	1312000	1245000	1176000	1092000	1009000
17	1450000	1454000	1450000	1436000	1448000	1426000	1361000	1310000	1242000	1173000	1090000	1007000
18	1450000	1455000	1449000	1437000	1449000	1423000	1359000	1308000	1239000	1171000	1087000	1004000
19	1450000	1454000	1449000	1438000	1449000	1420000	1359000	1306000	1236000	1168000	1085000	1001000
20	1450000	1453000	1449000	1439000	1450000	1417000	1360000	1302000	1234000	1164000	1083000	999700
21	1450000	1453000	1449000	1439000	1451000	1414000	1361000	1300000	1232000	1160000	1081000	998700
22	1450000	1453000	1448000	1439000	1452000	1411000	1361000	1298000	1229000	1157000	1079000	998200
23	1450000	1452000	1446000	1440000	1453000	1407000	1362000	1295000	1226000	1153000	1077000	997800
24	1450000	1452000	1444000	1441000	1453000	1405000	1362000	1293000	1223000	1149000	1075000	996800
25	1451000	1451000	1442000	1441000	1452000	1400000	1361000	1291000	1221000	1145000	1073000	996100
26	1451000	1451000	1441000	1442000	1450000	1398000	1361000	1289000	1218000	1141000	1071000	995400
27	1451000	1450000	1438000	1442000	1449000	1395000	1361000	1287000	1216000	1138000	1067000	992600
28	1451000	1450000	1437000	1443000	1447000	1392000	1361000	1285000	1213000	1134000	1064000	990300
29	1451000	1450000	1435000	1443000	1445000	1390000	1361000	1283000	1210000	1131000	1061000	988500
30	1451000	1449000	1433000	1444000	---	1387000	1359000	1281000	1207000	1128000	1058000	989300
31	1451000	---	1430000	1444000	---	1384000	---	1279000	---	1124000	1055000	---
MAX	1451000	1455000	1450000	1444000	1453000	1444000	1381000	1357000	1278000	1205000	1121000	1050000
MIN	1443000	1449000	1430000	1428000	1443000	1384000	1359000	1279000	1207000	1124000	1055000	988500
a	997.82	997.58	995.47	997.07	997.17	990.32	987.50	978.14	969.46	959.00	949.87	940.93
b	+8000	-2000	-19000	+14000	+1000	-61000	-25000	-80000	-72000	-83000	-69000	-65700
c	3873	1204	951	726	1762	3138	3096	4775	5962	7646	6546	4831

CAL YR 1987 b -490000

WTR YR 1988 b -453700

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, published as provided; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11299600 BLACK CREEK NEAR COPPEROPOLIS, CA

LOCATION.--Lat 37°57'40", long 120°36'51", in SE 1/4 SE 1/4, sec.2, T.1 N., R.12 E., Calaveras County, Hydrologic Unit 18040010, on left bank 100 ft upstream from O'Byrnes Ferry Road bridge, 1,300 ft upstream from Copper Creek, and 2.1 mi southeast of Copperopolis.

DRAINAGE AREA.--14.4 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1983 to current year.

REVISED RECORDS.--WDR CA-86-3; 1984(M).

GAGE.--Water-stage recorder. Datum of gage is 746.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion above station. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--5 years, 8.30 ft<sup>3</sup>/s, 6,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,200 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 9.10 ft, from rating curve extended above 2,500 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 17	1730	*15	*2.58				

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.16	.48	.74	3.9	.20	.39				
2		0	.18	.42	.73	2.1	.21	.35				
3		0	.14	.62	.66	1.2	.22	.34				
4		0	.16	.80	.66	.91	.22	.32				
5		0	.21	1.1	.66	.76	.19	.32				
6		0	.22	.73	.60	.72	.19	.38				
7		0	.35	.61	.59	.69	.19	.59				
8		0	.52	.72	.59	.65	.16	.62				
9		0	.48	.58	.59	.58	.16	.41				
10		0	.35	.49	.59	.53	.16	.33				
11		0	.30	1.0	.59	.48	.16	.28				
12		0	.26	.73	.59	.48	.14	.23				
13		0	.23	.60	.59	.48	.15	.19				
14		0	.22	.53	.58	.44	.57	.19				
15		0	.22	.99	.59	.43	.41	.19				
16		0	.28	2.9	.55	.42	.32	.17				
17		0	.32	10	.51	.39	.26	.23				
18		0	.27	5.7	.50	.39	.22	.19				
19		0	.26	2.8	.49	.38	.62	.18				
20		0	.24	1.8	.52	.38	3.0	.17				
21		0	.22	1.5	.51	.36	1.3	.17				
22		.12	.39	1.3	.50	.34	.70	.15				
23		.12	.37	1.1	.48	.32	3.5	.12				
24		.13	.25	1.0	.50	.30	1.5	.07				
25		.13	.23	.91	.48	.27	.91	.07				
26		.12	.24	.82	.46	.26	.74	.06				
27		.11	.22	.81	.43	.25	.65	.03				
28		.11	.96	.74	.75	.20	.55	.01				
29		.11	.97	.76	1.1	.20	.52	0				
30		.12	1.2	1.0	---	.22	.42	.03				
31		---	.63	.75	---	.19	---	.06	---			---
TOTAL	0	1.07	11.05	44.29	17.13	19.22	18.54	6.84	0	0	0	0
MEAN	0	.036	.36	1.43	.59	.62	.62	.22	0	0	0	0
MAX	0	.13	1.2	10	1.1	3.9	3.5	.62	0	0	0	0
MIN	0	0	.14	.42	.43	.19	.14	0	0	0	0	0
AC-FT	0	2.1	22	88	34	38	37	14	0	0	0	0

CAL YR 1987 TOTAL 775.40 MEAN 2.12 MAX 162 MIN 0 AC-FT 1540  
WTR YR 1988 TOTAL 118.14 MEAN .32 MAX 10 MIN 0 AC-FT 234

## SAN JOAQUIN RIVER BASIN

## 11299995 TULLOCH RESERVOIR NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°52'34", long 120°36'12", in Rancheria Del Rio Estanislao Grant, T.1 S., R.12 E., Tuolumne County, Hydrologic Unit 18040010, in center of Tulloch Dam on Stanislaus River, 1.9 mi upstream from Goodwin Dam, and 5.3 mi northeast of Knights Ferry.

DRAINAGE AREA.--980 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1957 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Oakdale and South San Joaquin Irrigation Districts).

REMARKS.--Reservoir is formed by gravity-type concrete dam completed in October 1957. Usable capacity, 56,840 acre-ft between elevations 431.0 ft, normal minimum water surface, and 511.0 ft, top of radial gates. Dead storage, 11,560 acre-ft. Reservoir is used for irrigation and power. Water passes down Stanislaus River, first passing through Tulloch powerplant at dam. Part of flow is diverted at Goodwin Dam to Oakdale Canal (station 11301000) and South San Joaquin Canal (station 11300500). Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Stanislaus River basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 69,500 acre-ft, Jan. 7, 1965, elevation, 512.0 ft; minimum, 4,580 acre-ft, Oct. 3, 1960, elevation, 404.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 66,200 acre-ft, July 25, elevation, 509.4 ft; minimum, 34,700 acre-ft, Nov. 18, elevation, 477.2 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by Pacific Gas & Electric Co., dated October 1956)

404	4,580	430	11,100	475	33,100
411	6,020	445	16,400	490	45,300
420	8,200	460	23,600	512	69,500

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60200	44100	35700	59400	59100	59600	61500	64500	65000	65600	65400	65400
2	59900	43600	36300	59200	58700	59600	61500	64400	64400	65600	65500	65200
3	59100	43200	36000	58800	58500	58900	61400	64000	65200	65200	65700	64900
4	57800	42700	35500	58600	58200	59200	61700	63900	65600	65200	65400	64900
5	56500	42300	36200	58400	57800	59300	62100	64000	65500	65500	65600	65000
6	55200	41900	35800	58000	57600	59300	62200	64400	65600	65600	65900	63800
7	54100	41300	35400	57800	57300	59400	62300	64500	65100	66000	65200	63300
8	53100	40700	35000	59400	59400	59500	61700	64500	64700	65700	65400	63500
9	52700	40100	35800	59100	59100	59500	61500	65900	64500	65400	65500	61900
10	52200	39400	35500	58800	59400	59500	61700	65900	65100	65600	65600	59900
11	51800	38800	36200	58500	59100	59500	61400	65700	65100	65500	65600	58800
12	51200	38200	36000	58300	58800	59500	61500	65900	65100	65500	65700	57700
13	50700	37700	35700	57900	58500	59600	61300	65400	64900	65600	65600	56600
14	50200	37100	35400	59200	58300	59100	61600	64700	65400	65900	64700	55500
15	49700	36500	36200	59000	60000	59200	61700	64900	65200	65500	64500	54500
16	49200	35800	35900	58700	59800	58900	61900	65500	65900	64900	64300	53400
17	49000	35300	35700	59000	59400	58700	62000	65400	65900	65400	64700	52200
18	48700	34700	36400	58700	59100	58700	62800	64900	65700	65200	65700	50900
19	48300	35700	36100	58500	59900	59400	63800	65200	65500	64400	65600	50300
20	48000	36700	35800	58800	59500	59400	63400	65200	65100	65400	65900	49600
21	47700	36100	35500	58100	59300	60200	63200	65200	65200	65000	65400	48200
22	47300	35500	37300	58500	58900	60100	62700	65000	65600	65400	65400	46600
23	47000	36200	39300	58300	58700	60000	62900	65400	65900	65700	65200	44800
24	46800	35600	41200	58100	58700	59500	62900	65200	65500	66000	65200	43500
25	46400	36500	43100	57700	59100	60400	64000	65200	65500	66200	65200	41900
26	46100	35900	44900	57500	59900	61000	64400	65500	65900	65700	64900	39700
27	45800	36500	46800	58300	59400	60400	64500	65400	65200	65500	65100	39300
28	45400	35900	48900	57900	59800	60700	64300	65200	65100	65400	65400	38600
29	45200	35300	51800	57700	60000	60700	64300	65500	65500	65600	65100	37400
30	44800	36200	54800	57400	---	60700	64500	65600	65700	65500	65000	35800
31	44500	---	57400	57200	---	61100	---	66000	---	65600	65200	---
MAX	60200	44100	57400	59400	60000	61100	64500	66000	65900	66200	65900	65400
MIN	44500	34700	35000	57200	57300	58700	61300	63900	64400	64400	64300	35800
a	489.10	479.20	501.90	501.70	504.20	505.20	508.00	509.20	509.00	508.90	508.60	478.70
b	-15300	-8300	+21200	-200	+2800	+1100	+3400	+1500	-300	-100	-400	-29400

CAL YR 1987 b -1400

WTR YR 1988 b -24000

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

11299997 STANISLAUS RIVER BELOW TULLOCH POWERPLANT, NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°52'34", long 120°36'15", in Rancheria del Rio Estanislao Grant, T.1 S., R.12 E., on Calaveras-Tuolumne County line, Hydrologic Unit 18040010, temperature recorder in south corner of Tulloch powerplant at downstream side of Tulloch Dam, 5.2 mi northeast of Knights Ferry.

DRAINAGE AREA.--980 mi<sup>2</sup>.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1972 to current year.

INSTRUMENTATION.--Temperature recorder since June 1972.

REMARKS.--Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from Tulloch Powerplant.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 27.5 °C, Aug. 30, 1977; minimum recorded, 5.0 °C, Jan. 13, 1973.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 14.5 °C, Nov. 19, 20; minimum recorded, 9.0 °C, Jan. 10 to Feb. 28.

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	14.0	13.5	13.5	13.0	12.5	12.5	9.5	9.5	9.0	9.0	---	---
2	14.0	13.5	13.5	13.0	12.5	12.5	9.5	9.5	9.0	9.0	---	---
3	14.0	13.5	13.5	13.0	12.5	12.0	9.5	9.5	9.0	9.0	10.0	10.0
4	13.5	13.5	13.5	13.0	12.5	12.0	9.5	9.5	9.0	9.0	10.0	10.0
5	14.0	13.5	13.5	13.5	12.0	12.0	9.5	9.5	9.0	9.0	10.0	10.0
6	13.5	13.5	13.5	13.5	12.5	12.0	9.5	9.5	9.0	9.0	10.5	10.0
7	13.5	13.5	13.5	13.5	12.5	12.0	9.5	9.5	9.0	9.0	10.5	10.0
8	13.5	13.5	13.5	13.5	12.0	12.0	9.5	9.5	9.0	9.0	10.5	10.5
9	13.5	13.5	13.5	13.5	12.0	12.0	9.5	9.5	9.0	9.0	10.5	10.5
10	13.5	13.5	13.5	13.5	12.0	12.0	9.5	9.0	9.0	9.0	10.5	10.5
11	14.0	13.5	13.5	13.5	12.0	12.0	9.5	9.0	9.0	9.0	10.5	10.5
12	14.0	13.5	14.0	13.5	12.0	12.0	9.5	9.0	9.0	9.0	10.5	10.5
13	14.0	13.5	14.0	13.5	12.0	12.0	9.5	9.0	9.0	9.0	10.5	10.5
14	14.0	13.5	14.0	14.0	12.0	11.5	9.5	9.0	9.0	9.0	10.5	10.5
15	14.0	14.0	14.0	14.0	11.5	11.5	9.5	9.0	9.0	9.0	10.5	10.5
16	14.0	13.0	14.0	13.5	11.5	11.5	9.0	9.0	9.0	9.0	10.5	10.5
17	13.0	13.0	14.0	14.0	11.5	11.0	9.0	9.0	9.0	9.0	10.5	10.5
18	13.0	13.0	14.0	14.0	11.0	11.0	9.0	9.0	9.0	9.0	10.5	10.5
19	13.0	13.0	14.5	14.0	11.0	11.0	9.0	9.0	9.0	9.0	10.5	10.5
20	13.0	13.0	14.5	13.5	11.0	11.0	9.0	9.0	9.5	9.0	10.5	10.5
21	13.0	13.0	14.0	13.5	11.0	10.5	9.0	9.0	9.5	9.0	10.5	10.5
22	13.0	13.0	13.5	13.0	10.5	10.5	9.0	9.0	9.5	9.0	10.5	10.5
23	13.0	13.0	13.5	13.0	10.5	10.5	9.0	9.0	9.5	9.0	10.5	10.5
24	13.5	13.0	13.5	13.0	10.5	10.5	9.0	9.0	9.0	9.0	10.5	10.5
25	13.5	13.0	13.5	13.0	10.5	10.0	9.0	9.0	9.0	9.0	10.5	10.5
26	13.5	13.0	13.0	13.0	10.0	10.0	9.0	9.0	9.0	9.0	10.5	10.5
27	13.5	13.0	13.0	12.5	10.0	10.0	9.0	9.0	9.5	9.0	11.0	10.5
28	13.5	13.0	13.0	12.5	10.0	10.0	9.0	9.0	9.5	9.0	11.0	10.5
29	13.5	13.0	12.5	12.5	10.0	9.5	9.0	9.0	9.5	9.5	11.0	10.5
30	13.5	13.0	12.5	12.5	10.0	9.5	9.0	9.0	---	---	11.0	10.5
31	13.5	13.0	---	---	9.5	9.5	9.0	9.0	---	---	10.5	10.5
MONTH	14.0	13.0	14.5	12.5	12.5	9.5	9.5	9.0	9.5	9.0	---	---

## SAN JOAQUIN RIVER BASIN

11299997 STANISLAUS RIVER BELOW TULLOCH POWERPLANT, NEAR KNIGHTS FERRY, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.5	10.5	11.5	11.5	12.5	12.0	13.0	13.0	13.0	13.0	13.0	13.0
2	10.5	10.5	11.5	11.5	12.5	12.0	13.0	13.0	13.0	13.0	13.0	13.0
3	10.5	10.5	11.5	11.5	12.5	12.0	13.0	13.0	13.0	13.0	13.0	13.0
4	11.0	10.5	11.5	11.5	12.5	12.0	13.0	13.0	13.0	13.0	13.0	13.0
5	11.0	10.5	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.0	13.0
6	---	---	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.0	13.0
7	---	---	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.0	13.0
8	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.0	13.0
9	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.0	13.0
10	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.0	13.0
11	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
12	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
13	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
14	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
15	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
16	11.0	11.0	11.5	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
17	11.0	11.0	12.0	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
18	11.0	11.0	12.0	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
19	11.0	11.0	12.0	11.5	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
20	11.0	11.0	12.0	12.0	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
21	11.0	11.0	12.0	12.0	12.5	12.5	13.0	13.0	13.0	13.0	13.5	13.0
22	11.0	11.0	12.0	12.0	12.5	12.5	13.0	13.0	13.0	13.0	13.0	13.0
23	11.5	11.0	12.0	12.0	13.0	12.5	13.0	13.0	13.0	13.0	13.0	13.0
24	11.5	11.0	12.0	12.0	13.0	12.5	13.0	13.0	13.0	13.0	13.5	13.0
25	11.5	11.0	12.0	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0
26	11.5	11.0	12.0	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.5
27	11.5	11.5	12.0	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.5
28	11.5	11.5	12.0	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.5
29	11.5	11.5	12.0	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0
30	11.5	11.5	12.5	12.0	13.0	13.0	13.0	13.0	13.0	13.0	13.5	13.0
31	---	---	12.0	12.0	---	---	13.0	13.0	13.0	13.0	---	---
MONTH	---	---	12.5	11.5	13.0	12.0	13.0	13.0	13.0	13.0	13.5	13.0



## SAN JOAQUIN RIVER BASIN

11300500 SOUTH SAN JOAQUIN CANAL NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°51'16", long 120°38'14", in Rancheria del Rio Estanislao Grant, Calaveras County, Hydrologic Unit 18040010, on left bank 0.8 mi downstream from headgate at Goodwin Dam and 3.0 mi northeast of Knights Ferry.

PERIOD OF RECORD.--May 1914 to current year. Monthly and yearly discharge only for some periods, published in WSP 1315-A.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 334.18 ft above National Geodetic Vertical Datum of 1929 (levels by Oakdale Irrigation District). Prior to Mar. 12, 1915, nonrecording gage 100 ft downstream. Mar. 12, 1915, to July 1, 1921, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 4-12, Dec. 15 to Jan. 5, Feb. 18-21, 26-29. Records good. Canal diverts from right bank of Stanislaus River at Goodwin Dam for irrigation in Oakdale and South San Joaquin Irrigation Districts. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--74 years, 441 ft<sup>3</sup>/s, 319,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,320 ft<sup>3</sup>/s, Aug. 10-17, 1978; no flow at times in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	9.0	3.9	.02	8.6	882	209	862	567	573	1090	913
2	7.8	8.8	4.0	.02	8.6	661	210	988	567	573	1090	850
3	134	4.1	4.0	.02	13	470	211	1010	566	573	1090	872
4	428	.08	4.0	.0	9.2	301	212	997	566	574	614	872
5	430	.01	3.8	.0	4.7	2.3	213	1000	567	574	283	872
6	431	.01	3.8	.92	4.7	2.1	223	1020	410	574	277	873
7	370	.0	3.7	3.7	4.7	2.1	235	1030	343	574	278	703
8	289	.0	3.8	4.0	4.5	2.1	236	1000	343	574	278	325
9	6.2	4.7	3.7	4.0	4.4	5.5	236	985	606	574	278	666
10	9.5	4.5	3.7	4.0	4.5	6.6	237	984	777	574	278	874
11	9.5	.05	3.7	4.0	4.7	6.6	425	985	779	575	278	875
12	5.0	1.2	3.7	4.0	4.7	6.6	496	822	779	575	277	877
13	4.3	3.7	3.7	4.0	4.7	6.6	640	616	867	576	277	866
14	6.4	3.7	3.7	4.0	4.7	265	500	563	938	576	277	879
15	6.6	3.9	1.6	4.0	4.7	421	371	562	969	577	276	878
16	6.5	4.0	.07	4.0	12	658	371	561	851	578	276	877
17	7.1	4.2	.03	4.2	7.5	817	370	764	776	578	578	877
18	7.8	4.2	.02	4.0	3.7	817	370	864	600	763	786	877
19	7.8	3.9	.02	4.0	2.8	817	221	865	522	1040	787	661
20	7.9	3.7	.02	4.0	2.8	817	18	865	523	1080	787	292
21	8.2	3.7	.01	4.0	2.8	695	4.4	866	523	1080	788	289
22	8.6	3.7	.03	4.0	2.8	810	4.0	866	525	1080	787	289
23	8.6	3.7	.03	5.6	2.9	839	4.1	773	525	1090	787	288
24	8.7	3.7	.02	8.2	313	917	3.2	667	526	1090	788	288
25	8.9	3.7	.01	8.6	544	732	2.2	664	526	1090	789	288
26	9.1	3.7	.01	8.6	544	548	3.5	664	525	1090	872	706
27	9.1	3.7	.01	8.6	762	548	3.5	664	686	1090	969	900
28	9.1	3.7	.18	8.6	889	549	3.5	664	932	1090	969	899
29	9.1	3.8	.16	8.6	889	549	3.5	664	927	1090	969	900
30	9.1	4.0	3.7	8.6	---	550	542	664	764	1090	1010	438
31	9.4	---	3.1	8.6	---	352	---	595	---	1090	1060	---
TOTAL	2280.0	101.15	62.22	138.88	4068.7	14055.5	6577.9	25094	19375	24625	19943	21064
MEAN	73.5	3.37	2.01	4.48	140	453	219	809	646	794	643	702
MAX	431	9.0	4.0	8.6	889	917	640	1030	969	1090	1090	913
MIN	4.3	.00	.01	.00	2.8	2.1	2.2	561	343	573	276	288
AC-FT	4520	201	123	275	8070	27880	13050	49770	38430	48840	39560	41780

CAL YR 1987 TOTAL 153421.31 MEAN 420 MAX 1140 MIN .00 AC-FT 304300  
WTR YR 1988 TOTAL 137385.35 MEAN 375 MAX 1090 MIN .00 AC-FT 272500

## SAN JOAQUIN RIVER BASIN

11300600 SOUTH SAN JOAQUIN MAIN CANAL BELOW DIVISION POINT, NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°49'54", long 120°40'24", in Rancheria del Rio Estanislao Grant, Stanislaus County, Hydrologic Unit 18040002, on left bank 600 ft downstream from division point and 0.85 mi north of Knights Ferry.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 325 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Canal diverts 600 ft upstream at division point which is 2.0 mi downstream from South San Joaquin Canal (station 11300500). Flow is used for irrigation in South San Joaquin Irrigation District. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--6 years, 368 ft<sup>3</sup>/s, 266,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 901 ft<sup>3</sup>/s, Feb. 28, 29, 1988; no flow for many days each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	10	.61	.0	11	899	2.6	816	292	300	853	610
2	2.0	10	.59	.0	11	663	2.1	821	297	301	854	511
3	127	5.4	.80	.0	14	456	2.0	813	301	302	855	526
4	416	.0	1.0	.0	10	294	2.0	801	301	303	376	527
5	415	.0	.93	.0	.0	.0	2.0	798	301	303	15	528
6	414	.0	1.1	.0	.0	.0	2.3	803	160	304	7.6	539
7	353	.0	1.4	.93	.0	.0	3.1	809	93	304	7.7	388
8	290	.0	1.6	1.4	.0	.0	3.1	810	93	304	7.6	4.5
9	.58	.0	1.5	1.4	.0	1.6	2.8	807	351	304	7.7	340
10	1.7	.0	1.5	1.3	.0	1.7	2.8	807	532	303	7.7	560
11	.92	.0	1.5	1.6	.0	1.7	156	807	530	303	7.7	569
12	.16	.0	1.2	1.5	.0	1.8	250	618	531	302	7.7	569
13	.0	.02	1.7	1.5	.0	1.8	330	363	628	302	7.6	560
14	.04	.0	1.4	1.5	.0	240	331	309	720	302	7.5	574
15	.0	.0	.44	1.7	.0	397	317	308	756	297	7.5	574
16	.0	.0	.0	2.5	4.6	646	319	297	627	291	7.4	575
17	.0	.03	.0	9.0	3.5	821	319	507	539	291	473	575
18	.0	.0	.0	2.9	.0	822	319	621	354	493	781	575
19	.01	1.4	.0	1.9	.0	821	197	622	263	805	780	365
20	.60	5.1	.0	1.8	.0	823	.59	622	261	858	776	2.2
21	2.1	5.1	.0	1.7	.0	702	.70	623	256	858	775	1.9
22	1.7	5.0	.0	1.7	.0	824	.55	624	257	857	775	1.9
23	1.8	5.0	.0	5.3	.0	817	.51	522	258	857	775	2.0
24	2.0	2.5	.0	11	291	805	.44	399	259	858	776	1.9
25	2.2	.31	.0	11	525	529	.04	396	259	858	776	2.0
26	2.2	.42	.0	11	528	296	.23	397	259	858	782	420
27	2.5	.47	.0	11	768	296	.19	397	419	857	802	625
28	2.3	.51	.04	11	901	296	.19	387	708	855	804	623
29	2.6	.54	.04	11	901	295	.46	383	699	854	802	622
30	2.4	.65	.03	11	---	296	515	384	525	852	799	345
31	5.0	---	.22	11	---	131	---	319	---	853	805	---
TOTAL	2049.71	52.45	17.60	127.63	3968.1	12177.6	3081.70	17990	11829	16689	14517.7	12116.4
MEAN	66.1	1.75	.57	4.12	137	393	103	580	394	538	468	404
MAX	416	10	1.7	11	901	899	515	821	756	858	855	625
MIN	.00	.00	.00	.00	.00	.00	.04	297	93	291	7.4	1.9
AC-FT	4070	104	35	253	7870	24150	6110	35680	23460	33100	28800	24030
CAL YR 1987	TOTAL	110367.69	MEAN	302	MAX	868	MIN	.00	AC-FT	218900		
WTR YR 1988	TOTAL	94616.89	MEAN	259	MAX	901	MIN	.00	AC-FT	187700		

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224	.08	.0	.0	.0	.0	278	42	368	357	685	387
2	232	.05	.0	.0	.0	.0	216	326	317	453	564	360
3	274	.02	.0	.0	.0	.0	147	317	264	506	546	282
4	314	.0	.0	.0	.0	.0	82	256	170	503	492	193
5	403	.0	.0	.0	.0	.0	23	191	137	676	419	168
6	440	.0	.0	.0	.0	.0	9.4	182	175	688	409	192
7	367	.0	.0	.0	.0	.0	9.8	162	214	726	374	169
8	344	.0	.0	.0	.0	.0	10	114	351	708	502	176
9	288	.0	.0	.0	.0	.29	110	84	411	642	564	241
10	276	.0	.0	.0	.0	70	104	81	513	585	560	379
11	254	.0	.0	.0	.0	43	589	123	564	544	565	397
12	395	.0	.0	.0	.0	13	686	194	559	419	544	409
13	364	.0	.0	.0	.0	28	685	165	617	334	507	468
14	288	.0	.0	.0	.0	435	618	155	619	256	433	433
15	157	.0	.0	.0	.0	698	604	405	533	325	561	389
16	40	.0	.0	.0	.0	858	573	549	404	337	577	285
17	.27	.0	.0	1.3	.0	872	517	557	277	363	583	265
18	.18	.0	.0	.46	.0	852	452	562	206	469	651	210
19	.14	.0	.0	.16	.0	893	197	589	243	542	708	209
20	.10	.0	.0	.22	.0	891	8.3	551	303	486	651	249
21	.07	.0	.0	.14	.0	880	7.5	491	321	394	490	290
22	.05	.0	.0	.08	.0	833	6.6	419	386	373	489	307
23	.05	.0	.0	.04	.0	723	6.9	299	401	306	408	310
24	.03	.0	.0	.01	.0	624	6.6	366	421	263	361	322
25	.01	.0	.0	.0	.0	570	6.7	364	361	326	335	222
26	.0	.0	.0	.0	.0	554	6.8	367	358	465	273	222
27	.0	.0	.0	.0	.0	489	7.1	313	304	583	267	308
28	.0	.0	.0	.0	.0	400	7.3	284	244	691	251	256
29	.20	.0	.0	.0	.0	360	7.6	322	276	731	337	135
30	.17	.0	.0	.0	---	334	7.7	285	308	753	390	7.7
31	.11	---	.0	.0	---	320	---	337	---	722	447	---
TOTAL	4661.38	0.15	0.0	2.41	0.0	11740.29	5989.3	9452	10625	15526	14943	8240.7
MEAN	150	.005	.00	.078	.00	379	200	305	354	501	482	275
MAX	440	.08	.00	1.3	.00	893	686	589	619	753	708	468
MIN	.00	.00	.00	.00	.00	.00	6.6	42	137	256	251	7.7
AC-FT	9250	.3	.0	4.8	.0	23290	11880	18750	21070	30800	29640	16350
CAL YR 1987	TOTAL	101106.63	MEAN	277	MAX	820	MIN	.00	AC-FT	200500		
WTR YR 1988	TOTAL	81180.23	MEAN	222	MAX	893	MIN	.00	AC-FT	161000		

LOCATION.--Lat 37°50'01", long 120°40'21", in Rancheria del Rio Estanislao Grant, Stanislaus County, Hydrologic Unit 18040002, on left bank at Parshall flume, 600 ft downstream from division point, and 1.0 mi north of Knights Ferry.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 310 ft above National Geodetic Vertical Datum of 1929, from topographic map.

AVERAGE DISCHARGE.--6 years, 160 ft<sup>3</sup>/s, 115,900 acre-ft/yr.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

[illegible]

## SAN JOAQUIN RIVER BASIN

## 11301000 OAKDALE CANAL NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°51'32", long 120°37'56", in SW 1/4 SE 1/4 sec.10, T.1 S., R.12 E., Tuolumne County, Hydrologic Unit 18040010, on left bank 0.3 mi downstream from headgate at Goodwin Dam and 3.4 mi northeast of Knights Ferry.

PERIOD OF RECORD.--May 1914 to current year. Records for water years 1933-36 incomplete; monthly and yearly estimates published in WSP 1315-A.

GAGE.--Water-stage recorder. Elevation of gage is 350 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 29, 1916, nonrecording gage at site 1,000 ft upstream at different datum. Apr. 29, 1916, to July 3, 1925, nonrecording gage and July 4, 1925, to Apr. 3, 1949, water-stage recorder at present site at datum 0.18 ft higher.

REMARKS.--Estimated daily discharges: Oct. 1-5, 8-16, Jan. 2-4. Records good. Canal diverts water from left bank of Stanislaus River at Goodwin Dam 0.3 mi upstream for irrigation in Oakdale Irrigation District. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--74 years, 170 ft<sup>3</sup>/s, 123,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 556 ft<sup>3</sup>/s, July 8-11, 1967; no flow at times in most years.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	5.1	0		0	.01	284	88	341	348	385	410
2	4.4	5.0	0		0	0	284	242	341	349	385	406
3	4.4	4.9	0		0	0	273	303	341	349	385	405
4	4.4	4.9	0		0	0	251	312	341	349	385	406
5	4.3	5.0	0		0	0	239	311	341	349	375	406
6	4.1	5.1	0		0	0	249	319	320	348	365	405
7	4.2	5.1	0		0	0	264	330	300	348	365	406
8	4.9	5.1	0		0	0	272	329	299	348	365	406
9	4.9	5.1	0		0	4.3	286	330	299	348	365	390
10	4.9	5.1	0		0	7.2	293	330	307	348	365	379
11	4.9	5.1	0		0	7.2	293	330	314	348	366	380
12	4.9	5.1	0		0	7.2	305	330	314	358	370	380
13	4.9	5.1	0		0	7.2	315	314	315	362	376	380
14	4.9	5.1	0		0	3.2	190	298	324	363	376	380
15	4.9	5.1	0		0	0	29	311	330	363	376	380
16	4.9	5.1	0		0	0	5.1	326	330	364	377	380
17	4.9	5.1	0		0	0	5.1	330	329	364	147	381
18	4.9	5.1	0		0	0	5.0	330	329	364	1.2	380
19	4.9	5.1	0		0	0	4.9	330	329	364	1.9	380
20	5.0	5.1	0		0	0	4.9	337	330	365	2.9	365
21	5.1	5.1	4.0		0	0	4.9	350	330	365	2.9	354
22	5.1	5.1	6.9		0	0	4.9	350	330	365	2.9	355
23	5.1	5.1	6.9		0	54	5.2	350	336	365	2.9	355
24	5.1	2.2	6.9		0	146	4.9	344	339	366	2.9	355
25	5.1	.01	6.9		3.6	250	4.9	341	339	366	2.9	355
26	5.1	0	6.9		9.3	282	4.9	341	338	366	119	355
27	5.1	0	6.9		9.3	282	4.9	341	345	366	238	354
28	5.1	0	2.3		9.6	282	18	341	348	366	238	354
29	5.1	0	0		3.2	296	23	341	348	374	238	354
30	5.1	0	0		---	312	23	341	348	384	300	127
31	5.1	---	0		---	301	---	341	---	384	391	---
TOTAL	150.1	118.91	47.7	0	35.0	2241.31	3950.6	9911	9875	11166	7672.5	11123
MEAN	4.84	3.96	1.54	0	1.21	72.3	132	320	329	360	248	371
MAX	5.1	5.1	6.9	0	9.6	312	315	350	348	384	391	410
MIN	4.1	0	0	0	0	0	4.9	88	299	348	1.2	127
AC-FT	298	236	95	0	69	4450	7840	19660	19590	22150	15220	22060
CAL YR 1987	TOTAL	60535.30	MEAN 166	MAX 457	MIN 0	AC-FT 120100						
WTR YR 1988	TOTAL	56291.12	MEAN 154	MAX 410	MIN 0	AC-FT 111700						

## SAN JOAQUIN RIVER BASIN

11302000 STANISLAUS RIVER BELOW GOODWIN DAM, NEAR KNIGHTS FERRY, CA

LOCATION.--Lat 37°51'06", long 120°38'13", in Rancheria del Rio Estanislao Grant, Calaveras County, Hydrologic Unit 18040010, on right bank 250 ft upstream from Owl Creek, 0.9 mi downstream from Goodwin Dam, and 2.9 mi northeast of Knights Ferry.

DRAINAGE AREA.--986 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1957 to current year. Records equivalent to those published as Stanislaus River at Knights Ferry, 1903-14, and as Stanislaus River near Knights Ferry, 1915-32, if adjusted for diversions in Stanislaus and San Joaquin Water Co.'s canal and Oakdale and South San Joaquin Canals.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252.83 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by New Melones Reservoir (station 11299000) since 1978 and Tulloch Reservoir (station 11299995). South San Joaquin Canal (station 11300500) and Oakdale Canal (station 11301000) divert at Goodwin Dam. See schematic diagram of Stanislaus River basin.

AVERAGE DISCHARGE.--31 years, 805 ft<sup>3</sup>/s, 583,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,200 ft<sup>3</sup>/s, Dec. 24, 1964, gage height, 28.85 ft in gage well, 31.2 ft outside, from floodmarks; minimum daily, 0.12 ft<sup>3</sup>/s, Feb. 8, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1955, reached a stage of 37.7 ft, from floodmarks, discharge, 62,900 ft<sup>3</sup>/s, by computation of flow over Goodwin Dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,380 ft<sup>3</sup>/s, Mar. 31, gage height, 10.34 ft; minimum daily, 128 ft<sup>3</sup>/s, Jan. 24-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	200	311	142	133	824	1110	917	808	702	698	707
2	150	203	210	146	134	826	1120	910	805	706	701	715
3	196	207	205	147	130	812	1120	914	768	705	707	699
4	203	211	207	147	132	813	1120	904	702	704	709	702
5	200	214	207	153	136	913	1110	872	700	705	704	704
6	196	220	211	145	137	919	933	815	712	676	703	703
7	221	299	210	144	137	920	922	809	704	649	703	704
8	196	304	210	145	137	1020	915	804	674	608	702	709
9	189	303	146	145	139	1030	714	802	600	563	703	709
10	237	309	141	145	270	1010	709	819	644	545	704	704
11	243	310	141	145	158	1240	712	818	701	560	704	709
12	242	306	141	145	133	1260	710	819	699	562	704	712
13	250	305	143	141	132	1260	686	817	768	564	705	712
14	254	303	143	133	132	1270	671	810	892	586	705	708
15	205	305	145	135	168	1260	655	807	950	610	703	713
16	196	309	148	136	132	1290	656	818	1000	702	749	712
17	141	302	148	146	143	1250	657	797	1000	707	812	708
18	141	306	147	136	180	1240	658	755	1010	706	815	712
19	141	306	148	134	134	1250	667	754	994	807	793	682
20	141	310	147	134	134	1270	664	780	1050	861	705	655
21	140	311	142	134	134	1280	656	812	1110	867	705	633
22	141	310	140	133	134	1280	656	818	1110	867	705	607
23	143	308	140	132	134	1260	658	825	1110	870	708	584
24	143	308	143	128	168	1240	655	815	1120	875	801	550
25	142	309	144	128	344	1260	828	806	1100	878	805	554
26	141	312	142	128	640	1270	916	803	976	878	802	538
27	141	311	141	131	665	1270	916	804	818	871	800	479
28	142	312	153	133	657	1270	911	802	698	863	808	437
29	144	310	156	133	642	1270	920	802	707	790	766	409
30	141	310	144	133	---	1270	914	808	707	697	720	414
31	141	---	148	132	---	1250	---	815	---	700	712	---
TOTAL	5443	8633	5102	4289	6449	35597	24539	25451	25637	22384	22761	19284
MEAN	176	288	165	138	222	1148	818	821	855	722	734	643
MAX	254	312	311	153	665	1290	1120	917	1120	878	815	715
MIN	140	200	140	128	130	812	655	754	600	545	698	409
AC-FT	10800	17120	10120	8510	12790	70610	48670	50480	50850	44400	45150	38250
CAL YR 1987	TOTAL	197011	MEAN	540	MAX	1360	MIN	140	AC-FT	390800		
WTR YR 1988	TOTAL	205569	MEAN	562	MAX	1290	MIN	128	AC-FT	407700		

## SAN JOAQUIN RIVER BASIN

11302000 STANISLAUS RIVER BELOW GOODWIN DAM, NEAR KNIGHTS FERRY, CA--Continued

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: February 1966 to current year.

INSTRUMENTATION.--Temperature recorder since February 1966.

REMARKS.--Temperature recorder located 2,300 ft upstream from gaging station. Interruptions in record were due to malfunction of recording instrument. Water temperature is affected by regulation from Goodwin Dam.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.5 °C July 25, 1974; minimum recorded, 5.5 °C, Feb. 3, 1972.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 16.0 °C, Oct. 2-4, 22, 24-28; minimum recorded, 9.5 °C, Dec. 26, 27, and Jan. 1, 2, 19-22.

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	15.5	14.5	15.0	14.5	---	---	10.0	9.5	11.0	10.5	11.5	11.5
2	16.0	15.0	14.5	14.5	---	---	10.0	9.5	10.5	10.0	11.5	11.5
3	16.0	15.0	14.5	14.0	14.0	13.5	10.0	10.0	10.5	10.0	12.0	11.5
4	16.0	14.5	14.5	14.0	13.5	13.5	10.5	10.0	10.5	10.0	12.0	11.5
5	15.0	14.5	14.5	14.5	13.5	13.5	10.5	10.5	10.5	10.0	12.0	12.0
6	15.0	14.5	14.5	14.5	13.5	13.0	10.5	10.5	10.5	10.0	12.0	12.0
7	15.0	14.5	14.5	14.5	13.0	13.0	10.5	10.5	11.0	10.0	12.5	12.0
8	15.0	14.5	14.5	14.5	13.0	13.0	11.0	10.5	11.0	10.0	12.5	12.0
9	15.0	14.5	15.0	14.5	13.0	13.0	11.0	10.5	11.5	10.5	12.5	12.0
10	15.5	14.5	15.0	14.5	13.5	13.0	11.0	11.0	11.5	11.0	12.0	11.5
11	15.0	15.0	15.0	14.5	13.5	13.0	11.0	10.5	11.5	11.0	12.0	11.5
12	15.5	15.0	15.0	14.5	13.0	12.5	11.0	10.5	11.5	11.0	12.0	11.5
13	15.5	15.0	15.0	14.5	12.0	11.5	10.5	10.5	11.5	11.0	12.5	11.5
14	15.0	14.5	14.5	14.5	11.5	11.5	10.5	10.0	11.5	11.0	12.5	12.0
15	15.5	14.5	14.5	14.5	11.5	11.5	11.0	10.5	11.5	11.0	12.5	12.0
16	15.5	15.0	15.0	14.5	11.5	11.5	10.5	10.5	11.5	11.0	12.5	12.0
17	15.5	15.0	15.0	15.0	11.5	11.5	10.5	10.5	11.5	11.0	13.0	12.0
18	15.5	15.0	15.0	15.0	11.5	11.0	10.5	10.0	11.5	10.5	13.0	12.5
19	15.5	15.0	15.5	15.0	11.5	11.5	10.0	9.5	11.5	10.5	13.0	12.5
20	15.5	15.0	15.0	15.0	11.5	11.0	10.0	9.5	11.5	10.5	13.0	12.5
21	15.5	15.0	15.0	14.5	11.5	11.5	10.0	9.5	11.5	10.5	12.5	12.5
22	16.0	15.0	---	---	11.5	11.0	10.5	9.5	12.0	11.0	13.0	12.5
23	15.5	15.0	---	---	11.0	11.0	10.5	10.0	12.0	11.0	13.0	12.5
24	16.0	15.0	---	---	11.0	10.5	10.5	10.0	12.0	11.0	13.0	12.5
25	16.0	15.5	---	---	10.5	10.0	10.5	10.0	11.5	11.0	13.5	12.5
26	16.0	15.5	---	---	10.0	9.5	11.0	10.0	11.5	11.0	13.0	12.5
27	16.0	15.5	---	---	10.0	9.5	11.0	10.0	11.5	11.0	13.0	12.5
28	16.0	15.0	---	---	10.5	10.0	11.0	10.5	11.5	11.0	13.0	12.0
29	15.5	15.0	---	---	10.5	10.5	11.0	10.5	11.5	11.5	13.0	12.0
30	15.5	15.0	---	---	10.5	10.0	11.5	11.0	---	---	13.0	12.5
31	15.0	14.5	---	---	10.0	10.0	11.0	10.5	---	---	13.0	12.0
MONTH	16.0	14.5	---	---	---	---	11.5	9.5	12.0	10.0	13.5	11.5

## SAN JOAQUIN RIVER BASIN

11302000 STANISLAUS RIVER BELOW GOODWIN DAM, NEAR KNIGHTS FERRY, CA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	12.5	12.0	13.0	12.5	13.5	13.0	14.0	13.5	14.5	14.0	15.0	14.5
2	12.5	12.0	13.5	13.0	14.0	13.0	14.5	13.5	14.5	14.0	15.0	14.0
3	12.5	12.0	14.0	13.0	13.5	13.0	14.5	13.5	14.5	14.0	15.0	14.5
4	12.5	12.0	13.5	13.0	13.5	13.0	14.0	13.5	14.5	14.0	15.0	14.5
5	12.5	12.0	13.5	13.0	13.5	13.0	14.0	13.5	14.5	14.0	15.0	14.5
6	12.5	12.0	13.5	13.0	13.5	13.0	14.5	13.5	14.5	13.5	14.5	14.5
7	12.5	12.0	13.0	13.0	13.5	13.0	14.5	13.5	14.5	13.5	14.5	14.0
8	12.5	12.0	13.5	13.0	13.5	13.0	14.5	13.5	14.5	13.5	14.5	14.0
9	13.0	12.0	13.5	13.0	13.5	13.0	14.5	13.5	14.5	14.0	14.5	14.0
10	13.0	12.0	13.5	13.0	14.0	13.0	14.5	14.0	14.5	13.5	14.5	14.0
11	13.0	12.0	13.5	13.0	14.0	13.0	14.5	14.0	14.5	14.0	15.0	14.5
12	12.5	12.0	13.5	13.0	14.0	13.0	14.5	14.0	14.5	14.0	15.0	14.5
13	12.5	12.0	13.0	12.5	14.0	13.0	14.5	13.5	14.5	13.5	15.0	14.5
14	12.5	12.5	13.5	12.5	14.5	13.5	14.5	14.0	14.5	14.0	15.0	14.5
15	12.5	12.5	13.5	12.5	14.5	13.5	14.5	14.0	14.5	14.0	15.5	14.5
16	12.5	12.5	13.0	12.5	14.5	14.0	14.5	14.0	14.5	14.0	15.0	14.5
17	13.0	12.5	13.5	12.5	14.0	13.5	14.5	14.0	14.5	14.0	15.5	14.5
18	13.0	12.5	13.5	12.5	14.0	13.5	14.5	14.0	14.5	14.0	15.0	15.0
19	13.0	12.5	13.5	12.5	14.0	13.5	15.5	14.0	14.5	14.0	15.0	14.5
20	13.0	12.5	13.5	13.0	14.0	13.5	15.5	15.0	14.5	14.0	14.5	14.0
21	13.0	12.5	14.0	13.0	14.0	13.5	15.0	15.0	14.5	14.0	14.5	14.0
22	13.0	12.5	14.0	13.0	14.0	13.5	15.0	14.5	14.5	14.0	14.5	14.0
23	12.5	12.5	14.0	13.0	14.0	13.5	15.0	14.5	14.5	14.0	14.5	14.0
24	13.0	12.5	13.5	13.0	14.0	13.5	15.0	14.5	14.5	14.0	15.0	14.0
25	13.0	13.0	13.5	13.0	14.0	13.5	15.0	14.5	14.5	14.0	15.0	14.0
26	13.0	12.5	13.5	13.0	14.0	13.5	15.0	14.5	14.5	14.0	15.5	14.5
27	13.0	13.0	13.5	13.0	14.0	13.5	15.0	14.5	15.0	14.5	15.5	15.0
28	13.0	13.0	13.5	13.0	14.5	13.5	15.0	14.5	14.5	14.5	15.0	14.5
29	13.0	12.5	13.5	13.0	14.0	13.5	15.0	14.5	15.0	14.5	15.0	14.5
30	13.0	12.5	13.5	13.0	14.5	13.5	15.0	14.0	15.0	14.5	15.0	14.5
31	---	---	13.5	13.0	---	---	15.0	14.0	15.0	14.5	---	---
MONTH	13.0	12.0	14.0	12.5	14.5	13.0	15.5	13.5	15.0	13.5	15.5	14.0



## SAN JOAQUIN RIVER BASIN

11302500 STANISLAUS RIVER AT OAKDALE, CA

LOCATION.--Lat 37°46'38", long 120°51'07", in Eight Square Leagues on Stanislaus River Grant, Stanislaus County, Hydrologic Unit 18040002, on left bank at State Highway 120 bridge at Oakdale.

DRAINAGE AREA.--1,032 mi<sup>2</sup>.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: September 1985 to current year.

INSTRUMENTATION.--Water-temperature recorder since Aug. 28, 1985.

REMARKS.--Interruptions in record are due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum daily, 20.0 °C, Aug. 2, 3, 1987, Oct. 2, 3, 1987; minimum daily, 7.5 °C, Jan. 16-19, 1987, Dec. 25, 26, 1987.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 20.0 °C, Oct. 2, 3; minimum recorded, 7.5 °C, Dec. 25, 26.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	19.5	17.0	16.0	15.5	14.0	13.0	9.0	8.5	12.5	11.0	12.5	11.0
2	20.0	17.5	16.0	15.0	15.0	13.5	9.5	8.5	12.0	10.5	13.0	11.5
3	20.0	17.5	15.0	14.0	15.0	14.0	10.0	9.5	11.5	9.5	13.5	12.0
4	19.5	17.5	15.0	13.5	14.0	13.5	11.0	10.0	11.0	9.5	13.5	12.0
5	19.5	17.0	15.5	14.0	14.0	13.5	12.0	11.0	11.0	9.5	13.5	11.5
6	19.0	17.0	16.0	15.0	14.0	13.0	11.5	10.5	11.5	9.5	---	---
7	19.0	17.0	15.5	14.5	14.0	13.0	11.5	11.0	12.0	10.0	---	---
8	18.0	16.5	15.0	14.0	13.0	13.0	12.0	11.0	12.5	10.0	---	---
9	18.0	16.5	15.5	14.5	14.0	12.5	12.5	11.5	13.0	10.5	13.5	11.5
10	18.0	16.5	15.5	14.5	14.5	13.0	12.5	11.5	13.5	11.5	13.0	11.0
11	17.5	16.0	15.0	14.5	14.0	13.0	12.5	11.5	12.5	11.0	13.0	11.0
12	17.5	16.5	15.0	14.5	13.0	11.0	11.0	10.0	13.5	11.5	13.0	11.5
13	17.5	16.0	15.0	14.5	11.0	10.0	11.0	10.0	14.0	12.0	13.5	11.5
14	17.0	16.0	15.0	14.0	10.5	9.5	11.0	10.0	13.5	11.5	13.5	12.0
15	17.0	15.5	14.0	13.0	10.5	9.5	11.5	10.5	13.5	11.5	13.5	12.0
16	17.0	15.5	14.5	13.5	11.0	10.0	11.5	10.5	13.5	11.0	13.5	12.0
17	17.0	15.5	14.5	14.0	11.5	11.0	11.0	10.0	13.0	11.0	14.0	12.5
18	17.5	15.0	15.5	14.5	11.5	10.0	10.0	9.0	13.0	10.5	14.0	12.5
19	17.0	15.0	15.0	14.5	12.0	11.0	10.0	9.0	13.0	10.5	14.0	12.5
20	17.0	15.5	14.5	14.0	11.0	10.0	10.0	8.5	13.0	10.5	14.5	12.5
21	17.5	15.5	14.5	14.0	11.5	11.0	10.5	9.0	13.5	11.0	14.0	12.5
22	17.5	16.5	14.5	14.0	12.0	11.0	10.5	9.0	14.0	11.5	14.0	12.5
23	18.0	16.5	14.0	13.0	11.0	9.5	10.5	9.0	14.0	11.5	14.5	12.5
24	18.5	16.5	14.0	13.0	9.5	8.5	11.0	9.5	14.5	12.0	14.0	12.5
25	18.5	16.5	13.5	12.5	9.0	7.5	11.5	9.5	14.5	12.0	15.0	13.0
26	18.0	16.0	13.0	12.0	9.0	7.5	11.5	10.0	13.0	12.0	14.5	12.5
27	18.0	16.5	13.0	12.0	9.0	8.0	12.0	10.5	13.0	12.0	14.0	12.0
28	18.0	17.0	13.0	12.5	10.0	9.0	12.5	11.0	13.0	12.0	14.0	12.0
29	17.5	17.0	12.5	12.0	10.0	9.5	13.5	12.0	12.5	11.0	14.0	12.5
30	17.0	16.0	13.0	12.0	10.5	9.5	13.5	12.0	---	---	14.0	12.0
31	16.5	15.5	---	---	10.0	9.0	13.0	11.5	---	---	14.0	12.5
MONTH	20.0	15.0	16.0	12.0	15.0	7.5	13.5	8.5	14.5	9.5	---	---

## SAN JOAQUIN RIVER BASIN

11302500 STANISLAUS RIVER AT OAKDALE, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	14.0	12.5	14.5	12.0	16.5	14.0	18.0	15.5	---	---	18.0	16.0
2	14.0	12.0	15.0	12.5	17.0	14.0	18.5	15.5	---	---	17.5	16.0
3	14.5	12.5	15.5	13.5	16.5	14.5	18.5	15.5	---	---	18.0	16.0
4	14.5	12.5	15.0	13.5	16.0	14.0	17.5	15.0	---	---	17.5	16.0
5	14.5	12.5	14.0	13.0	16.0	13.5	17.5	15.0	---	---	17.5	16.0
6	15.0	13.0	14.0	13.0	15.5	13.5	17.5	15.0	---	---	17.5	16.0
7	14.5	12.0	14.0	13.0	15.5	14.0	18.5	15.5	---	---	17.0	15.0
8	15.0	12.0	15.5	13.0	16.5	13.5	18.5	15.5	---	---	17.0	15.5
9	15.5	13.0	15.5	13.5	17.0	14.0	19.0	16.0	---	---	17.0	15.5
10	15.5	13.0	16.0	13.5	17.5	14.5	19.0	16.5	---	---	17.0	15.0
11	---	---	16.5	14.0	17.0	14.5	19.0	16.5	---	---	17.0	15.5
12	---	---	16.0	14.0	17.5	14.5	18.5	16.0	---	---	17.0	15.0
13	---	---	16.0	14.0	17.5	15.0	18.5	16.0	---	---	17.0	15.5
14	13.5	13.0	16.0	13.5	17.0	15.0	19.0	16.5	---	---	17.0	15.5
15	13.5	13.0	16.5	13.5	17.0	15.0	18.5	16.0	---	---	17.0	15.5
16	13.5	12.5	15.0	13.5	17.0	15.0	18.5	16.5	---	---	17.0	15.5
17	15.5	12.5	15.5	12.5	17.0	14.5	18.5	16.0	---	---	17.0	15.5
18	15.0	13.0	16.0	13.5	17.0	15.0	18.5	16.0	---	---	17.0	15.0
19	14.5	13.0	16.5	14.0	17.0	15.0	18.5	16.0	---	---	16.0	15.0
20	14.0	12.5	17.0	14.0	16.5	14.5	18.5	16.0	---	---	16.5	15.0
21	15.0	12.5	17.0	14.5	16.5	14.0	18.0	16.0	---	---	16.5	15.0
22	14.0	13.0	16.0	14.5	16.5	14.5	18.0	16.0	---	---	16.5	15.0
23	14.5	13.0	17.0	14.0	16.0	15.0	18.0	16.0	---	---	16.5	15.0
24	15.0	12.5	16.5	14.0	16.5	14.5	18.5	16.0	17.0	15.5	16.5	15.0
25	15.5	13.0	16.0	14.0	17.0	15.0	18.0	16.0	17.0	15.0	16.5	15.0
26	15.5	13.0	15.5	14.0	17.0	14.5	18.0	16.0	17.5	15.5	16.5	15.0
27	15.5	13.0	16.5	13.5	17.0	14.5	18.0	16.0	17.5	15.0	17.0	15.0
28	15.0	13.0	15.5	14.0	18.0	15.0	---	---	16.5	15.5	17.0	15.0
29	15.5	12.5	15.0	13.5	17.5	15.0	---	---	17.0	15.0	17.0	15.5
30	14.5	12.5	16.0	13.0	17.5	15.0	---	---	17.5	15.5	17.0	15.0
31	---	---	15.5	13.5	---	---	---	---	17.5	15.5	---	---
MONTH	---	---	17.0	12.0	18.0	13.5	---	---	---	---	18.0	15.0

## SAN JOAQUIN RIVER BASIN

11303000 STANISLAUS RIVER AT RIPON, CA

LOCATION.--Lat 37°43'47", long 121°06'34", in NW 1/4 SE 1/4 sec.29, T.2 S., R.8 E., Stanislaus County, Hydrologic Unit 18040002, on left bank 15 ft downstream from railroad bridge, 1.1 mi southeast of Ripon, and 15 mi upstream from mouth.

DRAINAGE AREA.--1,075 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1940 to current year. April to September 1940 in reports of California Department of Water Resources.

GAGE.--Water-stage recorder. Datum of gage is 0.72 ft above National Geodetic Vertical Datum of 1929. October 1940 to Nov. 17, 1953, at site 100 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by reservoirs and powerplants above station (see REMARKS for station 11302000). South San Joaquin and Oakdale Canals (stations 11300500 and 11301000) divert at Goodwin Dam 34 mi upstream. Diversions for irrigation of 57,250 acres in vicinity of Oakdale. See schematic diagram of Stanislaus River basin. Monthly chemical, trace element, biological, and sediment data are available in files of the U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Also available in the same report are daily maximum, minimum, and mean specific conductance and water temperature values.

AVERAGE DISCHARGE.--48 years, 1,034 ft<sup>3</sup>/s, 749,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,500 ft<sup>3</sup>/s, Dec. 24, 1955, gage height, 63.25 ft; minimum daily, 0.11 ft<sup>3</sup>/s, Aug. 4-6, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 12, 1938, reached a stage of 64.4 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,270 ft<sup>3</sup>/s, Mar. 28, gage height, 41.99 ft; minimum daily, 170 ft<sup>3</sup>/s, Feb. 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	259	197	348	203	185	612	1240	932	870	764	756	731
2	248	217	349	205	183	725	1170	943	850	736	735	730
3	247	242	299	210	186	779	1160	951	840	757	731	741
4	278	245	273	215	185	775	1160	953	819	757	737	733
5	294	256	277	210	183	804	1160	950	755	758	730	738
6	284	258	266	206	187	851	1150	946	740	732	728	734
7	273	262	264	210	187	865	1040	908	753	706	746	727
8	263	293	268	200	188	878	994	925	738	665	739	722
9	251	318	272	203	187	946	974	902	726	650	714	737
10	260	324	244	203	190	989	846	883	646	610	710	738
11	279	329	218	203	223	975	801	876	667	614	721	730
12	297	333	211	203	255	1120	774	875	738	587	727	734
13	291	337	208	200	199	1160	767	878	732	604	732	736
14	305	341	207	200	188	1200	770	871	782	608	742	765
15	336	337	207	199	186	1190	751	853	904	622	730	778
16	296	335	209	202	194	1210	711	856	957	649	719	781
17	358	347	216	219	189	1220	698	869	1000	705	747	760
18	272	350	210	303	185	1210	690	866	1010	730	801	748
19	227	345	209	285	201	1210	688	825	1020	721	803	770
20	218	345	205	229	192	1210	756	808	1020	811	790	767
21	211	357	206	212	179	1230	705	808	1040	870	718	732
22	210	354	206	202	175	1240	678	868	1110	873	705	717
23	211	347	206	197	170	1250	720	875	1110	875	702	678
24	212	345	203	194	170	1230	705	853	1130	904	713	652
25	204	345	203	190	190	1220	681	861	1140	918	774	622
26	199	341	203	188	276	1240	807	851	1140	904	804	622
27	198	344	201	189	501	1240	910	874	1050	915	811	626
28	205	344	214	188	572	1250	926	854	903	907	802	594
29	200	343	224	190	617	1230	945	846	781	904	809	569
30	203	343	220	189	---	1250	934	854	760	861	778	528
31	200	---	214	186	---	1240	---	867	---	740	729	---
TOTAL	7789	9474	7260	6433	6723	33549	26311	27281	26731	23457	23183	21240
MEAN	251	316	234	208	232	1082	877	880	891	757	748	708
MAX	358	357	349	303	617	1250	1240	953	1140	918	811	781
MIN	198	197	201	186	170	612	678	808	646	587	702	528
AC-FT	15450	18790	14400	12760	13340	66540	52190	54110	53020	46530	45980	42130

CAL YR 1987 TOTAL 227114 MEAN 622 MAX 1840 MIN 197 AC-FT 450500  
WTR YR 1988 TOTAL 219431 MEAN 600 MAX 1250 MIN 170 AC-FT 435200

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 37°40'34", long 121°15'55", in El Pescadero Grant, San Joaquin County, Hydrologic Unit 18040003, on left bank 12 ft downstream from Durham Ferry highway bridge, 2.6 mi downstream from Stanislaus River, and 3.2 mi northeast of Vernalis.

DRAINAGE AREA.--13,536 mi<sup>2</sup>, includes about 2,100 mi<sup>2</sup> in James Bypass.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1922 to current year (1922-23 and 1925-29, low-water records only).

REVISED RECORDS.--WSP 831: 1936. WSP 931: 1940. WSP 1930: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. See WSP 2130 for history of changes prior to Nov. 30, 1967.

REMARKS.--Estimated daily discharges: Feb. 11-22, July 10-14. Records good. Natural flow of stream affected by storage reservoirs, power developments, ground-water withdrawals, and diversions for irrigation; low flows consist mainly of return flow from irrigated areas.

AVERAGE DISCHARGE.--60 years (water years 1924, 1930-88), 4,706 ft<sup>3</sup>/s, 3,409,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 79,000 ft<sup>3</sup>/s, Dec. 9, 1950, elevation, 32.81 ft, present datum, including flow through breaks in levee; maximum elevation, 34.55 ft, Jan. 27, 1969; minimum discharge, 19 ft<sup>3</sup>/s, Aug. 10, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,740 ft<sup>3</sup>/s, Apr. 27, elevation, 11.15 ft; minimum daily, 1,120 ft<sup>3</sup>/s, Dec. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	1520	1560	1360	1550	1870	2180	2110	1740	1530	1390	1510
2	1220	1550	1530	1380	1550	1970	2090	2000	1700	1480	1360	1440
3	1250	1570	1500	1360	1540	2050	2140	1910	1710	1500	1330	1450
4	1310	1570	1420	1320	1500	2130	2160	1870	1650	1490	1400	1530
5	1350	1560	1430	1280	1470	2140	2160	1920	1660	1480	1400	1560
6	1320	1540	1390	1260	1460	2150	2100	1940	1680	1470	1390	1530
7	1290	1520	1350	1280	1470	2160	1990	1940	1660	1450	1570	1560
8	1280	1500	1350	1330	1460	2140	1810	2080	1750	1340	1650	1570
9	1270	1480	1350	1380	1450	2150	1790	2110	1750	1350	1550	1520
10	1310	1480	1350	1320	1470	2060	1740	2040	1700	1350	1530	1490
11	1410	1480	1300	1240	1460	2110	1710	1970	1610	1310	1480	1490
12	1440	1470	1250	1190	1430	2210	1630	1840	1630	1250	1460	1480
13	1470	1470	1250	1180	1410	2270	1610	1770	1690	1180	1470	1470
14	1500	1490	1240	1220	1380	2270	1890	1700	1580	1200	1560	1470
15	1500	1500	1240	1270	1350	2350	2180	1710	1570	1220	1650	1520
16	1540	1500	1240	1330	1350	2400	2230	1720	1650	1240	1590	1570
17	1490	1560	1260	1450	1330	2470	2250	1750	1640	1260	1550	1500
18	1470	1640	1250	1780	1320	2420	2140	1740	1670	1340	1590	1480
19	1380	1620	1220	2260	1300	2470	2020	1620	1790	1250	1640	1530
20	1340	1590	1170	2100	1270	2420	2180	1540	1830	1260	1650	1610
21	1330	1580	1160	1910	1240	2340	2310	1570	1740	1310	1710	1550
22	1310	1580	1160	1770	1210	2320	2150	1650	1770	1310	1700	1490
23	1310	1580	1150	1690	1190	2340	2200	1680	1810	1340	1630	1380
24	1300	1580	1150	1610	1200	2330	2600	1600	1830	1440	1630	1320
25	1330	1570	1150	1550	1190	2330	2590	1570	1860	1450	1590	1300
26	1340	1570	1150	1510	1200	2360	2620	1590	1910	1410	1620	1320
27	1330	1590	1120	1510	1340	2320	2720	1590	1910	1390	1600	1270
28	1400	1600	1130	1510	1540	2250	2650	1610	1720	1360	1660	1260
29	1410	1600	1240	1520	1650	2260	2370	1630	1590	1360	1750	1220
30	1440	1580	1260	1540	---	2220	2160	1680	1530	1370	1640	1170
31	1480	---	1300	1550	---	2180	---	1770	---	1370	1540	---
TOTAL	42460	46440	39620	45960	40280	69460	64370	55220	51330	42060	48280	43560
MEAN	1370	1548	1278	1483	1389	2241	2146	1781	1711	1357	1557	1452
MAX	1540	1640	1560	2260	1650	2470	2720	2110	1910	1530	1750	1610
MIN	1220	1470	1120	1180	1190	1870	1610	1540	1530	1180	1330	1170
AC-FT	84220	92110	78590	91160	79900	137800	127700	109500	101800	83430	95760	86400

CAL YR 1987 TOTAL 727780 MEAN 1992 MAX 6000 MIN 1120 AC-FT 1444000  
WTR YR 1988 TOTAL 589040 MEAN 1609 MAX 2720 MIN 1120 AC-FT 1168000

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951 to current year.

CHEMICAL DATA: Water years 1951 to current year.

BIOLOGICAL DATA: Water years 1974-81.

SPECIFIC CONDUCTANCE: Water years 1951-63, 1973-81, June 1985 to current year.

WATER TEMPERATURE: Water years 1951 to current year.

SEDIMENT DATA: Water years 1957 to current year.

PERIOD OF DAILY RECORD.--

CHEMICAL ANALYSES: March 1951 to May 1963.

SPECIFIC CONDUCTANCE: March 1951 to May 1963, January 1973 to October 1981.

WATER TEMPERATURE: March 1951 to current year.

SUSPENDED-SEDIMENT DISCHARGE: November 1956 to current year.

INSTRUMENTATION.--Conductivity recorder January 1973 to October 1981. Temperature recorder October 1961 to September 1963, and since December 1972. Mini-monitor recorder since June 1985.

REMARKS.--Mean daily specific conductance records January 1973 to October 1981, provided by U.S. Bureau of Reclamation. Maximum and minimum specific conductance values, June 1985 to current year, are available in files of U.S. Geological Survey. Additional bimonthly chemical, trace element, and biological data are available in files of U.S. Geological Survey and in U.S. Geological Survey Open-File Report 88-479. Interruptions in record were due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (March 1951 to May 1963, January 1973 to October 1981): Maximum daily, 2,350 microsiemens, Aug. 11, 1961; minimum daily, 60 microsiemens, June 21, 1953.

WATER TEMPERATURE: Maximum recorded, 30.0 °C, July 7, 1970, July 30, 1977; minimum recorded, 2.0 °C, Dec. 26, 1987.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,590 mg/L, Dec. 25, 1964; minimum daily mean, 9 mg/L, Jan. 4, 1960, Nov. 18, 1961.

SEDIMENT LOAD: Maximum daily, 54,100 tons, Dec. 25, 1964; minimum daily, 2 tons, Aug. 10, 1961.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 28.5 °C, July 19; minimum recorded, 2.0 °C, Dec. 26.

SEDIMENT CONCENTRATION: Maximum daily mean, 174 mg/L, Jan. 19; minimum daily mean, 15 mg/L, Dec. 25.

SEDIMENT LOAD: Maximum daily, 1,060 tons, Jan. 19; minimum daily, 47 tons, Dec. 25.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, (PER- CENT UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS TOTAL (MG/L AS CACO3)
NOV , 1987												
16...	0935	1510	904	8.00	12.5	0.40	765	9.0	84	510	250	210
JAN , 1988												
11...	1400	1230	1130	7.80	11.5	0.30	775	8.9	81	120	360	240
MAR												
16...	1302	2370	777	8.00	15.0	20	775	9.4	92	51	140	180
MAY												
19...	1045	1620	747	7.90	18.5	1.8	765	8.7	93	93	86	180
JUL												
18...	1230	1380	846	7.80	25.5	36	765	8.4	103	350	220	200
SEP												
19...	1245	1520	783	7.90	19.0	15	765	9.4	101	K130	210	190

DATE	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3
NOV											
16...	80	44	23	110	53	3	3.7	149	0	122	125
JAN											
11...	86	50	28	140	55	4	5.8	189	0	155	154
MAR											
16...	82	41	19	88	51	3	2.9	119	0	97	99
MAY											
19...	74	38	20	83	50	3	2.5	128	0	105	104
JUL											
18...	98	43	22	97	51	3	2.8	124	0	102	100
SEP											
19...	63	40	21	92	51	3	3.1	152	0	125	124

See footnote at end of table.

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)
NOV 16...	130	130	0.20	20	542	548	0.74	0.010	1.50	0.110	0.110	0.60
JAN 11...	170	170	0.20	19	699	688	0.95	0.080	2.50	0.340	0.300	0.90
MAR 16...	130	100	0.20	17	465	469	0.63	0.040	2.30	0.080	0.070	0.60
MAY 19...	110	100	0.20	16	436	439	0.59	0.020	1.40	0.020	0.010	0.40
JUL 18...	120	120	0.10	16	507	490	0.69	0.040	1.90	<0.010	<0.010	0.70
SEP 19...	100	120	0.10	18	473	475	0.64	<0.010	1.20	<0.010	<0.010	0.20

DATE	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 16...	0.140	0.130	0.120	<10	2	58	<0.5	<1	2	<3	<1	12
JAN 11...	0.470	0.340	0.270	--	--	--	--	--	--	--	--	--
MAR 16...	0.160	0.130	0.110	10	2	48	<0.5	<1	1	<3	1	12
MAY 19...	0.120	0.070	0.100	<10	2	50	<0.5	2	1	<3	4	14
JUL 18...	0.250	0.140	0.120	--	--	--	--	--	--	--	--	--
SEP 19...	0.240	0.130	0.100	<10	2	53	<0.5	3	1	<3	2	15

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 16...	<5	8	30	<0.1	<10	<1	1	<1.0	520	<6	18
JAN 11...	--	--	--	--	--	--	--	--	--	--	--
MAR 16...	<5	11	20	<0.1	<10	<1	3	<1.0	480	<6	4
MAY 19...	<5	9	45	<0.1	<10	<1	2	<1.0	440	<6	6
JUL 18...	--	--	--	--	--	--	--	--	--	--	--
SEP 19...	<5	11	33	<0.1	<10	3	2	<1.0	470	<6	4

K Results based on colony count outside acceptable range (non-ideal colony count).  
 < Actual value is known to be less than value shown.

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR										
16...*	1250	139	762	7.80	15.0	775	9.4	92	58	92
16...*	1255	177	752	7.80	15.0	775	9.7	95	66	88
16...*	1300	223	766	7.90	15.0	775	9.4	92	70	80
16...*	1310	267	756	7.90	15.0	775	9.3	91	72	85
16...*	1315	314	741	7.90	15.0	775	9.5	93	68	78
SEP										
19...*	1305	140	793	7.90	19.0	765	9.5	102	45	91
19...*	1300	168	796	7.90	19.0	765	9.4	101	45	91
19...*	1250	200	793	7.80	19.0	765	9.4	101	45	91
19...*	1240	240	736	7.70	19.0	765	9.3	100	45	91
19...*	1230	295	768	--	19.0	765	9.2	99	45	91

\* Instantaneous streamflow at the time of cross-sectional measurement: Mar. 16, 2,370 ft<sup>3</sup>/s;  
Sept. 19, 1,520 ft<sup>3</sup>/s.

## TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	21.5	17.5	17.5	15.5	11.5	8.5	5.5	4.0	12.0	9.5	---	---
2	21.0	17.0	17.0	14.0	14.0	10.5	6.0	5.0	12.5	9.0	---	---
3	22.0	17.5	17.5	13.5	15.5	11.5	6.5	5.0	12.0	8.5	---	---
4	22.5	18.0	16.5	12.0	13.0	11.0	9.5	6.5	---	---	17.5	12.5
5	22.0	17.5	14.5	12.0	12.0	10.0	10.0	9.0	---	---	18.0	13.0
6	22.0	17.5	14.5	12.5	12.0	9.5	9.5	9.0	---	---	18.5	13.5
7	22.0	18.0	17.0	12.5	12.0	8.5	9.5	8.0	---	---	18.5	13.0
8	21.0	17.0	16.0	12.0	9.5	8.0	10.5	8.5	---	---	18.0	12.0
9	20.0	17.0	15.5	13.5	11.5	9.0	11.5	9.0	---	---	17.0	12.0
10	20.0	15.5	15.0	12.5	13.0	10.0	12.0	10.0	---	---	15.0	10.5
11	20.0	16.0	15.5	11.5	12.0	8.0	13.5	10.0	---	---	14.5	9.5
12	20.0	16.0	13.5	11.0	9.5	5.5	12.5	9.0	---	---	14.5	9.5
13	20.5	16.0	13.0	11.5	7.5	3.5	12.5	8.5	---	---	15.5	9.0
14	21.5	16.5	14.0	11.5	5.0	2.5	11.5	8.0	---	---	16.0	9.5
15	20.0	16.0	13.0	10.0	4.0	2.5	10.5	8.5	---	---	16.0	10.5
16	19.5	15.5	13.0	10.5	5.0	3.0	9.5	7.0	---	---	16.5	11.0
17	20.0	15.5	11.5	9.5	7.5	4.5	8.5	7.0	---	---	17.0	10.5
18	20.5	15.5	13.5	11.0	7.5	4.0	10.0	6.5	---	---	17.5	11.5
19	20.5	16.0	14.0	11.0	9.0	5.5	9.5	6.5	---	---	18.0	12.5
20	19.0	15.5	12.5	10.5	8.0	4.5	9.5	5.0	---	---	18.0	13.5
21	20.0	16.0	11.0	10.0	8.0	7.0	10.0	6.0	---	---	16.5	13.5
22	19.0	16.0	12.5	9.0	10.5	7.0	10.0	6.0	---	---	17.0	12.5
23	21.0	17.0	11.5	9.0	8.5	4.5	10.5	6.5	---	---	17.5	13.0
24	22.0	17.5	11.5	8.0	6.5	3.5	11.5	6.5	---	---	16.5	12.0
25	22.5	17.0	11.5	8.5	6.5	2.5	12.0	8.0	---	---	18.0	12.5
26	22.0	17.5	10.5	7.0	6.0	2.0	11.0	8.0	---	---	18.5	13.0
27	20.5	18.0	10.0	7.0	4.5	2.5	12.5	8.5	---	---	16.0	12.0
28	20.5	17.5	12.0	8.5	6.5	4.0	11.5	9.5	---	---	15.0	10.5
29	20.5	18.0	11.5	8.0	6.5	4.5	12.5	10.0	---	---	16.5	10.5
30	19.5	17.0	9.5	8.0	8.5	5.5	14.0	10.5	---	---	16.0	12.0
31	18.0	16.5	---	---	8.5	5.5	13.5	10.0	---	---	16.5	11.0
MONTH	22.5	15.5	17.5	7.0	15.5	2.0	14.0	4.0	---	---	---	---

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

TEMPERATURE, (DEG. C) OF WATER, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	18.0	11.0	16.0	13.0	22.5	18.0	25.0	19.5	---	---	26.5	20.0
2	18.5	12.0	18.0	12.5	23.5	18.0	26.0	20.5	---	---	26.0	19.5
3	16.5	12.0	18.5	14.5	23.0	18.5	25.5	21.0	---	---	27.0	19.5
4	17.5	12.5	18.0	13.5	20.5	17.0	23.5	19.0	---	---	27.0	20.5
5	19.0	13.0	16.0	13.0	19.0	15.5	23.0	18.0	---	---	28.0	20.5
6	19.5	14.0	16.0	12.5	17.0	13.5	23.5	18.5	---	---	26.5	20.0
7	20.0	15.0	16.0	12.0	18.0	14.0	25.5	19.0	---	---	24.0	19.5
8	18.0	13.5	18.0	14.0	19.0	14.0	25.0	20.5	---	---	22.5	17.5
9	18.5	13.0	19.5	16.0	20.5	15.5	26.0	21.0	---	---	23.0	15.5
10	20.5	14.5	21.5	17.0	21.5	17.0	26.5	22.0	23.0	18.5	22.5	18.0
11	21.5	16.0	24.0	19.0	22.0	17.5	26.0	21.0	22.5	18.5	23.0	18.5
12	20.5	16.5	23.5	18.5	23.5	17.5	25.0	21.0	21.5	17.5	22.5	17.5
13	18.0	15.0	21.5	17.5	24.0	19.0	24.5	19.5	21.5	17.0	22.5	17.0
14	16.0	13.0	23.0	17.5	24.5	19.5	24.5	19.5	21.0	17.0	23.0	17.5
15	16.0	13.5	23.5	18.0	23.5	19.5	24.5	18.0	22.5	16.5	22.5	18.0
16	15.0	13.5	21.0	18.5	22.5	18.5	25.5	16.5	23.0	17.0	23.0	16.5
17	17.5	13.0	21.0	17.0	22.5	18.0	25.0	20.0	24.0	15.5	21.5	16.0
18	18.0	13.5	22.0	16.5	23.5	19.0	27.0	18.0	24.0	16.5	21.0	15.0
19	16.0	13.5	23.0	19.0	25.0	19.0	28.5	20.5	24.0	18.0	20.0	14.5
20	16.0	12.0	25.0	18.0	23.0	19.0	26.0	20.5	24.0	18.0	19.5	15.0
21	17.5	14.0	26.0	20.5	22.5	18.0	---	---	22.5	18.0	20.0	15.0
22	16.0	12.5	24.0	21.0	23.0	18.5	---	---	23.5	18.5	20.5	15.0
23	16.0	11.5	24.5	20.0	23.0	19.0	---	---	23.5	19.0	21.0	15.5
24	17.5	13.5	24.0	19.0	23.0	18.5	---	---	24.0	18.5	21.0	15.5
25	18.0	14.5	22.5	18.5	21.5	18.0	---	---	25.0	19.0	18.5	14.5
26	19.5	15.5	21.5	17.5	22.5	17.5	---	---	25.5	19.5	19.0	13.5
27	20.0	17.0	22.5	17.5	22.5	18.5	---	---	25.0	19.5	19.5	14.5
28	19.0	16.0	20.5	16.5	22.0	17.5	---	---	25.0	19.5	---	---
29	19.0	16.0	18.5	15.5	21.5	17.5	---	---	24.5	19.0	23.0	16.0
30	17.0	14.0	19.5	15.0	22.5	17.0	---	---	25.0	19.5	23.5	16.5
31	---	---	21.5	16.0	---	---	---	---	26.5	20.0	---	---
MONTH	21.5	11.0	26.0	12.0	25.0	13.5	---	---	---	---	---	---



## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	1340	57	206	1520	67	275	1560	39	164
2	1220	46	152	1550	62	259	1530	37	153
3	1250	52	175	1570	60	254	1500	37	150
4	1310	50	177	1570	58	246	1420	39	150
5	1350	44	160	1560	57	240	1430	43	166
6	1320	46	164	1540	52	216	1390	43	161
7	1290	40	139	1520	52	213	1350	37	135
8	1280	38	131	1500	52	211	1350	39	142
9	1270	42	144	1480	54	216	1350	37	135
10	1310	48	170	1480	52	208	1350	39	142
11	1410	50	190	1480	45	180	1300	40	140
12	1440	49	191	1470	45	179	1250	37	125
13	1470	50	198	1470	46	183	1250	28	94
14	1500	56	227	1490	46	185	1240	21	70
15	1500	55	223	1500	40	162	1240	20	67
16	1540	54	225	1500	38	154	1240	22	74
17	1490	52	209	1560	44	185	1260	24	82
18	1470	54	214	1640	44	195	1250	30	101
19	1380	50	186	1620	47	206	1220	32	105
20	1340	48	174	1590	43	185	1170	31	98
21	1330	51	183	1580	41	175	1160	30	94
22	1310	54	191	1580	38	162	1160	29	91
23	1310	51	180	1580	36	154	1150	28	87
24	1300	54	190	1580	37	158	1150	23	71
25	1330	57	205	1570	42	178	1150	15	47
26	1340	54	195	1570	32	136	1150	17	53
27	1330	60	215	1590	30	129	1120	19	57
28	1400	59	223	1600	34	147	1130	16	49
29	1410	61	232	1600	35	151	1240	19	64
30	1440	60	233	1580	34	145	1260	22	75
31	1480	62	248	---	---	---	1300	25	88
TOTAL	42460	---	5950	46440	---	5687	39620	---	3230
JANUARY			FEBRUARY			MARCH			
1	1360	27	99	1550	60	251	1870	94	475
2	1380	27	101	1550	56	234	1970	87	463
3	1360	28	103	1540	52	216	2050	79	437
4	1320	35	125	1500	49	198	2130	82	472
5	1280	36	124	1470	40	159	2140	91	526
6	1260	38	129	1460	44	173	2150	80	464
7	1280	35	121	1470	53	210	2160	74	432
8	1330	37	133	1460	48	189	2140	74	428
9	1380	47	175	1450	47	184	2150	71	412
10	1320	46	164	1470	54	214	2060	77	428
11	1240	41	137	1460	61	240	2110	64	365
12	1190	38	122	1430	58	224	2210	53	316
13	1180	34	108	1410	50	190	2270	58	355
14	1220	38	125	1380	47	175	2270	62	380
15	1270	42	144	1350	48	175	2350	71	450
16	1330	52	187	1350	54	197	2400	74	480
17	1450	68	266	1330	47	169	2470	76	507
18	1780	136	654	1320	45	160	2420	86	562
19	2260	174	1060	1300	44	154	2470	77	514
20	2100	125	709	1270	44	151	2420	75	490
21	1910	113	583	1240	47	157	2340	72	455
22	1770	82	392	1210	43	140	2320	69	432
23	1690	68	310	1190	42	135	2340	69	436
24	1610	60	261	1200	42	136	2330	77	484
25	1550	61	255	1190	50	161	2330	74	466
26	1510	57	232	1200	59	191	2360	72	459
27	1510	57	232	1340	65	235	2320	67	420
28	1510	60	245	1540	69	287	2250	61	371
29	1520	61	250	1650	81	361	2260	60	366
30	1540	65	270	---	---	---	2220	62	372
31	1550	64	268	---	---	---	2180	55	324
TOTAL	45960	---	8084	40280	---	5666	69460	---	13541

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	2180	56	330	2110	67	382	1740	95	446
2	2090	54	305	2000	58	313	1700	82	376
3	2140	56	324	1910	58	299	1710	83	383
4	2160	57	332	1870	59	298	1650	90	401
5	2160	55	321	1920	60	311	1660	95	426
6	2100	52	295	1940	57	299	1680	104	472
7	1990	54	290	1940	56	293	1660	109	489
8	1810	57	279	2080	56	314	1750	102	482
9	1790	57	275	2110	56	319	1750	107	506
10	1740	66	310	2040	50	275	1700	107	491
11	1710	71	328	1970	47	250	1610	108	469
12	1630	62	273	1840	55	273	1630	107	471
13	1610	74	322	1770	58	277	1690	109	497
14	1890	73	373	1700	54	248	1580	96	410
15	2180	101	594	1710	50	231	1570	91	386
16	2230	100	602	1720	56	260	1650	88	392
17	2250	94	571	1750	56	265	1640	94	416
18	2140	93	537	1740	44	207	1670	83	374
19	2020	103	562	1620	42	184	1790	73	353
20	2180	113	665	1540	49	204	1830	80	395
21	2310	117	730	1570	49	208	1740	92	432
22	2150	121	702	1650	56	249	1770	92	440
23	2200	103	612	1680	63	286	1810	80	391
24	2600	95	667	1600	61	264	1830	79	390
25	2590	94	657	1570	61	259	1860	88	442
26	2620	90	637	1590	67	288	1910	104	536
27	2720	83	610	1590	81	348	1910	119	614
28	2650	77	551	1610	73	317	1720	125	580
29	2370	74	474	1630	75	330	1590	126	541
30	2160	76	443	1680	77	349	1530	121	500
31	---	---	---	1770	86	411	---	---	---
TOTAL	64370	---	13971	55220	---	8811	51330	---	13501
JULY			AUGUST			SEPTEMBER			
1	1530	139	574	1390	115	432	1510	73	298
2	1480	121	484	1360	107	393	1440	85	330
3	1500	114	462	1330	110	395	1450	87	341
4	1490	129	519	1400	104	393	1530	85	351
5	1480	143	571	1400	104	393	1560	83	350
6	1470	150	595	1390	115	432	1530	73	302
7	1450	143	560	1570	136	577	1560	74	312
8	1340	133	481	1650	129	575	1570	79	335
9	1350	142	518	1550	139	582	1520	78	320
10	1350	141	514	1530	139	574	1490	70	282
11	1310	146	516	1480	124	496	1490	64	257
12	1250	144	486	1460	123	485	1480	73	292
13	1180	137	436	1470	122	484	1470	76	302
14	1200	130	421	1560	116	489	1470	63	250
15	1220	141	464	1650	126	561	1520	63	259
16	1240	137	459	1590	117	502	1570	62	263
17	1260	115	391	1550	122	511	1500	51	207
18	1340	108	391	1590	127	545	1480	43	172
19	1250	106	358	1640	118	523	1530	52	215
20	1260	103	350	1650	107	477	1610	53	230
21	1310	91	322	1710	118	545	1550	50	209
22	1310	82	290	1700	117	537	1490	43	173
23	1340	90	326	1630	118	519	1380	46	171
24	1440	91	354	1630	118	519	1320	44	157
25	1450	95	372	1590	112	481	1300	40	140
26	1410	95	362	1620	98	429	1320	41	146
27	1390	91	342	1600	89	384	1270	46	158
28	1360	84	308	1660	93	417	1260	49	167
29	1360	100	367	1750	84	397	1220	50	165
30	1370	118	436	1640	86	381	1170	51	161
31	1370	125	462	1540	82	341	---	---	---
TOTAL	42060	---	13491	48280	---	14769	43560	---	7315
YEAR	589040		114016						

## SAN JOAQUIN RIVER BASIN

11303500 SAN JOAQUIN RIVER NEAR VERNALIS, CA--Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM
OCT									
22...	0915	1310	17.5	45	159	95	--	--	--
NOV									
16...	0935	1510	12.5	36	147	95	--	--	--
19...	1130	1620	13.0	51	223	84	--	--	--
27...	1247	1600	10.0	32	138	78	--	--	--
DEC									
17...	1030	1260	7.5	21	71	87	92	96	100
JAN									
11...	1400	1230	11.5	42	139	86	--	--	--
22...	1300	1770	10.0	82	392	88	--	--	--
FEB									
19...	0915	1370	10.5	39	144	91	--	--	--
MAR									
16...	1302	2370	15.0	66	421	82	90	93	100
MAY									
19...	1045	1630	18.5	46	202	95	97	99	100
JUL									
18...	1230	1380	25.5	103	384	98	100	--	--
AUG									
24...	1420	1660	23.5	113	506	97	98	99	100
26...	0845	1620	22.5	115	503	92	--	--	--
SEP									
19...	1245	1520	19.0	45	185	91	96	99	100
28...	1330	1260	20.5	48	163	84	--	--	--

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	NUMBER OF SAM- PLING POINTS (COUNT)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM
DATE	TIME							
MAY 19...	1045	1630	18.5	5	--	0	6	49
		BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM
DATE								
MAY 19...	91	99	100	--	--	--	--	--

## SAN JOAQUIN RIVER BASIN

11308600 CALAVERAS RIVER ABOVE NEW HOGAN LAKE, NEAR SAN ANDREAS, CA

LOCATION.--Lat 38°11'48", long 120°43'18", in NW 1/4 SW 1/4 sec. 13, T.4 N., R.11 E., Calaveras County, Hydrologic Unit 18040011, on right bank 600 ft below confluence of the North and South Forks of the Calaveras River, and 2.3 mi west of San Andreas.

DRAINAGE AREA.--307 mi<sup>2</sup>.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1970 to September 1988 (discontinued).

INSTRUMENTATION.--Temperature recorder since October 1970.

REMARKS.--Interruptions in record were due to extreme low-flow conditions.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.5 °C, Aug. 8, 9, 1978; minimum recorded, 2.0 °C, Jan. 7, 1973, Jan. 4, 1976, Jan. 17-19, 21, 1987.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded (more than 20-percent missing record), 20.0 °C, Apr. 11; minimum recorded, 3.5 °C, Dec. 26, 27.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	---	---	10.5	8.0	5.5	4.5	9.5	8.0	12.0	10.0
2	---	---	---	---	12.0	9.5	6.0	5.0	9.5	7.5	10.5	9.0
3	---	---	---	---	13.0	9.5	6.5	5.5	9.0	6.5	11.0	9.0
4	---	---	---	---	11.0	9.5	7.5	6.0	8.5	6.0	12.0	10.0
5	---	---	---	---	11.0	9.5	8.5	7.5	8.5	6.0	13.5	11.0
6	---	---	---	---	11.0	9.5	8.0	7.0	8.5	6.0	14.0	12.0
7	---	---	---	---	11.0	9.5	8.0	7.0	9.0	6.0	14.0	11.0
8	---	---	---	---	10.0	9.5	9.0	8.0	9.0	6.5	14.5	11.5
9	---	---	---	---	11.0	9.5	9.5	8.5	10.0	6.5	14.5	12.0
10	---	---	---	---	12.5	10.5	10.0	9.0	10.0	7.5	13.5	10.5
11	---	---	---	---	12.5	10.5	10.5	9.0	10.5	8.0	12.5	9.5
12	---	---	---	---	10.5	8.5	9.0	7.5	10.5	8.0	12.5	9.0
13	---	---	---	---	9.0	6.5	8.0	7.0	10.5	8.0	13.0	9.5
14	---	---	---	---	7.0	5.5	8.5	7.0	10.5	8.0	13.5	9.5
15	---	---	---	---	6.5	6.0	9.0	8.0	10.5	8.0	14.0	10.0
16	---	---	---	---	8.0	6.5	8.5	8.0	10.5	8.0	14.0	10.0
17	---	---	---	---	9.0	7.0	8.0	7.0	10.0	7.5	14.5	10.0
18	---	---	---	---	8.5	6.0	7.5	6.5	10.5	7.5	15.0	11.0
19	---	---	---	---	9.0	7.0	6.5	5.5	10.0	7.0	16.0	11.5
20	---	---	---	---	8.0	5.5	6.5	5.5	10.5	7.0	16.5	12.0
21	---	---	---	---	8.0	6.5	6.5	5.0	10.5	7.5	16.5	12.5
22	---	---	---	---	8.0	7.5	7.0	5.0	10.5	7.5	16.5	12.5
23	---	---	---	---	7.5	6.0	7.5	5.5	11.0	8.0	17.5	13.5
24	---	---	---	---	6.0	5.0	8.0	5.5	11.5	8.0	17.0	13.0
25	---	---	---	---	5.5	4.0	8.5	6.0	12.0	8.5	18.0	13.0
26	---	---	---	---	6.0	3.5	8.0	6.5	12.0	9.5	18.5	13.5
27	---	---	---	---	5.0	3.5	8.5	6.5	12.0	10.5	17.5	14.0
28	---	---	---	---	6.0	5.0	8.5	7.0	13.0	10.5	17.0	12.5
29	---	---	---	---	6.0	5.5	10.0	8.0	12.5	11.0	17.0	12.5
30	---	---	---	---	7.0	6.0	10.5	9.0	---	---	16.5	12.5
31	---	---	---	---	6.5	5.0	10.0	9.0	---	---	16.5	12.0
MONTH	---	---	---	---	13.0	3.5	10.5	4.5	13.0	6.0	18.5	9.0

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

[illegible]

## SAN JOAQUIN RIVER BASIN

11308700 NEW HOGAN LAKE NEAR VALLEY SPRINGS, CA

LOCATION.--Lat 38°09'01", long 120°48'45", in SW 1/4 SW 1/4 sec.31, T.4 N., R.11 E., Calaveras County, Hydrologic Unit 18040011, in control house at New Hogan Dam on the Calaveras River, 3.0 mi south of Valley Springs.

DRAINAGE AREA.--362 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1963 to current year. Prior to October 1971, published as "New Hogan Reservoir."

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by an earthfill dam and four earthfill dikes. Storage began Dec. 20, 1963. Total capacity, 317,055 acre-ft between elevations 534.5 ft, invert of outlet valve, and 713.0 ft, top of spillway gates. Elevation of spillway crest is 679.5 ft. No dead storage. The reservoir is operated for flood control according to existing downstream channel conditions. Reservoir releases limited, insofar as possible, to amounts that will not cause flows greater than 6,000 ft<sup>3</sup>/s at Bellota. Records, including extremes, show contents at 2400 hours.

COOPERATION.--Records provided by U.S. Army Corps of Engineers; not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 278,798 acre-ft, May 15-16, 1982, elevation, 703.75 ft; minimum since initial season of normal operation, 9,360 acre-ft, Oct. 27, 1964, elevation, 576.81 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 58,984 acre-ft, Oct. 1, elevation, 624.29 ft; minimum, 15,431 acre-ft, Sept. 30, elevation, 586.81 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by U.S. Army Corps of Engineers, from 1978 survey)

545	588	600	26,851
550	1,117	610	38,252
555	1,892	630	68,795
560	2,960	650	110,300
570	6,149	670	163,134
580	11,013	700	264,177
590	17,835	713	317,123

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58984	56138	53996	52652	55187	55582	54293	51980	48041	38683	28163	19224
2	58738	56043	53950	52652	55235	56075	54059	51904	47794	38366	27860	19018
3	58509	55979	53872	52683	55235	56298	53810	51904	47491	38037	27559	18797
4	58265	55884	53794	52637	55219	56426	53593	51798	47103	37698	27311	18546
5	58118	55820	53686	52637	55219	56521	53376	51737	46702	37460	27034	18272
6	58021	55788	53655	52637	55203	56569	53129	51722	46304	37111	26739	18025
7	57939	55693	53639	52652	55203	56649	52960	51616	46105	36802	26476	17843
8	57842	55630	53639	52667	55203	56665	52560	51600	45766	36469	26154	17670
9	57761	55535	53608	52683	55172	56714	52285	51570	45400	36163	25815	17498
10	57696	55487	53562	52714	55156	56746	51980	51585	45022	35870	25498	17273
11	57599	55424	53515	52775	55156	56778	51767	51555	44702	35530	25233	17043
12	57551	55345	53422	52883	55156	56794	51525	51479	44466	35169	24989	16791
13	57470	55329	53376	52883	55156	56794	51268	51359	44162	34774	24746	16527
14	57405	55266	53314	52898	55156	56810	51072	51253	43832	34369	24495	16280
15	57324	55187	53222	52960	55187	56810	50967	51162	43462	34027	24227	16072
16	57260	55108	53191	53191	55219	56810	50861	51042	43094	33721	23960	15940
17	57163	55077	53160	53919	55219	56810	50771	50952	42782	33441	23658	15889
18	57099	55061	53067	54449	55219	56810	50696	50816	42579	33116	23339	15837
19	57002	54967	53005	54668	55219	56794	50726	50711	42323	32712	23042	15793
20	56922	54873	52944	54778	55219	56730	51087	50651	42054	32311	22738	15764
21	56858	54810	52883	54857	55219	56665	51253	50487	41747	31913	22436	15728
22	56810	54731	52867	54904	55219	56601	51389	50308	41428	31518	22164	15699
23	56714	54637	52837	54935	55219	56537	51661	50173	41163	31160	21912	15655
24	56649	54558	52729	54967	55219	56426	51843	49994	40846	30804	21626	15619
25	56569	54465	52683	54998	55219	56234	51995	49831	40570	30429	21316	15590
26	56505	54418	52652	55030	55203	56027	52011	49638	40256	30045	20991	15554
27	56426	54324	52576	55045	55203	55820	52056	49387	39931	29730	20644	15525
28	56378	54277	52621	55061	55219	55503	52087	49122	39607	29406	20300	15489
29	56346	54168	52637	55156	55250	55093	52041	48829	39310	29105	19985	15460
30	56282	54121	52652	55187	---	54762	51995	48550	39003	28817	19698	15431
31	56202	---	52652	55187	---	54512	---	48302	---	28478	19448	---
MAX	58984	56138	53996	55187	55250	56810	54293	51980	48041	38683	28163	19224
MIN	56202	54121	52576	52637	55156	54512	50696	48302	39003	28478	19448	15431
a	622.57	621.25	620.30	621.93	621.97	621.50	619.87	617.39	610.59	601.57	591.99	586.81
b	-3028	-2081	-1469	+2535	+63	-738	-2517	-3693	-9299	-10525	-9030	-4017
c	619	204	134	129	241	432	416	600	737	847	670	476

CAL YR 1987 b -72732

WTR YR 1988 b -43799

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11308900 CALAVERAS RIVER BELOW NEW HOGAN DAM, NEAR VALLEY SPRINGS, CA

LOCATION.--Lat 38°08'53", long 120°49'26", in NW 1/4 NE 1/4 sec.1, T.3 N., R.10 E., Calaveras County, Hydrologic Unit 18040011, on right bank at county road bridge, 0.5 mi upstream from Cosgrove Creek, 0.8 mi downstream from New Hogan Dam, and 3.0 mi south of Valley Springs.

DRAINAGE AREA.--363 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1961 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 519.8 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Auxiliary nonrecording gage 300 ft downstream at different datum used May 1, 1962, to Jan. 26, 1963.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by New Hogan Lake (station 11308700). Some seepage of North Fork Stanislaus River water enters basin from diversion canals and reservoirs. Small diversions above station for irrigation.

AVERAGE DISCHARGE (adjusted for change in contents and evaporation from New Hogan Lake).--27 years, 242 ft<sup>3</sup>/s, 175,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft<sup>3</sup>/s, Jan. 22, 1980, gage height, 10.52 ft; no flow many days in 1961-65, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 223 ft<sup>3</sup>/s, Mar. 28, gage height, 1.65 ft; minimum daily, 9.8 ft<sup>3</sup>/s, Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	33	37	37	31	14	113	21	107	148	159	104
2	127	33	33	37	31	14	124	27	106	154	159	104
3	116	32	31	38	29	14	132	27	137	150	156	107
4	110	32	33	37	28	14	124	27	176	146	137	124
5	68	32	33	39	30	14	120	33	186	144	142	136
6	24	32	32	38	30	14	113	45	171	143	148	107
7	25	32	32	38	30	14	124	37	166	147	147	81
8	26	32	32	39	30	14	141	23	156	158	173	76
9	24	34	32	34	30	14	149	19	156	148	189	83
10	24	34	32	31	30	14	157	24	155	141	158	114
11	25	35	32	31	21	14	149	31	147	154	140	111
12	23	35	32	31	12	14	135	46	129	178	128	118
13	24	33	32	32	12	14	135	54	136	192	126	131
14	24	33	33	32	12	14	113	55	147	201	134	121
15	23	33	34	33	12	13	96	54	178	184	147	102
16	25	34	33	32	12	13	80	54	186	153	149	66
17	26	34	33	33	15	13	71	54	146	149	155	16
18	26	34	34	31	18	21	71	54	98	160	166	17
19	25	34	34	30	18	43	59	55	107	190	161	13
20	26	33	34	31	19	45	31	55	133	202	159	10
21	24	33	34	30	22	45	18	62	146	202	157	10
22	29	34	34	30	25	45	15	77	146	202	144	11
23	33	34	33	30	21	45	15	77	131	191	131	12
24	33	36	33	31	18	63	13	77	133	182	150	11
25	32	35	32	31	17	99	14	75	144	189	167	10
26	30	36	34	31	15	109	15	90	144	199	172	10
27	31	36	34	31	14	110	15	110	144	172	177	10
28	31	35	35	31	14	168	15	137	144	161	174	9.8
29	32	35	35	31	14	210	15	149	144	154	161	11
30	32	36	36	31	---	187	15	129	144	159	148	11
31	32	---	37	31	---	139	---	116	---	168	123	---
TOTAL	1244	1014	1035	1022	610	1564	2387	1894	4343	5221	4737	1846.8
MEAN	40.1	33.8	33.4	33.0	21.0	50.5	79.6	61.1	145	168	153	61.6
MAX	127	36	37	39	31	210	157	149	186	202	189	136
MIN	23	32	31	30	12	13	13	19	98	141	123	9.8
AC-FT	2470	2010	2050	2030	1210	3100	4730	3760	8610	10360	9400	3660

CAL YR 1987 TOTAL 47837 MEAN 131 MAX 301 MIN 20 AC-FT 94880 MEAN a 43.0 AC-FT a 31120  
WTR YR 1988 TOTAL 26917.8 MEAN 73.5 MAX 210 MIN 9.8 AC-FT 53390 MEAN a 20.8 AC-FT a 15100

a Adjusted for change in contents and evaporation from New Hogan Lake. Evaporation data provided by U.S. Army Corps of Engineers; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11308900 CALAVERAS RIVER BELOW NEW HOGAN DAM, NEAR VALLEY SPRINGS, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-66, 1971 to current year.

CHEMICAL DATA: Water years 1964-66.

WATER TEMPERATURE: Water year 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1970 to current year.

INSTRUMENTATION.--Temperature recorder since October 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 24.0 °C Aug. 10, 28, 29 1977; minimum recorded, 5.5 °C Dec. 17, 1971, Jan. 1, 1973.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.0 °C several days during September; minimum recorded, 7.5 °C several days during winter.

## WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.0	15.5	16.5	15.5	14.0	13.5	9.0	8.0	9.5	8.0	11.0	9.5
2	16.5	15.5	16.5	15.5	14.5	13.5	9.0	8.5	9.5	8.0	12.0	9.0
3	16.5	15.5	16.5	15.0	14.0	13.0	8.5	8.5	9.5	7.5	12.0	9.0
4	16.5	15.5	17.0	15.5	13.5	13.0	9.0	8.5	10.0	7.5	12.0	9.0
5	17.0	15.5	17.0	15.5	13.0	13.0	9.0	8.5	9.5	8.0	11.5	9.5
6	16.5	15.0	17.0	16.0	13.5	13.0	9.0	8.0	10.0	7.5	12.0	9.0
7	16.5	15.0	17.5	16.0	14.0	12.5	9.0	8.5	10.0	8.0	12.5	9.0
8	16.5	14.5	17.5	16.0	13.0	12.5	9.0	8.5	10.0	8.0	13.0	9.5
9	16.5	14.5	17.5	16.0	13.0	12.5	9.0	8.5	10.5	8.5	12.0	9.5
10	16.0	14.5	17.5	16.0	13.5	12.5	9.0	8.5	10.5	8.0	12.0	8.5
11	16.5	14.5	17.5	16.0	13.0	12.0	9.0	8.0	11.0	8.5	12.0	8.5
12	16.5	14.5	17.0	16.0	12.5	11.5	9.0	7.5	11.0	7.5	12.5	8.5
13	16.5	14.5	16.5	16.0	12.5	11.5	9.0	8.0	11.0	8.0	13.0	9.0
14	16.5	14.5	17.0	15.5	12.0	11.5	9.0	8.0	11.0	8.0	13.0	9.0
15	16.5	14.5	16.5	15.5	12.0	11.0	9.0	8.5	11.0	8.0	13.0	9.5
16	16.5	14.5	16.5	15.5	11.5	11.0	9.0	8.5	11.0	8.0	13.0	9.0
17	16.5	14.5	16.0	16.0	12.0	10.5	9.0	8.5	10.5	7.5	13.5	9.5
18	16.5	14.5	16.5	15.5	11.5	10.5	9.5	8.0	11.0	8.0	13.5	9.5
19	16.5	14.5	16.5	15.5	11.0	10.5	9.0	8.0	11.0	8.0	12.0	10.0
20	16.5	14.5	15.5	15.0	11.0	10.0	9.5	8.0	11.0	8.5	12.0	10.0
21	16.5	15.0	15.5	15.0	11.0	10.0	9.0	8.0	11.0	8.5	12.0	10.0
22	16.0	15.0	15.5	15.0	10.5	9.5	9.5	8.0	11.0	8.5	12.0	10.0
23	16.5	15.5	15.5	14.5	10.5	9.5	9.0	8.0	11.5	8.5	12.0	10.5
24	16.5	15.5	15.5	14.5	10.0	9.0	9.5	8.0	11.5	8.5	12.0	10.5
25	16.5	15.0	15.0	14.0	10.0	9.0	9.5	8.0	11.5	8.0	11.5	10.5
26	16.5	15.5	15.0	14.0	10.0	9.0	9.5	8.0	11.5	9.0	12.0	10.5
27	16.5	15.5	15.0	13.5	10.0	9.0	9.5	8.0	11.0	9.5	12.0	10.5
28	16.5	15.5	14.5	13.5	9.5	9.0	9.5	8.0	12.0	9.5	12.0	10.5
29	16.0	15.5	14.5	13.5	9.5	9.0	9.5	8.5	11.0	9.5	12.0	11.0
30	16.5	15.5	14.0	13.5	9.5	8.5	9.5	8.5	---	---	12.0	11.0
31	16.5	15.5	---	---	9.5	7.5	9.5	8.0	---	---	12.5	11.0
MONTH	17.0	14.5	17.5	13.5	14.5	7.5	9.5	7.5	12.0	7.5	13.5	8.5



## SAN JOAQUIN RIVER BASIN

11308900 CALAVERAS RIVER BELOW NEW HOGAN DAM, NEAR VALLEY SPRINGS, CA--Continued

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	12.5	10.5	14.0	10.0	14.5	13.5	16.0	15.0	18.5	17.0	22.5	21.0
2	12.5	10.5	14.0	10.0	14.5	13.0	16.5	15.0	18.0	17.0	22.5	21.0
3	12.0	10.5	14.5	11.5	14.5	13.5	16.5	15.0	18.5	17.5	22.5	21.5
4	13.0	10.0	13.5	11.5	14.5	13.5	16.5	15.0	18.0	17.0	22.5	21.5
5	12.5	11.0	13.0	11.5	14.5	13.5	16.5	15.0	18.5	17.0	23.0	22.0
6	12.5	11.0	13.0	11.5	14.5	13.5	16.5	15.0	18.5	17.0	23.0	21.5
7	13.0	11.0	13.0	11.5	14.5	13.5	16.5	15.5	18.5	17.0	22.5	21.0
8	12.5	10.0	15.0	11.5	14.5	13.5	17.0	15.5	19.0	17.5	22.5	21.5
9	12.5	11.5	15.0	11.5	15.0	13.5	16.5	15.5	19.5	18.5	22.5	21.0
10	12.5	11.5	15.0	11.5	15.0	14.0	17.0	15.5	19.5	18.5	23.0	22.0
11	12.5	11.5	15.0	12.0	15.0	14.0	17.0	15.5	19.0	18.0	23.0	22.0
12	13.0	11.5	14.0	12.0	15.0	14.0	17.0	16.0	19.0	18.0	23.0	22.0
13	12.0	11.5	14.0	12.0	15.0	14.0	17.0	16.0	19.0	18.0	23.0	22.0
14	13.0	11.0	14.5	12.0	15.0	14.0	17.5	16.5	19.5	18.0	23.0	22.0
15	11.5	11.5	14.5	12.0	15.0	14.0	17.5	16.0	20.0	18.5	23.0	21.5
16	12.0	11.0	13.0	12.5	15.5	14.5	17.5	16.0	20.0	19.0	23.0	21.0
17	12.5	11.5	14.5	12.5	15.5	14.0	17.5	15.5	20.0	19.0	23.0	20.0
18	12.5	11.0	14.5	12.0	15.5	14.0	17.5	16.0	20.5	19.5	23.0	20.0
19	12.0	11.5	15.0	12.5	15.5	14.0	17.5	16.5	20.5	19.5	22.0	20.0
20	13.5	11.0	15.0	12.0	15.5	14.0	18.0	17.0	20.5	19.5	22.5	19.5
21	14.5	10.5	15.0	11.5	15.5	14.0	18.0	17.0	21.0	20.0	22.0	19.0
22	12.5	11.0	14.5	12.5	15.5	14.5	18.0	17.0	21.0	20.0	22.0	19.0
23	13.5	11.0	14.5	12.0	15.0	14.5	18.0	17.0	21.0	20.0	22.5	19.0
24	14.5	10.0	14.5	12.0	15.5	14.5	18.0	17.0	21.0	20.0	22.0	19.0
25	15.0	10.5	14.5	12.5	15.5	14.5	18.0	17.0	21.5	20.5	21.5	19.0
26	15.0	11.0	14.0	11.0	15.5	14.5	18.5	17.5	21.5	20.5	21.5	18.5
27	15.0	11.0	14.5	12.5	16.0	14.5	18.0	17.0	22.0	21.0	21.5	18.5
28	14.0	11.5	14.0	13.0	16.0	14.5	18.0	17.0	22.0	21.0	21.5	18.0
29	13.5	10.5	14.0	13.0	16.0	14.5	18.0	17.0	22.0	21.0	22.0	18.5
30	14.0	10.5	14.5	13.0	16.0	15.0	18.0	17.0	22.5	21.5	22.0	18.5
31	---	---	14.5	13.0	---	---	18.5	17.5	22.5	21.0	---	---
MONTH	15.0	10.0	15.0	10.0	16.0	13.0	18.5	15.0	22.5	17.0	23.0	18.0

LOCATION.--Lat 37°47'49", long 121°35'03", in SW 1/4 SW 1/4 sec.31, T.1 S., R.4 E., Alameda County, Hydrologic Unit 18040003, at Tracy pumping plant at intake to canal, 6 mi southeast of Byron, and 10 mi northwest of Tracy.

GAGE.--Water-stage recorder on forebay, pressure gages on pump discharge lines, and operating time of pumps.  
Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

AVERAGE DISCHARGE.--37 years, 2,467 ft<sup>3</sup>/s, 1,787,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 4,940 ft<sup>3</sup>/s, Aug. 11, 1969; no flow many days in some years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4350	4080	3400	4040	4070	4130	4090	4080	2430	3040	4730	4630
2	4070	4070	4140	4080	4080	4120	4110	3470	2430	3310	4730	4620
3	4250	4060	4120	4080	4110	4100	3900	3210	3000	4280	4750	4630
4	4200	4060	4110	4080	4100	3240	4080	3220	3250	4680	4740	4620
5	4230	4060	4120	4100	4080	4090	4100	2730	3240	4670	4780	4590
6	4270	4090	4120	4080	4060	4150	4080	2520	3240	4720	4780	4640
7	4310	4080	4100	3940	4080	4130	4130	2510	3220	4700	4760	4640
8	4250	4100	4100	4090	4060	4130	4100	2530	3200	4750	4760	4460
9	4240	4080	4100	4090	4080	4130	4080	3040	3180	4750	4770	4480
10	4300	3360	4080	4050	4090	4120	4100	3200	3220	4780	4690	4670
11	4260	3030	4070	4080	4100	4120	4100	3230	3200	4720	4660	4660
12	4480	3020	4060	4070	4110	4120	4100	3240	3220	4760	4640	4650
13	4100	3760	4020	4010	4100	4120	4100	3180	3210	4780	4620	4640
14	4250	4080	4050	4080	4120	4110	4070	3220	2810	4720	4600	4640
15	2560	4080	4000	4080	4120	4130	4080	3230	2520	4700	4620	4660
16	3820	4060	4000	4080	4120	4130	4070	3230	2520	4720	4600	4620
17	3970	4060	3970	4100	4110	4120	4080	3220	3030	4690	4600	4600
18	3970	4120	3940	4110	4110	4120	4100	3230	3220	4660	4590	4600
19	3970	4100	3950	4070	4100	4120	4090	3240	3210	4680	4590	4600
20	3990	4130	4030	3850	4100	4100	4110	3220	3210	4710	4640	4610
21	4140	4120	3990	4090	4090	4100	4100	3230	3220	4740	4630	4610
22	3770	4130	4110	4050	4090	4100	4100	3230	3190	4750	4670	4600
23	3940	4150	4030	4050	4100	4100	4080	3210	3200	4760	4640	4600
24	3580	4120	4060	4070	4100	4100	4070	2670	3210	4770	3730	4590
25	3470	4090	4060	4040	4090	4090	4070	2430	3270	4720	3330	4550
26	3330	4020	3980	4060	4100	4090	4070	2430	3160	4670	3320	4500
27	3880	3920	4080	4070	4130	4110	4080	2430	2490	3720	4050	4480
28	4000	3900	4080	4090	4100	4100	4070	2440	2490	3320	4640	4520
29	3910	3590	4040	4100	4130	4070	4090	2450	2490	3560	4630	4500
30	3970	3400	4080	4100	---	4100	4090	2390	2490	4290	4540	4530
31	4080	---	4070	4090	---	4080	---	2440	---	4740	4610	---
TOTAL	123910	117920	125060	125970	118830	126570	122490	92100	89770	138860	140440	137740
MEAN	3997	3931	4034	4064	4098	4083	4083	2971	2992	4479	4530	4591
MAX	4480	4150	4140	4110	4130	4150	4130	4080	3270	4780	4780	4670
MIN	2560	3020	3400	3850	4060	3240	3900	2390	2430	3040	3320	4460
AC-FT	245800	233900	248100	249900	235700	251100	243000	182700	178100	275400	278600	273200
CAL YR 1987	TOTAL 1398140		MEAN 3831	3831	MAX 4650	MIN 1700	AC-FT 2773000					
WTR YR 1988	TOTAL 1459660		MEAN 3988	3988	MAX 4780	MIN 2390	AC-FT 2895000					

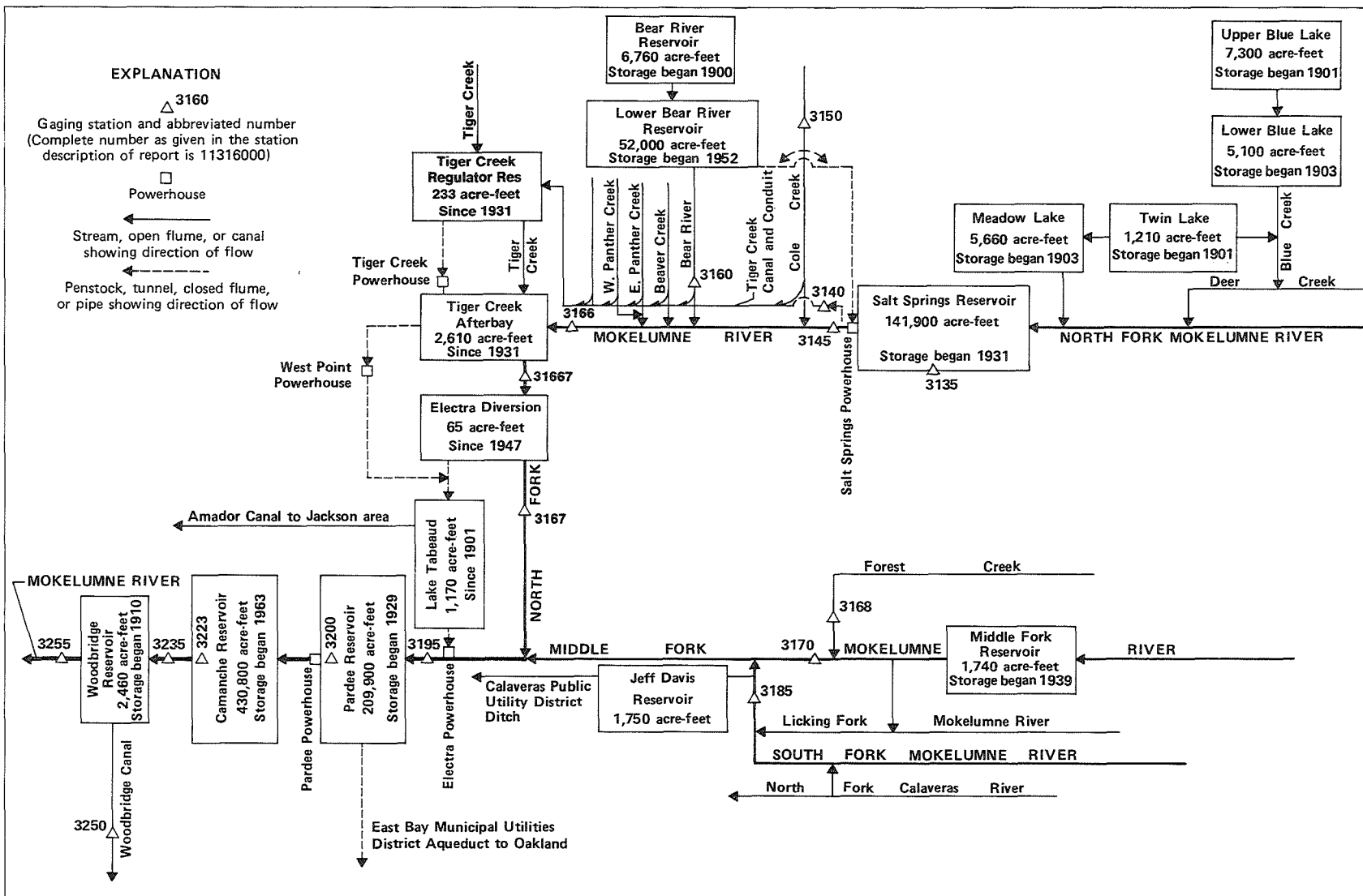


Figure 35.--Schematic diagram showing diversions and storage in Mokelumne River basin.

## SAN JOAQUIN RIVER BASIN

11313477 LOWER BLUE LAKE OUTLET NEAR MARKLEEVILLE, CA

LOCATION.--Lat 38°36'24", long 119°55'31", in SW 1/4 NE 1/4 sec.30, T.9 N., R.19 E., Alpine County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 800 ft downstream from Lower Blue Lake dam, and 10.0 mi southwest of Markleeville.

DRAINAGE AREA.--4.66 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to September 1988. Unpublished records for water years 1981-87 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 7,870 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records computed for summer months only. Low and medium flow regulated by Lower Rock Lake Dam 800 ft upstream. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	12	---	---	---	---	---	10	12	11	11	11
2	11	13	---	---	---	---	---	10	12	11	10	11
3	11	---	---	---	---	---	---	10	12	11	10	11
4	11	---	---	---	---	---	---	10	12	11	10	10
5	10	---	---	---	---	---	---	10	12	11	11	10
6	10	---	---	---	---	---	---	10	12	10	11	11
7	32	---	---	---	---	---	---	10	12	10	11	11
8	51	---	---	---	---	---	---	10	12	10	11	11
9	50	---	---	---	---	---	---	10	12	10	11	11
10	49	---	---	---	---	---	---	10	12	10	11	11
11	48	---	---	---	---	---	---	11	12	10	11	11
12	48	---	---	---	---	---	---	11	11	10	11	11
13	47	---	---	---	---	---	---	11	10	10	11	11
14	47	---	---	---	---	---	---	11	10	10	11	11
15	47	---	---	---	---	---	---	12	10	10	11	11
16	50	---	---	---	---	---	---	12	11	11	11	11
17	51	---	---	---	---	---	---	12	11	11	11	11
18	49	---	---	---	---	---	---	12	11	11	11	11
19	47	---	---	---	---	---	3.0	12	11	11	11	10
20	45	---	---	---	---	---	3.0	12	11	11	11	11
21	43	---	---	---	---	---	3.0	12	11	12	11	11
22	40	---	---	---	---	---	2.9	12	11	12	11	11
23	23	---	---	---	---	---	2.8	12	11	12	11	11
24	20	---	---	---	---	---	2.9	12	11	12	11	11
25	19	---	---	---	---	---	2.7	12	11	12	11	11
26	18	---	---	---	---	---	2.8	12	10	12	11	11
27	17	---	---	---	---	---	2.8	12	11	12	11	11
28	16	---	---	---	---	---	2.9	12	11	12	11	11
29	15	---	---	---	---	---	5.3	12	11	12	11	10
30	8.8	---	---	---	---	---	10	12	11	12	11	10
31	5.4	---	---	---	---	---	---	12	---	12	11	---
TOTAL	950.2	---	---	---	---	---	---	348	337	342	338	325
MEAN	30.7	---	---	---	---	---	---	11.2	11.2	11.0	10.9	10.8
MAX	51	---	---	---	---	---	---	12	12	12	11	11
MIN	5.4	---	---	---	---	---	---	10	10	10	10	10
AC-FT	1880	---	---	---	---	---	---	690	668	678	670	645

## SAN JOAQUIN RIVER BASIN

## 11313485 MEADOW LAKE OUTLET NEAR MARKLEEVILLE, CA

LOCATION.--Lat 38°35'53", long 119°58'40", in SE 1/4 SE 1/4 sec.27, T.9 N., R.18 E., Alpine County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 700 ft downstream from Meadow Lake dam, and 12.5 mi southwest of Markleeville.

DRAINAGE AREA.--5.66 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to September 1988. Unpublished records for water years 1981-87 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 7,660 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records computed for summer months only. Low and medium flow regulated by Meadow Lake Dam 700 ft upstream. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	7.6	33	8.2	17	18
2	---	---	---	---	---	---	---	8.1	32	8.1	17	18
3	---	---	---	---	---	---	---	8.6	32	7.9	17	17
4	---	---	---	---	---	---	---	8.1	33	7.8	17	17
5	---	---	---	---	---	---	---	8.2	29	8.0	17	17
6	---	---	---	---	---	---	---	8.3	26	8.0	16	17
7	---	---	---	---	---	---	---	8.4	25	7.9	17	17
8	---	---	---	---	---	---	---	7.9	22	7.9	16	17
9	---	---	---	---	---	---	---	7.6	22	7.7	16	17
10	---	---	---	---	---	---	---	7.4	21	7.8	16	17
11	---	---	---	---	---	---	---	7.2	20	7.8	16	17
12	---	---	---	---	---	---	---	7.4	19	7.8	17	17
13	---	---	---	---	---	---	---	7.3	19	7.8	17	17
14	---	---	---	---	---	---	---	7.1	18	13	17	17
15	---	---	---	---	---	---	---	7.1	18	16	17	16
16	---	---	---	---	---	---	---	7.3	18	16	17	16
17	---	---	---	---	---	---	---	7.5	15	16	17	17
18	---	---	---	---	---	---	---	7.4	13	17	17	17
19	---	---	---	---	---	---	---	3.8	7.0	12	17	17
20	---	---	---	---	---	---	---	4.0	6.9	11	16	18
21	---	---	---	---	---	---	4.0	7.4	9.7	17	17	18
22	---	---	---	---	---	---	4.3	7.4	9.0	17	18	17
23	---	---	---	---	---	---	4.3	7.4	8.7	16	18	17
24	---	---	---	---	---	---	4.3	7.5	8.2	16	18	17
25	---	---	---	---	---	---	4.5	7.6	8.2	16	18	16
26	---	---	---	---	---	---	4.6	8.0	8.2	16	18	16
27	---	---	---	---	---	---	4.8	8.2	8.4	16	18	15
28	---	---	---	---	---	---	4.8	10	8.5	16	18	15
29	---	---	---	---	---	---	6.0	30	8.3	15	18	15
30	---	---	---	---	---	---	7.3	33	8.2	16	18	14
31	---	---	---	---	---	---	---	31	---	16	18	---
TOTAL	---	---	---	---	---	---	---	309.9	523.4	393.7	531	501
MEAN	---	---	---	---	---	---	---	10.0	17.4	12.7	17.1	16.7
MAX	---	---	---	---	---	---	---	33	33	18	18	18
MIN	---	---	---	---	---	---	---	6.9	8.2	7.7	16	14
AC-FT	---	---	---	---	---	---	---	615	1040	781	1050	994

## SAN JOAQUIN RIVER BASIN

## 11313500 SALT SPRINGS RESERVOIR NEAR WEST POINT, CA

LOCATION.--Lat 38°29'55", long 120°12'52", in NW 1/4 SE 1/4 sec.33, T.8 N., R.16 E., Calaveras County, Hydrologic Unit 18040012, Eldorado National Forest, near center of Salt Springs Dam on North Fork Mokelumne River, 1.8 mi upstream from Cole Creek, and 18 mi northeast of West Point.

DRAINAGE AREA.--169 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1931 to current year. Prior to October 1964, records published as usable contents.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Reservoir is formed by concrete-faced, rockfill dam, completed in 1931; storage began in March 1931. Capacity, 141,857 acre-ft between elevations 3,667.75 ft, outlet drain, and 3,958.0 ft, top of radial gates. Storage of 1,860 acre-ft available for release to river only. Water is released through Salt Springs powerplant just downstream from dam and discharged into Tiger Creek powerplant conduit (station 11314000). Figures given here, including extremes, represent total contents at 1400 hours. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 141,857 acre-ft, several days during June or July of most years, elevation, 3,958.0 ft; no contents at times in 1932-33, 1945, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 76,053 acre-ft, June 10, elevation, 3,880.8 ft; minimum, 6,335 acre-ft, Feb. 9, elevation, 3,735.5 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Pacific Gas & Electric Co., dated October 1964)

3,700.0	1,251	3,720.0	3,519	3,740.0	7,324	3,800.0	28,017
3,705.0	1,679	3,725.0	4,324	3,750.0	9,799	3,850.0	54,852
3,710.0	2,199	3,730.0	5,229	3,760.0	12,689	3,900.0	90,786
3,715.0	2,812	3,735.0	6,230	3,780.0	19,632	3,958.0	141,857

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 14:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27790	23978	19632	13865	8340	11865	22153	47250	73629	71166	56370	44852
2	27383	23978	19442	13639	8060	12288	22643	48064	74360	70449	55988	44180
3	27024	23978	19252	13574	7780	12751	23347	48887	74874	69734	55544	43458
4	26578	24020	19101	13639	7500	12939	23767	49955	75168	69164	54914	42907
5	26224	24020	19101	14093	7220	13223	24189	50855	75389	68526	54539	42359
6	25916	24062	19139	14126	6940	13574	25123	51702	75094	68101	54539	41869
7	25610	24274	19366	13963	6657	13865	26313	52373	75094	67537	54539	41652
8	25262	24360	19176	13800	6357	14126	27248	53110	75463	67116	54414	41490
9	24916	24360	19026	13735	6335	14455	28245	53667	75831	66416	53915	41112
10	24616	24232	19026	13735	6549	14722	29105	55166	76053	65789	53295	40575
11	24488	23935	19101	13963	6657	14856	29955	55355	75979	65097	52864	40041
12	24573	23724	19139	13735	6875	14889	31753	56625	75905	64545	52373	39829
13	24702	23347	19139	13414	7508	14957	33202	58174	75831	64064	51824	39194
14	24702	23473	18988	13002	7788	15024	34184	59484	75610	63516	51338	38983
15	24702	23515	18688	12814	8074	15126	35030	60945	75463	63039	50855	38773
16	24702	23431	18280	12596	8389	15193	36109	62699	75242	62495	50314	38511
17	24873	23222	17766	12503	8389	15261	37368	64064	75094	62021	49836	37885
18	25003	23015	17187	12076	8463	15398	37989	64958	74874	61549	49360	37213
19	25046	22808	16900	11895	8687	15603	38720	65789	74654	61079	48828	36598
20	25123	22643	16687	11627	8813	15810	39299	67046	74434	60478	48887	36444
21	25219	22602	16334	11247	8939	15949	40361	67537	74287	59946	48946	36241
22	25392	22602	15984	10902	9273	16089	40629	68313	74141	59550	48592	36088
23	25392	22397	15432	10314	9481	16439	40629	69093	73702	59352	48240	35835
24	25132	22072	14990	9906	9719	16651	40308	70019	73411	59154	47772	35180
25	24916	21668	14957	9455	9933	17043	40629	70735	73265	58892	47250	34482
26	24702	21348	15058	9273	10314	18354	41274	71166	73484	58369	46730	34038
27	24488	20952	15126	9210	10680	19708	42196	71454	73120	57849	46730	33790
28	24232	20559	14957	8970	11045	20403	43458	71815	72611	57590	46845	33544
29	24020	20170	14688	8820	11480	20952	44908	72321	72104	56817	46500	33299
30	23893	19862	14422	8770	---	21468	46271	72684	71743	56753	46042	33104
31	23935	---	14290	8620	---	21789	---	72974	---	56689	45416	---
MAX	27790	24360	19632	14126	11480	21789	46271	72974	76053	71166	56370	44852
MIN	23893	19862	14290	8620	6335	11865	22153	47250	71743	56689	45416	33104
a	3790.7	3780.6	3765.0	3745.4	3756.0	3785.5	3835.7	3876.6	3874.9	3852.9	3834.2	3810.8
b	-4219	-4073	-5572	-5670	+2860	+10309	+24482	+26703	-1231	-15054	-11273	-12312

CAL YR 1987 MAX 90310 MIN 9640 b -12511  
WTR YR 1988 MAX 76053 MIN 6335 b +4950

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## SAN JOAQUIN RIVER BASIN

## 11314000 TIGER CREEK POWERPLANT CONDUIT BELOW SALT SPRINGS DAM, CA

LOCATION.--Lat 38°29'45", long 120°13'11", in SE 1/4 SW 1/4 sec.33, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 1,000 ft downstream from Salt Springs Dam and powerplant and 18 mi northeast of West Point.

PERIOD OF RECORD.--June 1931 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,700 ft above National Geodetic Vertical Datum of 1929, from topographic map. Auxiliary nonrecording gages in stilling wells upstream and downstream from control.

REMARKS.--Estimated daily discharges: Oct. 27 to Dec. 4. Conduit conveys water of North Fork Mokelumne River from tailrace of Salt Springs powerplant to forebay of Tiger Creek powerplant. Since December 1952, records include Bear River and Cole Creek diversion to Salt Springs No. 2 powerplant (station 11313510). See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--57 years, 364 ft<sup>3</sup>/s, 263,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 577 ft<sup>3</sup>/s, June 22, 1945; no flow at times in many years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	402	.00	250	101	209	101	149	.00	351	469	433	542
2	402	205	250	100	301	101	150	.00	350	351	484	465
3	401	205	250	101	302	100	150	.00	351	352	484	302
4	402	205	150	154	301	101	147	.00	352	353	484	300
5	402	205	66	100	300	100	149	.00	352	483	378	301
6	402	.00	85	251	301	100	151	.00	382	536	221	319
7	402	.00	176	250	302	117	151	.00	401	534	221	330
8	402	.00	250	186	250	125	151	.00	400	466	269	330
9	403	350	249	101	137	125	152	.00	399	351	301	331
10	403	350	249	64	101	126	151	116	386	352	365	332
11	224	350	164	107	101	125	152	335	300	453	480	330
12	.00	350	49	301	101	125	151	401	303	506	388	340
13	.00	.00	51	301	101	126	203	400	434	506	251	336
14	.00	.00	122	300	100	126	254	400	523	507	252	331
15	.00	.00	300	266	101	126	148	401	524	507	398	331
16	.00	270	340	200	101	125	8.4	401	526	507	493	331
17	.00	270	399	200	101	125	118	401	438	505	475	331
18	.00	270	273	264	101	125	301	399	304	499	494	332
19	.00	270	100	302	101	125	302	400	304	499	383	332
20	.00	.00	101	302	100	125	303	402	436	499	221	332
21	.00	.00	290	301	100	141	303	402	492	500	221	332
22	.00	.00	400	301	101	151	302	401	493	450	400	332
23	66	200	399	301	100	150	301	372	493	354	509	332
24	124	200	238	302	100	150	300	315	493	354	531	331
25	125	200	100	301	100	151	301	350	80	447	525	332
26	249	200	102	297	101	152	301	352	217	496	421	332
27	350	200	101	236	101	153	196	351	524	492	223	332
28	350	200	191	201	101	153	9.5	351	540	492	223	325
29	350	200	250	164	101	150	.00	350	541	409	430	332
30	350	250	250	102	---	150	.00	351	540	304	541	333
31	.00	---	166	101	---	150	---	351	---	304	544	---
TOTAL	6209.00	4950.00	6361	6558	4417	4000	5454.90	8002.00	12229	13837	12043	10191
MEAN	200	165	205	212	152	129	182	258	408	446	388	340
MAX	403	350	400	302	302	153	303	402	541	536	544	542
MIN	.00	.00	49	64	100	100	.00	.00	80	304	221	300
AC-FT	12320	9820	12620	13010	8760	7930	10820	15870	24260	27450	23890	20210
a	6190	4450	3930	2320	3960	419	0	254	9020	10670	11090	7250

CAL YR 1987 TOTAL 95945.48 MEAN 263 MAX 555 MIN .00 AC-FT 190300 AC-FT a 54470  
WTR YR 1988 TOTAL 94251.90 MEAN 258 MAX 544 MIN .00 AC-FT 186900 AC-FT a 59450

a Inflow, in acre-feet, through Salt Springs No. 2 powerplant, provided by Pacific Gas & Electric Co.





## SAN JOAQUIN RIVER BASIN

11315000 COLE CREEK NEAR SALT SPRINGS DAM, CA

LOCATION.--Lat 38°31'09", long 120°12'42", in SW 1/4 NE 1/4 sec.28, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 200 ft downstream from bridge, 0.3 mi upstream from diversion dam, 1.4 mi north of Salt Springs Dam, 3.2 mi upstream from mouth, and 6.5 mi southwest of Mokelumne Peak.

DRAINAGE AREA.--21.0 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1927 to November 1942, October 1943 to current year. Prior to October 1958, published as Cold Creek near Mokelumne Peak. October 1958 to September 1960, published as "near Mokelumne Peak."

REVISED RECORDS.--WSP 1515: 1928, 1930-31, 1938(M), 1944, 1947. WSP 1930: Drainage area.

GAGE.--Water-stage recorder and concrete control since Oct. 30, 1974. Elevation of gage is 5,920 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 30, 1974, at site 0.4 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 23-27, Dec. 7, 11-14, 22-28, Jan. 5-8, 12-19, Feb. 2, 3, 6. Occasional pumping upstream from station for domestic use in summer-home tract began in September 1961. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

AVERAGE DISCHARGE.--60 years, 65.1 ft<sup>3</sup>/s, 47,160 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,140 ft<sup>3</sup>/s, Dec. 23, 1964, gage height, 10.21 ft, site and datum then in use, from rating curve extended above 900 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 9.69 ft, site and datum then in use; no flow many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 289 ft<sup>3</sup>/s, Apr. 7, gage height, 2.83 ft, minimum daily, 0.04 ft<sup>3</sup>/s, Sept. 7-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.33	2.2	9.0	17	42	56	61	47	3.0	.22	.06
2	.07	.34	8.5	8.9	17	39	78	54	40	2.5	.20	.07
3	.07	.38	10	9.2	17	43	90	57	36	2.2	.19	.08
4	.07	.29	11	12	17	47	59	65	34	1.9	.18	.07
5	.07	.24	7.4	15	18	54	94	52	28	1.7	.16	.06
6	.07	.29	8.5	20	18	54	127	46	24	1.5	.13	.05
7	.09	.30	17	15	19	47	134	42	28	1.3	.19	.04
8	.10	.24	11	20	26	55	111	44	33	1.2	.15	.04
9	.07	.21	22	18	32	68	95	48	32	1.0	.13	.04
10	.07	.21	82	37	33	44	121	70	27	.93	.13	.04
11	.08	.19	33	30	34	38	132	125	25	.79	.13	.04
12	.16	.18	17	18	40	33	126	141	22	.70	.12	.04
13	.18	1.2	11	16	39	30	109	136	20	.62	.11	.04
14	.14	1.9	11	14	37	35	120	119	19	.57	.11	.04
15	.11	2.8	9.1	14	42	41	92	128	17	.53	.11	.05
16	.10	1.9	7.8	13	42	34	88	118	16	.49	.11	.06
17	.10	5.8	6.7	13	30	36	86	107	13	.42	.10	.05
18	.10	13	6.2	13	29	53	86	83	11	.34	.10	.05
19	.08	7.3	6.2	13	25	73	72	77	10	.32	.10	.05
20	.08	4.9	7.5	12	26	79	70	77	11	.30	.09	.09
21	.08	5.6	6.9	14	32	77	61	81	13	.27	.09	.18
22	.14	9.8	15	15	37	61	56	78	9.2	.26	.08	.14
23	.57	5.8	14	18	41	117	52	68	7.2	.24	.21	.10
24	.31	3.3	13	26	41	111	74	60	6.2	.23	.42	.10
25	.26	3.1	11	32	48	120	99	51	7.0	1.4	.38	.08
26	.21	2.6	10	28	55	138	124	46	17	.75	.21	.08
27	.17	2.0	10	24	64	140	127	39	8.4	.57	.07	.08
28	.43	1.7	10	23	67	82	114	36	5.9	.42	.07	.08
29	.71	1.6	11	21	51	71	98	65	4.4	.35	.08	.07
30	.51	1.3	11	19	---	76	89	50	3.6	.28	.06	.07
31	.33	---	9.4	18	---	57	---	59	---	.24	.06	---
TOTAL	5.60	78.80	416.4	558.1	994	1995	2840	2283	574.9	27.32	4.49	2.04
MEAN	.18	2.63	13.4	18.0	34.3	64.4	94.7	73.6	19.2	.88	.14	.068
MAX	.71	13	82	37	67	140	134	141	47	3.0	.42	.18
MIN	.07	.18	2.2	8.9	17	30	52	36	3.6	.23	.06	.04
AC-FT	11	156	826	1110	1970	3960	5630	4530	1140	54	8.9	4.0

CAL YR 1987 TOTAL 9838.29 MEAN 27.0 MAX 283 MIN .03 AC-FT 19510  
WTR YR 1988 TOTAL 9779.65 MEAN 26.7 MAX 141 MIN .04 AC-FT 19400

## SAN JOAQUIN RIVER BASIN

11315030 COLE CREEK BELOW DIVISION DAM, NEAR SALT SPRINGS DAM, CA

LOCATION.--Lat 38°30'54", long 120°12'53", in NW 1/4 SE 1/4 sec.28, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 200 ft downstream from diversion dam, 1.1 mi north of Salt Springs Dam, and 6.7 mi southwest of Mokelumne Peak.

DRAINAGE AREA.--21.8 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to September 1988. Unpublished records for water years 1981-87 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and broad-crested weir. Elevation of gage is 5,830 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 3, 1987, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Mar. 29 to Apr. 6, July 17 to Sept. 8. No records computed above 3.9 ft<sup>3</sup>/s. Flow regulated by Cole Creek diversion dam. Water is diverted for power since December 1952 to a tunnel from Lower Bear River Reservoir to Salt Springs powerplant No. 2 (station 11313510) on North Fork Mokelumne River. Water diverted occasionally from Cole Creek into Lower Bear River Reservoir. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	3.6	3.6	3.7	3.0	3.7	3.8	3.4	.30	.08
2	---	---	---	3.6	---	3.7	3.0	3.7	3.8	3.3	.30	.09
3	---	---	2.3	3.6	3.7	3.7	3.0	3.6	3.7	2.7	.30	.10
4	---	---	2.3	3.6	3.6	3.7	3.0	3.7	3.7	2.2	.30	.09
5	---	---	2.3	3.6	3.6	3.7	3.0	3.6	3.7	2.0	.25	.08
6	---	---	2.3	3.6	3.6	3.7	3.0	3.7	3.7	1.8	.25	.07
7	---	---	2.4	3.6	3.6	3.7	3.7	3.6	3.7	1.7	.25	.06
8	---	---	2.3	3.6	3.6	3.8	3.6	3.7	3.7	1.5	.25	.06
9	---	---	2.4	3.6	3.6	3.8	3.6	3.7	3.7	1.3	.25	.06
10	---	---	2.3	3.6	3.6	3.8	3.6	3.7	3.6	1.1	.25	.06
11	---	---	2.3	3.6	3.6	3.8	3.7	3.7	3.6	.95	.20	.06
12	---	---	---	3.7	3.6	3.8	3.6	3.6	3.6	.84	.20	.05
13	---	---	---	3.6	3.6	3.7	3.6	3.6	3.6	.81	.20	.05
14	---	---	2.4	3.6	3.6	3.7	3.6	3.6	3.6	.78	.20	.05
15	---	---	2.3	3.6	3.6	3.7	3.6	3.6	3.5	.74	.20	.06
16	---	---	2.3	3.6	3.7	3.7	3.6	3.6	3.5	.67	.15	.06
17	---	---	---	3.6	3.6	3.7	3.6	3.6	3.5	.60	.15	.06
18	---	---	3.6	3.7	3.6	3.7	3.6	3.7	3.5	.55	.15	.06
19	---	---	3.6	3.6	3.6	3.7	3.6	3.7	3.5	.50	.12	.06
20	---	---	3.6	3.6	3.6	3.7	3.6	3.7	3.6	.45	.11	.14
21	---	---	3.5	3.6	3.6	3.7	3.6	3.7	3.5	.40	.10	.25
22	---	---	3.7	3.6	3.7	3.7	3.6	3.8	3.5	.35	.10	.21
23	---	---	3.7	3.6	3.7	3.7	3.6	3.7	3.5	.35	.10	.16
24	---	---	3.6	3.6	3.7	3.6	3.7	3.7	3.5	.30	.10	.16
25	---	---	3.6	3.6	3.7	3.6	3.7	3.7	3.6	1.4	.10	.16
26	---	---	3.6	3.6	3.7	3.5	3.7	3.7	3.6	.90	.10	.14
27	---	---	3.6	3.6	3.7	3.4	3.7	3.7	3.6	.75	.09	.12
28	---	---	3.6	3.6	3.8	3.2	3.7	3.7	3.6	.60	.09	.12
29	---	---	3.6	3.6	3.8	3.0	3.7	3.8	3.5	.45	.09	.12
30	---	---	3.6	3.6	---	3.0	3.7	3.8	3.5	.40	.09	.12
31	---	---	3.6	3.6	---	3.0	---	3.8	---	.35	.09	---
TOTAL	---	---	---	111.8	---	111.9	105.3	114.2	108.0	34.14	5.43	2.96
MEAN	---	---	---	3.61	---	3.61	3.51	3.68	3.60	1.10	.18	.099
MAX	---	---	---	3.7	---	3.8	3.7	3.8	3.8	3.4	.30	.25
MIN	---	---	---	3.6	---	3.0	3.0	3.6	3.5	.30	.09	.05
AC-FT	---	---	---	222	---	222	209	227	214	68	11	5.9

## SAN JOAQUIN RIVER BASIN

## 11315900 BEAR RIVER BELOW LOWER BEAR RIVER DAM, CA

LOCATION.--Lat 38°32'11", long 120°15'24", in NW 1/4 NW 1/4 sec.19, T.8 N., R.16 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on left bank 250 ft downstream from outlet valve on Lower Bear River Reservoir, 0.2 mi below Lower Bear River Reservoir Dam, 1.4 mi upstream from Rattlesnake Creek, and 3.5 mi northwest of Salt Springs Dam.

DRAINAGE AREA.--37.4 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to September 1988. Unpublished records for water years 1981-87 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 5,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 3, 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. No records computed above 5.4 ft<sup>3</sup>/s. Flow regulated since 1900 by Bear River Reservoir, capacity, 6,760 acre-ft, and since December 1952 by Lower Bear River Reservoir 0.2 mi upstream, capacity, 49,100 acre-ft. Water diverted for power since December 1952 from Lower Bear River Reservoir through tunnel to Salt Springs powerplant No. 2 (station 11313510) on North Fork Mokelumne River. Water diverted occasionally from Cole Creek into Lower Bear River Reservoir. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	3.1	3.2	3.5	3.8	2.4	2.6	2.9	2.5	2.6
2	---	---	---	3.1	3.0	3.7	3.8	2.4	2.7	2.9	2.5	2.9
3	---	---	2.7	3.6	3.0	3.6	3.8	2.4	2.7	2.8	2.5	3.2
4	---	---	2.5	3.6	2.8	3.6	3.8	2.4	2.6	2.8	2.4	3.3
5	---	---	5.2	3.8	2.8	3.6	3.8	2.4	2.6	2.8	2.7	3.3
6	---	---	5.4	3.3	2.8	3.6	3.8	2.4	2.6	2.8	2.8	3.3
7	---	---	4.4	3.2	2.8	3.6	3.8	2.5	2.6	2.8	2.8	3.2
8	---	---	3.1	3.2	2.9	3.6	3.9	2.5	2.6	2.7	2.8	3.2
9	---	---	3.8	3.2	2.9	3.7	3.3	2.4	2.6	2.7	2.8	3.2
10	---	---	3.7	3.2	3.2	3.7	2.5	2.4	2.6	2.7	2.8	3.2
11	---	---	3.2	3.2	3.2	3.6	2.6	2.5	2.6	2.7	2.8	3.2
12	---	---	3.1	3.2	3.2	3.6	2.7	2.5	2.6	2.7	2.8	3.1
13	---	---	3.2	3.1	3.2	3.6	2.8	2.5	2.6	2.7	2.8	3.1
14	---	---	3.1	3.1	3.2	3.5	3.4	2.5	2.5	2.7	2.8	3.1
15	---	---	3.1	3.1	3.2	3.5	3.1	2.5	2.5	2.7	2.8	3.1
16	---	---	3.1	3.1	3.2	3.5	3.1	2.5	2.5	2.7	2.8	2.7
17	---	---	3.1	3.1	3.2	3.4	3.1	2.6	2.5	2.7	2.8	2.6
18	---	---	3.1	3.1	3.2	3.4	3.1	2.6	2.5	2.7	2.8	2.6
19	---	---	3.1	3.1	3.2	3.5	3.6	2.6	2.5	2.7	2.7	2.6
20	---	---	3.0	3.1	3.2	3.5	3.5	2.5	2.6	2.7	2.7	2.6
21	---	---	3.2	3.1	3.2	3.5	3.3	2.6	2.6	2.7	2.6	2.6
22	---	---	4.1	3.1	3.2	3.5	3.3	2.6	2.6	2.7	2.5	2.6
23	---	---	3.2	3.2	3.2	3.6	3.5	2.6	2.6	2.7	2.5	2.5
24	---	---	3.1	3.2	3.3	3.6	3.4	2.6	4.4	2.7	2.5	2.4
25	---	---	3.1	3.3	3.2	3.6	3.3	2.5	5.7	2.7	2.6	2.4
26	---	---	3.1	3.5	3.3	3.7	3.3	2.5	5.7	2.7	2.7	2.4
27	---	---	3.1	3.5	3.3	3.7	3.2	2.6	4.2	2.6	2.7	2.4
28	---	---	3.1	3.5	3.5	3.8	2.6	2.8	3.0	2.6	2.6	2.4
29	---	---	3.1	3.5	3.5	3.9	2.4	2.7	2.9	2.5	2.6	2.4
30	---	---	3.1	3.5	---	3.9	2.4	2.7	2.9	2.5	2.6	2.5
31	---	---	3.1	3.5	---	3.9	---	2.6	---	2.5	2.6	---
TOTAL	---	---	---	101.4	91.1	112.0	98.0	78.3	88.2	83.8	82.9	84.7
MEAN	---	---	---	3.27	3.14	3.61	3.27	2.53	2.94	2.70	2.67	2.82
MAX	---	---	---	3.8	3.5	3.9	3.9	2.8	5.7	2.9	2.8	3.3
MIN	---	---	---	3.1	2.8	3.4	2.4	2.4	2.5	2.5	2.4	2.4
AC-FT	---	---	---	201	181	222	194	155	175	166	164	168

## SAN JOAQUIN RIVER BASIN

## 11316100 BEAR RIVER BELOW BEAR RIVER DIVERSION DAM, CA

LOCATION.--Lat 38°29'33", long 120°17'21", in NE 1/4 NW 1/4 sec.2, T.7 N., R.15 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 200 ft downstream from diversion dam on Bear River and highway bridge, 1.4 mi upstream from mouth, and 3.5 mi northwest of Salt Springs Dam.

DRAINAGE AREA.--47.8 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to September 1988. Unpublished records for water years 1983-87 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 3,710 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 8, 1987, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Apr. 27 to May 8. No records computed above 13 ft<sup>3</sup>/s. Flow regulated since 1900 by Bear River Reservoir, capacity, 6,760 acre-ft, and since December 1952 by Lower Bear River Reservoir 4 mi upstream, capacity, 49,100 acre-ft. Water diverted for power since December 1952 from Lower Bear River Reservoir through tunnel to Salt Springs powerplant No. 2 (station 11313510) on North Fork Mokelumne River. Water diverted at diversion dam 200 ft upstream to Tiger Creek powerplant conduit for use at Tiger Creek powerplant (station 11316610). See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	5.3	5.6	5.1	5.0	8.7	5.1	5.1	5.1	5.0
2	---	---	---	5.3	5.0	5.0	5.0	8.3	5.1	5.0	5.0	5.1
3	---	---	---	5.3	5.0	5.3	5.0	7.9	5.1	5.0	5.0	5.1
4	---	---	---	5.8	5.0	5.1	5.0	7.6	5.2	5.0	5.0	5.1
5	---	---	---	6.4	5.0	5.0	5.1	7.6	5.2	5.1	5.1	5.1
6	---	---	---	6.8	5.0	5.0	5.1	8.1	5.1	5.0	5.1	5.0
7	---	---	---	5.0	5.0	5.1	5.1	8.9	5.1	5.0	5.1	5.0
8	---	---	4.5	5.2	5.3	5.2	5.0	7.4	5.1	5.0	5.1	5.0
9	---	---	4.6	5.5	5.2	5.2	5.0	5.1	5.1	5.0	5.0	5.0
10	---	---	4.5	5.5	5.0	5.2	5.0	5.2	5.3	5.0	5.1	5.0
11	---	---	4.6	6.1	5.0	5.2	5.0	5.1	5.3	5.1	5.1	5.0
12	---	---	4.8	4.8	5.0	5.2	5.0	5.2	5.0	5.0	5.1	5.1
13	---	---	5.5	4.8	5.0	5.2	5.1	5.1	5.1	5.0	5.1	5.0
14	---	---	5.5	5.0	5.1	5.2	5.1	5.1	5.0	5.0	5.0	5.0
15	---	---	4.5	5.0	5.1	5.1	5.1	5.1	5.0	5.1	5.1	5.0
16	---	---	4.6	5.1	5.1	5.0	5.5	5.1	5.0	5.1	5.1	5.0
17	---	---	4.7	5.2	5.1	5.1	6.5	5.1	5.1	5.1	5.2	5.0
18	---	---	5.1	5.0	5.1	5.1	7.6	5.0	5.1	5.0	5.1	5.0
19	---	---	5.6	5.0	5.1	5.1	5.1	5.0	5.1	5.0	5.1	5.0
20	---	---	5.1	5.0	5.2	5.1	5.1	5.0	5.1	5.0	5.2	5.0
21	---	---	5.0	5.0	5.1	5.2	5.1	5.0	5.0	5.0	5.2	5.0
22	---	---	4.9	5.0	5.0	5.1	5.1	5.0	5.0	5.0	5.3	5.0
23	---	---	5.3	5.0	5.1	5.0	5.2	5.0	5.1	5.0	5.0	5.0
24	---	---	6.2	5.0	5.1	5.0	5.2	5.1	---	5.1	5.0	5.0
25	---	---	6.6	5.0	5.1	5.0	5.2	5.1	---	5.4	5.1	5.0
26	---	---	6.7	5.0	5.1	5.0	5.2	5.1	---	5.3	5.1	5.0
27	---	---	6.7	5.1	5.1	5.0	10	5.1	---	5.1	5.1	5.0
28	---	---	6.1	5.1	5.2	5.0	13	5.1	5.0	5.0	5.0	5.7
29	---	---	5.4	5.6	5.2	5.0	10	5.1	5.0	5.2	5.0	5.0
30	---	---	5.3	6.4	---	5.0	9.1	5.1	5.0	5.1	5.0	5.0
31	---	---	5.5	6.4	---	5.0	---	5.1	---	5.1	5.0	---
TOTAL	---	---	---	165.7	147.9	157.8	178.5	181.4	---	156.9	157.5	151.2
MEAN	---	---	---	5.35	5.10	5.09	5.95	5.85	---	5.06	5.08	5.04
MAX	---	---	---	6.8	5.6	5.3	13	8.9	---	5.4	5.3	5.7
MIN	---	---	---	4.8	5.0	5.0	5.0	5.0	---	5.0	5.0	5.0
AC-FT	---	---	---	329	293	313	354	360	---	311	312	300

## SAN JOAQUIN RIVER BASIN

11316600 NORTH FORK MOKELUMNE RIVER ABOVE TIGER CREEK, NEAR WEST POINT, CA

LOCATION.--Lat 38°26'48", long 120°29'21", in SW 1/4 NE 1/4 sec.24, T.7 N., R.13 E., Amador County, Hydrologic Unit 18040012, Eldorado National Forest, on right bank 0.4 mi upstream from Tiger Creek and Tiger Creek powerplant, 3.9 mi northeast of West Point, 18.3 mi downstream from Salt Springs Dam, and at mile 106.4.

DRAINAGE AREA.--333 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year. Unpublished records for water years 1970-85 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,337.50 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Gas & Electric Co.).

REMARKS.--Estimated daily discharges: Dec. 25-28, 31, Jan. 1. Flow regulated since 1931 by Salt Springs Reservoir (station 11313500) 18.3 mi upstream. Some water is diverted through Tiger Creek powerplant conduit (station 11314000). Additional water is diverted out of the Bear River and several smaller tributaries into Tiger Creek powerplant conduit. All the water enters the North Fork Mokelumne River at Tiger Creek powerplant (station 11316610) 0.4 mi downstream. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 8.98 ft, from rating curve extended above 7,700 ft<sup>3</sup>/s; minimum daily, 30 ft<sup>3</sup>/s, Aug. 6, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 138 ft<sup>3</sup>/s, Jan. 3, Mar. 1, gage height, 2.99 ft; maximum gage height, 3.12 ft, Dec. 27; minimum daily, 35 ft<sup>3</sup>/s, Aug. 27-31, Sept. 1, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	52	51	69	71	106	72	96	61	43	36	35
2	37	51	53	71	68	92	72	91	58	43	36	36
3	37	50	54	104	66	85	72	91	57	42	37	36
4	37	48	53	115	65	81	72	87	56	42	37	38
5	36	46	52	116	65	80	75	86	56	42	38	37
6	37	46	55	101	65	80	75	88	56	43	39	37
7	37	47	74	81	64	80	74	91	58	42	38	37
8	37	49	75	89	63	78	75	89	58	40	38	37
9	37	49	73	86	65	79	75	82	54	40	38	37
10	38	49	74	84	66	77	77	79	52	42	38	38
11	38	47	72	106	66	76	77	78	55	41	39	37
12	41	46	69	87	68	74	78	78	52	39	37	36
13	46	48	66	78	68	72	106	80	52	40	36	37
14	44	67	62	75	68	72	105	80	53	40	37	37
15	48	68	62	80	68	72	87	80	50	40	38	36
16	47	62	61	83	68	71	84	81	49	40	37	36
17	47	60	60	84	68	70	83	82	49	39	37	36
18	47	59	59	76	67	70	111	76	49	39	38	36
19	43	58	58	71	66	71	118	76	47	38	38	35
20	42	56	59	69	65	72	110	71	47	38	38	38
21	41	61	57	70	64	72	91	70	48	38	38	44
22	43	63	64	69	66	74	89	68	47	37	37	39
23	62	61	78	68	66	72	88	64	46	38	43	38
24	62	60	75	69	66	72	84	64	45	37	56	38
25	55	56	72	69	66	74	83	63	55	37	49	38
26	53	54	70	69	67	76	88	60	55	38	36	38
27	48	53	68	71	68	79	90	60	55	38	35	38
28	47	52	70	72	75	78	104	73	46	37	35	38
29	58	51	72	70	81	76	102	75	44	36	35	39
30	56	50	71	79	---	76	102	65	44	38	35	38
31	52	---	66	73	---	73	---	61	---	37	35	---
TOTAL	1390	1619	2005	2504	1949	2380	2619	2385	1554	1224	1184	1120
MEAN	44.8	54.0	64.7	80.8	67.2	76.8	87.3	76.9	51.8	39.5	38.2	37.3
MAX	62	68	78	116	81	106	118	96	61	43	56	44
MIN	36	46	51	68	63	70	72	60	44	36	35	35
AC-FT	2760	3210	3980	4970	3870	4720	5190	4730	3080	2430	2350	2220
a	11,760	9830	12,890	13,990	10,050	9270	11,430	15,790	23,980	26,560	22,740	20,130

CAL YR 1987 TOTAL 22271 MEAN 61.0 MAX 388 MIN 30 AC-FT 44170 AC-FT a 193800

WTR YR 1988 TOTAL 21933 MEAN 59.9 MAX 118 MIN 35 AC-FT 43500 AC-FT a 188400

a Diversion, in acre-feet, to Tiger Creek powerplant, provided by Pacific Gas & Electric Co.

## SAN JOAQUIN RIVER BASIN

11316670 NORTH FORK MOKELUMNE RIVER BELOW TIGER CREEK RESERVOIR, NEAR WEST POINT, CA

LOCATION.--Lat 38°26'25", long 120°30'14", in SE 1/4 SE 1/4 sec.23, T.7 N., R.13 E., Amador County, Hydrologic Unit 18040012, on right bank 500 ft downstream from Tiger Creek Reservoir Dam and 3.1 mi northeast of West Point.

DRAINAGE AREA.--357 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1982-85 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,220 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. No records computed above 50 ft<sup>3</sup>/s. Flow regulated since 1931 by Salt Springs Reservoir (station 11313500) 20 mi upstream. Most of the water is diverted at Tiger Creek Reservoir to West Point powerplant. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	12	13	12	12	12	---	13	12	12	14
2	12	13	12	13	12	11	12	---	13	12	13	14
3	12	13	12	13	12	11	12	---	13	12	13	14
4	12	12	12	13	12	12	12	---	13	12	13	14
5	12	12	12	14	12	12	12	---	13	12	14	14
6	12	12	13	14	12	12	12	---	13	12	14	14
7	13	12	13	14	12	11	12	---	13	12	14	14
8	12	12	13	14	12	11	12	---	13	12	14	14
9	12	12	12	14	12	12	12	---	12	12	14	14
10	12	13	13	14	12	12	12	---	12	12	13	14
11	12	12	13	14	11	12	11	13	13	12	13	14
12	12	12	14	13	11	12	12	13	13	12	13	14
13	12	12	14	13	11	11	12	13	13	12	13	14
14	12	12	14	13	11	12	12	13	13	12	13	13
15	12	12	13	13	11	12	12	14	12	13	13	13
16	12	12	14	15	11	11	12	13	12	12	13	13
17	12	13	14	14	11	12	12	13	12	12	14	13
18	12	13	14	13	11	12	12	13	12	12	14	14
19	12	13	14	12	11	12	12	13	12	12	14	14
20	12	12	14	12	11	12	12	13	12	12	14	14
21	12	12	14	12	11	12	12	13	12	13	14	14
22	12	13	14	12	11	12	12	13	12	12	14	14
23	12	13	14	12	12	12	12	13	12	12	14	14
24	13	13	14	12	12	12	12	13	12	12	14	14
25	13	12	14	12	13	12	11	13	12	12	14	14
26	12	12	14	12	12	12	11	13	12	12	14	14
27	12	12	14	12	12	13	12	13	12	12	14	14
28	12	12	14	12	12	12	13	13	12	12	14	14
29	12	12	14	12	12	12	11	13	13	12	14	14
30	12	12	14	12	---	12	---	13	13	12	14	14
31	12	---	14	12	---	12	---	13	---	12	14	---
TOTAL	375	369	416	400	337	367	---	---	374	374	422	416
MEAN	12.1	12.3	13.4	12.9	11.6	11.8	---	---	12.5	12.1	13.6	13.9
MAX	13	13	14	15	13	13	---	---	13	13	14	14
MIN	12	12	12	12	11	11	---	---	12	12	12	13
AC-FT	744	732	825	793	668	728	---	---	742	742	837	825

## SAN JOAQUIN RIVER BASIN

11316700 NORTH FORK MOKELUMNE RIVER BELOW ELECTRA DIVERSION DAM, NEAR WEST POINT, CA

LOCATION.--Lat 38°25'15", long 120°32'56", in SW 1/4 NE 1/4 sec.33, T.7 N., R.13 E., Amador County, Hydrologic Unit 18040012, on right bank 300 ft downstream from Electra Diversion Dam and 2.0 mi northwest of West Point.

DRAINAGE AREA.--365 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1985 to current year (low-flow records only). Unpublished records for water years 1982-84 available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder and sharp-crested weir since March 1987. Elevation of gage is 1,980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Feb. 1-5, Apr. 1-4. No records computed above 25 ft<sup>3</sup>/s. Flow regulated since 1931 by numerous reservoirs and diversions upstream. Most of the water is diverted at Electra Diversion Dam to Electra powerplant. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records were collected by Pacific Gas & Electric Co., under general supervision of U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	13	13	12	12	12	13	13	11	11	13
2	12	12	12	13	12	12	12	13	13	11	11	13
3	12	12	12	13	12	13	12	13	12	11	12	13
4	12	11	12	13	12	13	12	13	12	11	12	13
5	12	11	12	13	12	13	13	13	12	11	12	13
6	12	11	13	13	12	13	12	13	12	11	12	13
7	12	11	14	13	12	13	12	13	12	11	12	13
8	12	11	14	13	12	13	12	15	12	11	12	13
9	12	11	14	13	12	13	12	18	12	11	12	13
10	12	11	13	13	12	13	12	17	12	11	12	13
11	12	11	14	---	12	13	12	13	12	12	12	13
12	12	11	14	12	12	12	12	13	12	11	12	13
13	12	11	14	12	12	12	12	12	12	12	12	13
14	12	11	14	12	12	12	12	12	12	12	12	12
15	12	11	13	12	12	12	12	12	12	12	12	12
16	12	11	13	12	12	12	12	12	12	11	12	12
17	11	12	13	12	12	12	12	12	12	12	13	12
18	11	12	13	12	12	12	12	12	11	11	13	13
19	11	12	13	12	12	12	12	12	11	11	13	13
20	11	12	13	12	12	12	12	12	11	11	13	13
21	11	11	12	12	12	12	12	12	11	12	13	13
22	11	11	12	12	12	12	12	12	12	11	13	13
23	11	11	12	12	12	12	12	13	11	11	13	13
24	11	11	12	12	12	12	12	13	12	11	13	13
25	11	11	13	12	12	12	12	13	12	11	13	13
26	23	11	13	12	12	12	12	13	12	11	13	13
27	9.9	11	13	12	12	12	12	12	11	11	13	13
28	12	11	13	12	12	12	13	12	11	11	13	13
29	12	11	13	12	12	12	13	13	11	11	13	13
30	12	11	13	12	---	12	13	13	11	11	13	13
31	12	---	13	12	---	12	---	13	---	11	13	---
TOTAL	371.9	337	402	---	348	381	364	402	353	347	385	386
MEAN	12.0	11.2	13.0	---	12.0	12.3	12.1	13.0	11.8	11.2	12.4	12.9
MAX	23	12	14	---	12	13	13	18	13	12	13	13
MIN	9.9	11	12	---	12	12	12	12	11	11	11	12
AC-FT	738	668	797	---	690	756	722	797	700	688	764	766

## SAN JOAQUIN RIVER BASIN

11316800 FOREST CREEK NEAR WILSEYVILLE, CA

LOCATION.--Lat 38°24'12", long 120°26'45", in SW 1/4 NW 1/4 sec.4, T.6 N., R.14 E., Calaveras County, Hydrologic Unit 18040012, on left bank 1.0 mi downstream from Lion Creek, 1.8 mi upstream from mouth, and 4 mi northeast of Wilseyville.

DRAINAGE AREA.--20.8 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1960 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,950 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No regulation. Minor diversions above station for irrigation and domestic use. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--28 years, 24.3 ft<sup>3</sup>/s, 17,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,020 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 8.12 ft, from rating curve extended above 500 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 7.41 ft; minimum daily, 0.11 ft<sup>3</sup>/s, Aug. 14, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 120 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 1	1345	*32	*3.36				

Minimum daily, 0.30 ft<sup>3</sup>/s, Sept. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	2.4	4.3	4.4	7.1	17	5.8	7.4	3.1	2.1	.83	.43
2	.84	2.4	4.2	4.4	6.5	14	5.7	7.0	3.3	2.0	.83	.43
3	.86	2.5	3.8	12	5.9	12	5.6	6.9	3.3	2.0	.88	.47
4	.86	2.4	3.6	13	6.0	11	5.6	6.6	3.1	1.8	.85	.43
5	.80	2.4	3.6	14	5.8	11	5.3	6.4	3.4	1.6	.77	.42
6	.79	2.5	6.1	11	5.9	11	5.2	6.8	3.7	1.7	.76	.41
7	.88	2.6	9.3	8.7	5.7	10	5.1	7.0	4.1	1.2	.80	.38
8	1.0	2.5	6.6	11	5.5	10	5.0	7.2	4.0	1.4	.86	.41
9	1.0	2.3	7.1	9.7	5.5	9.8	5.0	6.6	3.7	1.2	.83	.37
10	.79	2.2	7.7	9.1	5.4	9.3	5.0	6.3	3.4	.93	.87	.35
11	1.0	2.1	5.8	16	5.6	9.0	4.9	6.0	3.2	.88	.67	.33
12	1.3	2.1	4.9	10	5.6	8.5	4.7	5.6	3.2	.97	.60	.30
13	1.4	4.5	3.7	8.6	5.7	8.1	4.9	5.6	3.1	1.0	.59	.33
14	1.4	5.4	4.3	7.7	5.7	7.8	8.3	5.2	2.9	1.1	.64	.36
15	1.4	3.4	4.1	8.8	5.8	7.6	6.6	4.5	2.7	.96	.70	.41
16	1.4	2.9	4.4	9.3	5.8	7.5	6.0	4.5	2.6	1.1	.74	.46
17	1.3	3.6	4.4	9.8	5.6	7.2	5.7	5.3	2.4	1.1	.73	.45
18	1.1	3.7	3.9	8.2	5.4	7.1	5.4	5.0	2.7	.83	.69	.45
19	1.1	3.1	4.1	7.1	5.2	7.0	7.5	4.7	2.3	.85	.68	.54
20	1.2	4.4	3.6	7.3	5.0	6.9	9.8	4.5	2.3	.87	.61	.78
21	1.2	5.0	3.9	7.1	5.1	6.8	8.5	4.3	2.3	.87	.59	1.2
22	1.7	3.9	10	6.9	5.0	6.8	9.0	4.1	2.3	.87	.59	1.2
23	4.4	3.4	7.0	6.7	5.0	6.9	9.2	3.9	2.7	.90	.59	1.1
24	4.4	3.2	4.6	6.6	5.1	7.0	8.4	3.8	2.3	.91	.59	1.0
25	2.7	3.3	5.1	6.4	5.1	6.7	7.8	3.6	2.6	.90	.63	1.1
26	2.4	3.1	4.6	6.2	5.2	6.7	7.7	3.0	2.7	.90	.60	1.0
27	2.2	3.0	4.9	6.1	5.6	6.6	7.6	2.3	2.4	.91	.62	1.0
28	5.2	3.1	4.6	6.1	7.2	6.4	7.6	2.4	2.2	.89	.58	.89
29	5.2	3.5	4.4	6.4	8.8	6.2	7.6	5.5	2.1	.84	.50	.82
30	3.3	3.4	4.5	9.0	---	6.1	7.5	4.1	2.3	.75	.48	.85
31	2.7	---	4.0	7.7	---	5.9	---	3.6	---	.76	.46	---
TOTAL	55.64	94.3	157.1	265.3	166.8	263.9	198.0	159.7	86.4	35.09	21.16	18.67
MEAN	1.79	3.14	5.07	8.56	5.75	8.51	6.60	5.15	2.88	1.13	.68	.62
MAX	5.2	5.4	10	16	8.8	17	9.8	7.4	4.1	2.1	.88	1.2
MIN	.79	2.1	3.6	4.4	5.0	5.9	4.7	2.3	2.1	.75	.46	.30
AC-FT	110	187	312	526	331	523	393	317	171	70	42	37

CAL YR 1987 TOTAL 2147.71 MEAN 5.88 MAX 91 MIN .35 AC-FT 4260  
WTR YR 1988 TOTAL 1522.06 MEAN 4.16 MAX 17 MIN .30 AC-FT 3020



## SAN JOAQUIN RIVER BASIN

## 11317000 MIDDLE FORK MOKELUMNE RIVER AT WEST POINT, CA

LOCATION.--Lat 38°23'23", long 120°31'32", in SE 1/4 NE 1/4 sec.10, T.6 N., R.13 E., Calaveras County, Hydrologic Unit 18040012, on right bank 200 ft downstream from highway bridge, 0.6 mi south of West Point, and 4.5 mi upstream from South Fork Mokelumne River.

DRAINAGE AREA.--68.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1911 to current year. Monthly discharge only for October 1911, published in WSP 1315-A.

REVISED RECORDS.--WSP 1515: 1919-20, 1927-28(M), 1936(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,450 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 6, 1926, nonrecording gage at site 1,200 ft upstream at different datum. Oct. 6, 1926, to Aug. 18, 1928, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records fair. Flow slightly regulated by Middle Fork Reservoir, capacity, 1,740 acre-ft, 6 mi above station, since January 1940. Several small diversions above station. Some diurnal fluctuation caused by small powerplant upstream; daily flows are not affected appreciably. At times water is diverted 4 mi above station to South Fork Mokelumne River via Middle Fork ditch, capacity, 10 ft<sup>3</sup>/s, and Licking Fork Mokelumne River. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--77 years, 64.2 ft<sup>3</sup>/s, 46,510 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,920 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 9.19 ft, from rating curve extended above 3,100 ft<sup>3</sup>/s; no flow many days in 1931 and Sept. 9, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 1	1645	*79	*2.29				
Minimum daily, 2.1 ft <sup>3</sup> /s, Oct. 7.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	5.9	9.0	17	20	49	16	34	15	6.1	6.0	5.3
2	2.5	5.8	9.4	14	38	55	13	21	12	5.8	6.1	5.2
3	2.4	6.0	8.5	23	29	33	10	18	9.0	5.5	6.0	5.0
4	2.9	5.9	8.1	28	17	51	12	17	5.9	5.6	6.4	5.0
5	2.4	6.0	8.1	32	16	23	15	17	5.5	5.4	6.3	4.9
6	2.2	6.5	12	28	17	32	18	18	13	5.4	6.1	4.8
7	2.1	6.7	15	24	16	47	14	21	11	7.5	5.8	4.8
8	2.5	6.7	12	38	16	26	14	33	9.9	8.0	5.9	4.8
9	2.7	6.7	11	22	15	25	12	20	8.6	7.4	5.7	4.8
10	2.5	6.7	12	33	16	30	9.6	17	7.7	6.9	5.6	4.5
11	2.4	6.6	11	55	16	27	13	17	5.5	6.7	6.3	3.5
12	3.1	6.6	12	25	16	29	14	17	5.5	6.8	6.4	3.6
13	4.5	9.8	12	24	14	44	14	17	11	6.5	6.1	3.7
14	4.1	11	11	19	12	42	25	11	7.1	6.6	6.0	3.7
15	3.8	7.6	11	22	14	20	19	9.0	6.5	6.9	6.0	3.9
16	3.7	7.4	11	22	16	21	14	13	6.1	7.1	6.1	3.8
17	3.9	8.1	10	23	15	21	32	16	5.8	8.0	6.0	3.6
18	3.4	9.4	9.9	26	15	21	17	11	6.6	8.1	6.1	3.5
19	3.1	7.7	11	20	15	19	20	13	6.8	7.0	6.1	3.6
20	3.3	9.5	9.9	20	13	16	27	15	6.9	7.0	6.1	3.7
21	3.4	11	9.7	19	11	18	33	15	7.2	6.8	6.1	4.2
22	3.8	9.4	20	19	12	20	23	15	7.1	6.5	6.1	4.6
23	7.8	8.5	20	16	15	20	35	14	6.8	6.5	5.9	4.2
24	7.6	7.7	16	14	13	20	36	13	7.3	6.4	6.0	4.1
25	6.2	7.4	15	35	15	28	19	12	7.6	6.4	6.3	4.1
26	5.7	7.4	15	17	15	17	18	15	6.7	6.1	6.2	4.1
27	5.9	7.4	15	17	13	29	21	42	6.1	6.3	6.4	4.1
28	7.2	7.4	19	17	15	36	27	6.9	6.7	6.0	6.4	3.9
29	11	7.7	17	17	30	17	23	10	6.4	5.7	6.3	3.7
30	7.2	7.7	15	18	---	16	26	16	6.5	5.5	6.2	3.6
31	6.1	---	15	15	---	16	---	16	---	5.5	6.1	---
TOTAL	132.0	228.2	390.6	719	485	868	587.6	529.9	233.8	202.0	189.1	126.3
MEAN	4.26	7.61	12.6	23.2	16.7	28.0	19.6	17.1	7.79	6.52	6.10	4.21
MAX	11	11	20	55	38	55	36	42	15	8.1	6.4	5.3
MIN	2.1	5.8	8.1	14	11	16	9.6	6.9	5.5	5.4	5.6	3.5
AC-FT	262	453	775	1430	962	1720	1170	1050	464	401	375	251

CAL YR 1987 TOTAL 6320.60 MEAN 17.3 MAX 143 MIN .90 AC-FT 12540  
WTR YR 1988 TOTAL 4691.5 MEAN 12.8 MAX 55 MIN 2.1 AC-FT 9310

## SAN JOAQUIN RIVER BASIN

11318500 SOUTH FORK MOKELUMNE RIVER NEAR WEST POINT, CA

LOCATION.--Lat 38°22'06", long 120°32'40", in SE 1/4 SE 1/4 sec.16, T.6 N., R.13 E., Calaveras County, Hydrologic Unit 18040012, on right bank 500 ft upstream from highway bridge, 2.4 mi southwest of West Point, and 2.5 mi upstream from mouth.

DRAINAGE AREA.--75.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1933 to current year.

REVISED RECORDS.--WSP 1315-A: 1934(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,950 ft above National Geodetic Vertical Datum of 1929, from topographic map. October 1933 to Sept. 19, 1957, at site 1,100 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Feb. 17, 18, Sept. 3-18. Records good except those for estimated daily discharges, which are poor. Several small diversions above station for domestic use and for irrigation of about 100 acres. Diversions into South Fork Mokelumne River basin above station at times from North Fork Calaveras River and from Middle Fork Mokelumne River for use below station. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--55 years, 85.3 ft<sup>3</sup>/s, 61,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,300 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 12.48 ft, from rating curve extended above 2,700 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow Aug. 6, 7, Aug. 12 to Sept. 26, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 1	1630	*177	*3.55				
Minimum daily, 0.10 ft <sup>3</sup> /s, Sept. 15.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	8.8	3.7	7.5	16	80	8.6	25	13	4.4	.89	.60
2	1.9	5.9	5.9	7.6	15	57	7.4	23	12	3.9	.85	.44
3	1.7	2.4	6.0	21	14	37	7.7	20	12	3.8	.97	.36
4	1.7	2.4	4.4	37	13	30	7.8	19	11	3.5	.85	.30
5	1.7	2.7	3.9	39	13	27	6.9	18	11	3.4	.83	.27
6	1.5	3.3	8.2	33	12	26	6.4	19	11	3.6	.83	.34
7	1.6	3.5	20	21	12	24	6.5	20	12	3.8	.88	.24
8	1.7	2.7	10	23	10	23	6.3	23	13	2.9	1.1	.38
9	1.9	2.5	9.1	21	7.7	22	5.2	19	11	2.5	.90	.22
10	2.0	3.6	8.8	19	7.9	20	5.0	17	11	2.3	.84	.16
11	2.2	6.6	7.8	32	8.5	18	3.7	16	11	2.3	1.0	.14
12	2.5	5.9	8.2	25	9.5	17	3.5	15	10	2.3	.85	.35
13	2.6	3.2	6.5	20	9.4	16	4.2	14	9.6	2.6	.82	.30
14	2.8	12	5.3	18	9.3	15	15	14	8.8	2.5	.81	.12
15	2.6	8.5	5.4	23	9.5	14	18	14	8.2	2.7	.83	.10
16	2.7	3.8	6.1	37	9.9	14	15	15	8.0	2.3	.86	.34
17	3.0	4.8	7.4	52	9.3	13	14	19	7.6	2.1	.92	.35
18	2.8	6.7	6.1	38	9.0	13	13	17	7.1	2.0	1.3	.24
19	2.8	5.2	5.7	25	8.5	13	27	16	6.1	2.2	1.1	.42
20	2.8	5.5	5.5	18	8.3	12	68	15	6.2	1.8	1.0	.40
21	2.8	11	5.0	16	8.4	13	46	14	6.0	1.9	1.0	.41
22	3.0	7.1	13	15	8.8	12	41	13	5.8	1.8	1.2	.47
23	5.1	5.5	18	15	8.9	12	43	13	5.9	1.6	.88	.88
24	6.5	4.8	9.2	15	9.4	13	38	12	5.5	1.4	1.1	1.1
25	5.1	4.3	7.5	15	9.2	12	34	12	5.8	1.4	.89	1.2
26	4.1	3.9	7.7	16	9.3	11	31	11	6.0	1.3	.70	1.4
27	4.4	3.7	7.3	16	9.9	12	32	13	5.7	1.4	.66	1.2
28	5.2	3.4	9.8	16	19	11	30	12	4.7	1.2	.64	1.2
29	9.6	2.9	11	16	25	11	29	20	4.6	1.1	1.1	1.2
30	9.0	3.1	14	21	---	10	27	17	4.4	.98	.68	1.3
31	9.6	---	9.0	18	---	9.5	---	14	---	.88	.76	---
TOTAL	108.9	149.7	255.5	696.1	319.7	617.5	600.2	509	254.0	71.86	28.04	16.43
MEAN	3.51	4.99	8.24	22.5	11.0	19.9	20.0	16.4	8.47	2.32	.90	.55
MAX	9.6	12	20	52	25	80	68	25	13	4.4	1.3	1.4
MIN	1.5	2.4	3.7	7.5	7.7	9.5	3.5	11	4.4	.88	.64	.10
AC-FT	216	297	507	1380	634	1220	1190	1010	504	143	56	33

CAL YR 1987 TOTAL 5625.5 MEAN 15.4 MAX 190 MIN 1.4 AC-FT 11160  
WTR YR 1988 TOTAL 3626.93 MEAN 9.91 MAX 80 MIN .10 AC-FT 7190

## SAN JOAQUIN RIVER BASIN

## 11319500 MOKELUMNE RIVER NEAR MOKELUMNE HILL, CA

LOCATION.--Lat 38°18'46", long 120°43'09", in SW 1/4 SW 1/4 sec.1, T.5 N., R.11 E., Calaveras County, Hydrologic Unit 18040012, on downstream side of bridge 1.2 mi northwest of Mokelumne Hill and 8 mi downstream from confluence of North and South Forks of Mokelumne River.

DRAINAGE AREA.--544 mi<sup>2</sup>.

PERIOD OF RECORD.--January to June 1901, May 1903 to December 1904, October 1927 to current year. Yearly estimate only for water year 1928 (incomplete), published in WSP 1315-A. Published as "at Electra" 1901, 1903-4.

CHEMICAL DATA: Water year 1980. Water years 1971-79 in files of California Department of Water Resources.

WATER TEMPERATURE: Water years 1961-79 (daily record).

REVISED RECORDS.--WSP 1445: 1903-4, 1928(M), 1936(M), 1938(M), 1940(M), 1943(M), 1945(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 584.88 ft above National Geodetic Vertical Datum of 1929 (levels by California Division of Highways). Jan. 1 to June 30, 1901, and May 11, 1903, to Dec. 31, 1904, nonrecording gage at site 3 mi upstream at different datum. Nov. 10, 1927, to Aug. 26, 1952, water-stage recorder at site 40 ft upstream at datum 5.00 ft higher. Aug. 27, 1952, to Oct. 14, 1977, at present site at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records good except for the period Dec. 8-18, which is fair. Flow regulated by Salt Springs Reservoir (station 11313500) beginning in 1931, several smaller reservoirs, and four powerplants. Diversion above station for irrigation and domestic use. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--62 years (water years 1904, 1928-88), 1,001 ft<sup>3</sup>/s, 725,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,700 ft<sup>3</sup>/s, Dec. 3, 1950, gage height, 23.5 ft, present datum; minimum observed, 5 ft<sup>3</sup>/s, Aug. 13-15, 17, 18, 1904.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,150 ft<sup>3</sup>/s, Jan. 11, gage height, 9.20 ft; minimum daily, 19 ft<sup>3</sup>/s, Oct. 13, 17, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	497	114	342	194	214	307	241	184	421	578	366	529
2	420	96	276	162	406	485	152	163	441	354	498	556
3	414	214	304	202	429	247	124	186	418	335	491	351
4	361	324	287	378	415	309	210	133	480	372	478	263
5	407	164	218	251	341	246	203	136	327	485	396	294
6	372	226	115	408	331	220	314	170	442	504	196	303
7	446	57	121	389	423	428	236	246	477	547	243	321
8	445	86	403	377	333	176	222	119	456	523	272	284
9	408	189	380	185	314	256	279	104	409	450	307	309
10	427	328	476	226	197	257	160	192	438	263	295	316
11	345	391	224	416	133	272	299	369	434	497	397	301
12	28	405	97	590	193	172	260	563	293	471	467	353
13	19	410	147	428	169	328	191	428	482	532	388	424
14	20	104	201	438	194	223	551	561	677	529	149	463
15	20	65	353	432	203	240	240	513	393	499	331	301
16	26	105	350	176	195	254	142	439	599	543	465	310
17	19	311	438	338	190	211	183	528	545	479	461	182
18	60	362	401	401	232	257	456	472	359	502	423	297
19	67	315	232	475	152	184	468	535	236	505	526	306
20	314	292	139	413	177	213	559	458	435	474	151	352
21	21	119	229	392	161	208	496	500	541	522	218	332
22	19	81	518	422	173	238	434	468	526	487	339	351
23	21	135	515	385	242	247	507	492	479	376	506	315
24	24	196	405	368	140	320	505	378	510	309	507	324
25	30	242	91	431	177	185	502	469	287	400	567	306
26	329	205	153	413	229	333	474	402	98	551	503	439
27	298	224	224	374	175	381	360	450	570	436	164	291
28	484	219	259	320	172	304	285	342	517	437	180	343
29	383	255	410	289	321	256	92	521	506	416	345	337
30	357	275	319	151	---	238	87	432	605	414	480	264
31	68	---	216	326	---	229	---	422	---	227	558	---
TOTAL	7149	6509	8843	10750	7031	8224	9232	11375	13401	14017	11667	10117
MEAN	231	217	285	347	242	265	308	367	447	452	376	337
MAX	497	410	518	590	429	485	559	563	677	578	567	556
MIN	19	57	91	151	133	172	87	104	98	227	149	182
AC-FT	14180	12910	17540	21320	13950	16310	18310	22560	26580	27800	23140	20070

CAL YR 1987 TOTAL 132111 MEAN 362 MAX 1050 MIN 19 AC-FT 262000  
WTR YR 1988 TOTAL 118315 MEAN 323 MAX 677 MIN 19 AC-FT 234700

## SAN JOAQUIN RIVER BASIN

## 11320000 PARDEE RESERVOIR NEAR VALLEY SPRINGS, CA

LOCATION.--Lat 38°15'25", long 120°50'59", in NW 1/4 SW 1/4 sec.26, T.5 N., R.10 E., Amador County, Hydrologic Unit 18040012, at Pardee Dam on the Mokelumne River, 4.5 mi north of Valley Springs.

DRAINAGE AREA.--578 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1961 to current year. March 1929 to September 1930 (lake elevation only), October 1930 to September 1933, published in reports of U.S. Geological Survey. October 1933 to September 1961, in files of East Bay Municipal Utility District.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District).

REMARKS.--Reservoir is formed by a curved concrete gravity dam, completed in 1929. Storage began Mar. 9, 1929. Usable capacity, 194,100 acre-ft between elevations 393.50 ft, diversion tunnel invert, and 567.65 ft, spillway crest. Dead storage, 15,800 acre-ft. Water is released from reservoir for municipal use in the area on the east side of San Francisco Bay. Small intermittent diversions are made to Jackson Valley Irrigation District. Records, including extremes, represent total contents at 0800 hours. Prior to Oct. 1, 1985, records, including extremes, represent contents at 2400 hours. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records provided by East Bay Municipal Utility District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 219,300 acre-ft, Dec. 23, 1955, Feb. 19, 1986, elevation, 571.72 ft; minimum, 47,000 acre-ft, Mar. 25, 1977, elevation, 454.98 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 207,000 acre-ft, Oct. 9-11, elevation, 566.34 ft; minimum, 164,300 acre-ft, May 11, elevation, 545.67 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by East Bay Municipal Utility District, from 1930 survey)

450	43,400	480	69,200	510	105,700	540	153,800	570	215,300
460	50,900	490	80,100	520	120,400	550	172,700	580	239,100
470	59,500	500	92,930	530	136,500	560	193,200		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	206500	198500	192500	190900	185100	175900	173400	169400	167400	178100	188100	191300
2	206500	198000	192500	190800	184000	176100	173100	168900	167400	178800	188300	192300
3	206600	197600	192500	190600	183700	176400	172900	168400	167500	178800	188600	192600
4	206700	197500	192500	190600	183300	176300	172600	167900	167800	178900	189000	192600
5	206700	197400	192300	190900	182900	176300	172500	167300	167800	179300	189300	192300
6	206600	197100	192200	190000	182500	176100	172300	166800	167800	179600	189400	192400
7	206700	196800	191700	189700	182600	176000	172200	166400	168100	180100	189200	192200
8	206900	196300	191600	189300	182800	176200	172200	166000	168400	180700	189200	192300
9	207000	195900	191600	189000	182100	175900	171700	165400	168600	181200	189100	192300
10	207000	195600	191800	188800	181200	175900	171400	164800	168900	181400	189000	192200
11	207000	195700	192000	188800	180300	175700	170900	164300	169100	181400	189000	192300
12	206800	195800	191700	188700	179500	175700	170700	164400	169300	182200	189300	192400
13	206100	196100	191200	188400	179300	175400	170400	164600	169400	182200	189500	192500
14	205400	196200	190800	188100	179100	175400	170200	164800	169800	182800	189300	192800
15	204700	195700	190700	187900	178800	175300	170500	165000	170800	182200	189100	193000
16	204100	195200	190700	187600	178700	175100	170000	165200	171000	183600	189200	193000
17	203400	194900	190800	187700	178400	175000	169400	165300	171500	184000	189500	193000
18	202700	195000	191100	188100	178200	174800	169100	165600	172000	184500	189700	192800
19	202000	194900	191100	187800	178100	174700	169200	165800	172200	184900	190100	192900
20	201400	195000	190900	187500	177800	174600	169600	166100	172100	185300	190300	192700
21	201200	194900	190500	187100	177500	174300	170000	166400	172700	185700	189900	192800
22	200700	194400	190500	186800	177300	174100	170200	166600	173500	186100	189200	192900
23	200100	194000	191000	186600	177000	174000	170500	166700	174200	186200	189900	193000
24	199500	193600	191500	186800	176900	174000	170700	166800	174800	186300	190300	192800
25	198900	193400	191500	187000	176600	173900	170800	166900	175400	186500	190400	193200
26	198300	193300	191000	186600	176300	173600	171000	166900	175600	186800	191000	193200
27	198400	193000	190700	186600	176200	173800	171000	167000	175700	187300	191100	193500
28	198500	192800	190700	186200	176000	173800	171200	167000	176400	187600	191100	193500
29	198900	192700	190700	185700	175800	173800	170700	167100	177000	187900	190700	193600
30	199000	192500	191100	185100	---	173700	170000	167300	177500	188200	190800	193700
31	198900	---	191200	185100	---	173800	---	167300	---	188200	191300	---
MAX	207000	198500	192500	190900	185100	176400	173400	169400	177500	188200	191300	193700
MIN	198300	192500	190500	185100	175800	173600	169100	164300	167400	178100	188100	191300
a	562.68	559.69	559.07	556.15	551.58	550.55	548.61	547.22	552.45	557.65	559.15	560.27
b	-7700	-6400	-1300	-6100	-9300	-2000	-3800	-2700	+10200	+10700	+3100	+2400
c	749	223	205	175	359	658	640	930	1218	1663	1455	1233
d	20894	18288	18615	15658	16725	18385	22656	24052	15114	16469	18256	16642

CAL YR 1987 b +14700

WTR YR 1988 b -12900

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

d Diversion, in acre-feet, from Pardee Reservoir to East Bay Municipal Utility District and to Jackson Valley Irrigation District; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

## 11322300 CAMANCHE RESERVOIR NEAR CLEMENTS, CA

LOCATION.--Lat 38°13'31", long 121°01'17", in NE 1/4 SE 1/4 sec.6, T.4 N., R.9 E., San Joaquin County, Hydrologic Unit 18040005, at Camanche Dam on the Mokelumne River, 4.3 mi northeast of Clements.

DRAINAGE AREA.--621 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1963 to current year.

REVISED RECORDS.--WDR CA-85-3; 1984.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District).

REMARKS.--Reservoir is formed by earthfill dam. Storage began Dec. 18, 1963. Usable capacity, 430,300 acre-ft between elevations 104.00 ft, invert of emergency valve release, and 235.50 ft, spillway crest. Dead storage, 534 acre-ft. Camanche Reservoir provides holdover storage to meet downstream water requirements and flood control on the Mokelumne River. Records, including extremes, represent total contents at 0800 hours. Prior to July 1, 1984, records, including extremes, represent total contents at 2400 hours. See schematic diagram of Mokelumne River basin.

COOPERATION.--Records provided by East Bay Municipal Utility District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 439,100 acre-ft, Feb. 22, 1986, elevation, 236.57 ft; minimum since reservoir first filled, 10,000 acre-ft, Sept. 30, 1988, elevation, 126.16 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 117,900 acre-ft, Oct. 1, elevation, 180.55 ft; minimum, 10,000 acre-ft, Sept. 30, elevation, 126.16 ft.

Capacity table (elevation, in feet NGVD, and contents, in acre-feet)  
(Provided by East Bay Municipal Utility District, from 1964 survey)

120	4,970	170	82,600
130	13,600	190	156,200
140	25,000	220	320,900
150	38,900	235.5	430,900
160	57,100	240	465,900

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117900	109100	104200	99400	108500	110400	99400	88300	76300	58000	37700	22700
2	117400	108900	104100	99300	109400	110300	99000	88000	75700	57300	37200	22200
3	116900	108600	103900	99100	110000	110000	98600	87600	75200	56600	36700	21700
4	116400	108400	103800	98900	110500	109700	98200	87400	74600	55900	36200	21300
5	116000	108200	103700	99000	111000	109500	97800	87000	74000	55200	35700	20800
6	115500	108100	103800	99600	111400	109300	97400	86700	73400	54500	35200	20400
7	115000	107900	103600	100000	111300	109100	96900	86400	72800	53900	34800	19900
8	114500	107700	103300	100600	111200	108800	96300	86100	72100	53200	34300	19400
9	114100	107500	103200	101000	111800	108500	95800	85800	71600	52500	33900	19000
10	113700	107300	103100	100900	112300	108300	95300	85600	71100	51900	33400	18600
11	113400	107100	102900	100800	113000	107900	94900	85300	70500	51200	32900	18100
12	113100	107000	102600	100900	113300	107700	94400	85000	70000	50600	32400	17700
13	112900	106700	102400	101800	113000	107400	93900	84600	69500	49900	32000	17300
14	112600	106700	102100	102300	112900	107100	93400	84200	68900	49200	31500	16800
15	112300	106700	102000	102800	112700	106800	92900	83800	68300	48600	31000	16400
16	112100	106600	101700	103000	112500	106500	92400	83400	67800	47900	30600	16000
17	111900	106400	101600	103200	112400	106000	91900	83100	67000	47300	30100	15600
18	111700	106500	101500	103700	112300	105600	91600	82800	66400	46700	29600	15200
19	111500	106500	101300	104500	112100	105200	91200	82400	65700	46100	29200	14700
20	111200	106500	101100	105000	111900	104800	91200	82000	65100	45400	28700	14300
21	111000	106400	100900	105500	111700	104400	90900	81600	64400	44700	28200	13900
22	110900	106100	100800	105900	111400	104000	90600	81200	63800	44000	27700	13500
23	110800	105800	100800	106000	111300	103400	90400	80700	63200	43400	27200	13000
24	110600	105700	100700	106100	111100	103100	90200	80300	62600	42700	26700	12600
25	110300	105400	100500	106200	110900	102600	90200	79700	62000	42100	26200	12200
26	110200	105300	100300	107000	110800	102200	89800	79200	61300	41400	25700	11700
27	110000	105100	100200	107200	110600	101900	89500	78700	60700	40800	25200	11300
28	109900	105000	100000	107600	110500	101200	89300	78200	60000	40100	24700	10800
29	109700	104800	99900	108200	110400	100800	89000	77700	59300	39500	24200	10400
30	109500	104600	99800	108300	---	100300	88700	77300	58600	38900	23700	10000
31	109300	---	99600	108400	---	99900	---	76800	---	38300	23200	---
MAX	117900	109100	104200	108400	113300	110400	99400	88300	76300	58000	37700	22700
MIN	109300	104600	99600	98900	108500	99900	88700	76800	58600	38300	23200	10000
a	178.18	176.85	175.37	177.94	178.48	175.47	172.01	167.99	160.72	149.57	138.57	126.16
b	-9100	-4700	-5000	+8800	+2000	-10500	-11200	-11900	-18200	-20300	-15100	-13200
c	1448	504	376	328	866	1596	1349	1630	1939	1667	1030	716

CAL YR 1987 b -177200

WTR YR 1988 b -108400

a Elevation, in feet NGVD, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

## 11323500 MOKELUMNE RIVER BELOW CAMANCHE DAM, CA

LOCATION.--Lat 38°13'14", long 121°02'19", in NW 1/4 NW 1/4 sec.7, T.4 N., R.9 E., San Joaquin County, Hydrologic Unit 18040005, on left bank 0.7 mi downstream from Murphy Creek, 1.0 mi downstream from Camanche Dam, and 3.4 mi northeast of Clements.

DRAINAGE AREA.--627 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1904 to current year. Monthly discharge only for some periods, published in WSP 1315-A and 1735. Prior to October 1961, published as "near Clements."

CHEMICAL DATA: Water years 1906-7, 1965-66. Published as "at Clements" in 1906-7.

WATER TEMPERATURE: Water years 1962-76.

SEDIMENT DATA: Water years 1956-70. Prior to 1962 water year, published as "near Clements".

REVISED RECORDS.--WSP 751: Drainage area. WSP 881: 1905-9 (yearly summaries only). WSP 1445: 1911, 1917(M), 1925(M).

GAGE.--Water-stage recorder. Datum of gage is 82.71 ft above National Geodetic Vertical Datum of 1929. See WSP 1930 for history of changes prior to Oct. 1, 1961.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Camanche Reservoir (station 11322300) 1 mi upstream beginning December 1963, Salt Springs Reservoir (station 11313500) beginning March 1931, Pardee Reservoir (station 11320000) beginning March 1929, and several small reservoirs. East Bay Municipal Utility District aqueducts, maximum capacity 511 ft<sup>3</sup>/s with Pardee Reservoir full, are the largest of several diversions above the station. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--24 years (water years 1905-28), 1,111 ft<sup>3</sup>/s, 804,300 acre-ft/yr; 60 years (water years 1929-88), 823 ft<sup>3</sup>/s, 596,300 acre-ft/yr, adjusted for change in contents in and evaporation from Camanche Reservoir since 1963. Storage and diversion by East Bay Municipal Utility District began in March 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,800 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 24.40 ft, site and datum then in use; no flow on several days in 1924. Maximum discharge since construction of Camanche Dam in 1963, 6,060 ft<sup>3</sup>/s, Feb. 18, 1986, gage height, 11.21 ft; minimum daily, 23 ft<sup>3</sup>/s, Oct. 6, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 370 ft<sup>3</sup>/s, June 30, July 7, gage height, 4.18 ft; minimum daily, 80 ft<sup>3</sup>/s, Oct. 30, Nov. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217	81	85	88	87	123	212	125	241	320	289	233
2	221	80	86	88	88	137	212	125	241	320	249	221
3	221	81	86	88	87	134	211	125	246	319	249	220
4	225	82	86	88	86	128	213	138	259	315	249	220
5	225	83	86	88	87	109	214	150	259	316	249	221
6	225	83	88	88	85	109	213	150	258	317	249	221
7	209	83	88	88	85	109	214	144	258	320	249	217
8	173	85	91	88	85	109	220	135	252	315	252	217
9	162	86	89	88	85	125	225	134	245	314	251	210
10	155	88	88	88	86	134	225	135	244	313	251	209
11	152	87	88	88	86	132	224	144	243	311	250	210
12	149	90	88	87	85	131	221	160	243	317	250	210
13	145	91	88	88	85	131	221	161	248	324	249	209
14	135	91	88	88	86	133	223	161	258	320	249	209
15	105	91	88	89	85	154	222	161	267	320	251	208
16	100	94	89	97	87	178	221	159	283	320	251	209
17	97	100	88	111	88	177	223	158	285	321	252	208
18	94	96	88	93	90	187	220	157	285	324	253	205
19	91	94	88	89	88	197	215	171	284	335	252	206
20	93	95	88	88	86	196	188	188	285	334	249	209
21	91	88	88	86	85	196	154	188	285	339	249	206
22	88	88	88	87	86	196	155	191	286	344	251	206
23	88	89	90	88	87	199	147	199	284	342	254	206
24	85	88	91	88	87	199	134	213	287	339	252	208
25	87	82	91	88	85	199	134	213	290	334	251	206
26	85	85	91	87	87	199	130	214	290	329	252	209
27	86	86	91	87	88	200	128	213	287	332	250	209
28	81	85	93	87	88	202	128	213	310	332	249	206
29	81	85	91	88	88	202	128	213	322	327	252	205
30	80	85	88	88	---	202	128	213	321	324	250	197
31	82	---	88	87	---	206	---	223	---	323	249	---
TOTAL	4128	2622	2744	2759	2508	5033	5703	5274	8146	10060	7802	6330
MEAN	133	87.4	88.5	89.0	86.5	162	190	170	272	325	252	211
MAX	225	100	93	111	90	206	225	223	322	344	289	233
MIN	80	80	85	86	85	109	128	125	241	311	249	197
AC-FT	8190	5200	5440	5470	4970	9980	11310	10460	16160	19950	15480	12560

CAL YR 1987 TOTAL 86125 MEAN 236 MAX 490 MIN 80 AC-FT 170800 MEAN a 25.1 AC-FT a 18175  
WTR YR 1988 TOTAL 63109 MEAN 172 MAX 344 MIN 80 AC-FT 125200 MEAN a 41.7 AC-FT a 30249

a Adjusted for change in contents and evaporation from Camanche Reservoir. Evaporation data provided by East Bay Municipal Utility District; not reviewed by U.S. Geological Survey.

## SAN JOAQUIN RIVER BASIN

11325000 WOODBRIDGE CANAL AT WOODBRIDGE, CA

LOCATION.--Lat 38°09'07", long 121°18'00", in NE 1/4 SE 1/4 sec.34, T.4 N., R.6 E., San Joaquin County, Hydrologic Unit 18040005, on right bank at Woodbridge, at point of diversion from Woodbridge Reservoir.

PERIOD OF RECORD.--April 1926 to current year.

GAGE.--Water-stage recorder. Datum of gage is 32.18 ft above National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District). Prior to Mar. 15, 1931, water-stage recorder at site 0.2 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Mar. 12-14, Aug. 26-28. Records good except those periods of estimated daily discharge, which are poor. Discharge computed from records of gate openings and effective head as shown by differential recorder. Canal diverts from Woodbridge Reservoir on Mokelumne River for irrigation south and west of Woodbridge. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE.--62 years, 129 ft<sup>3</sup>/s, 93,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 482 ft<sup>3</sup>/s July 8, 1953; no flow at times in each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134	.00	.00	.00	.00	.00	94	42	126	201	187	164
2	126	.00	.00	.00	.00	.00	105	47	136	201	182	153
3	116	.00	.00	.00	.00	.00	109	50	140	199	170	150
4	118	.00	.00	.00	.00	.00	109	54	147	196	159	139
5	122	.00	.00	.00	.00	.00	112	63	157	197	151	129
6	124	.00	.00	.00	.00	.00	116	78	158	209	153	125
7	104	.00	.00	.00	.00	.00	114	79	161	214	158	130
8	74	.00	.00	.00	.00	.00	112	77	162	215	159	138
9	40	.00	.00	.00	.00	.00	112	77	153	215	159	142
10	29	.00	.00	.00	.00	.00	110	76	153	215	162	138
11	49	.00	.00	.00	.00	.00	112	68	150	214	163	130
12	47	.00	.00	.00	.00	9.0	118	62	145	209	165	128
13	23	.00	.00	.00	.00	12	126	69	141	210	164	124
14	.00	.00	.00	.00	.00	16	126	82	142	211	157	120
15	.00	.00	.00	.00	.00	27	128	80	140	211	150	118
16	.00	.00	.00	.00	.00	39	129	74	156	208	155	114
17	.00	.00	.00	.00	.00	42	129	77	171	201	155	111
18	.00	.00	.00	.00	.00	49	131	86	181	208	159	112
19	.00	.00	.00	.00	.00	62	129	88	185	207	151	110
20	.00	.00	.00	.00	.00	68	108	87	192	200	157	111
21	.00	.00	.00	.00	.00	94	82	86	200	203	165	116
22	.00	.00	.00	.00	.00	117	70	89	200	208	164	114
23	.00	.00	.00	.00	.00	112	58	92	191	215	148	115
24	.00	.00	.00	.00	.00	103	54	106	184	218	152	116
25	.00	.00	.00	.00	.00	100	53	113	181	221	164	116
26	.00	.00	.00	.00	.00	100	49	114	184	225	167	122
27	.00	.00	.00	.00	.00	98	52	113	184	226	169	126
28	.00	.00	.00	.00	.00	102	57	114	185	225	173	127
29	.00	.00	.00	.00	.00	93	54	116	183	227	173	125
30	.00	.00	.00	.00	---	84	46	118	194	224	172	122
31	.00	---	.00	.00	---	82	---	122	---	200	170	---
TOTAL	1106.00	0.00	0.00	0.00	0.00	1409.00	2904	2599	4982	6533	5033	3785
MEAN	35.7	.00	.00	.00	.00	45.5	96.8	83.8	166	211	162	126
MAX	134	.00	.00	.00	.00	117	131	122	200	227	187	164
MIN	.00	.00	.00	.00	.00	.00	46	42	126	196	148	110
AC-FT	2190	.0	.0	.0	.0	2790	5760	5160	9880	12960	9980	7510

CAL YR 1987 TOTAL 36464.00 MEAN 99.9 MAX 260 MIN .00 AC-FT 72330  
WTR YR 1988 TOTAL 28351.00 MEAN 77.5 MAX 227 MIN .00 AC-FT 56230

## SAN JOAQUIN RIVER BASIN

11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA  
(National stream-quality accounting network station)

LOCATION.--Lat 38°09'31", long 121°18'09", in NW 1/4 NE 1/4 sec.34, T.4 N., R.6 E., San Joaquin County, Hydrologic Unit 18040005, on right bank at Woodbridge, 0.4 mi downstream from county highway bridge, and 0.5 mi downstream from dam and canal intake of Woodbridge Irrigation District.

DRAINAGE AREA.--661 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1924 to current year (low-water records only 1924-25).

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.9 ft above National Geodetic Vertical Datum of 1929 (levels by East Bay Municipal Utility District). See WSP 2130 for history of changes prior to July 26, 1968.

REMARKS.--No estimated daily discharges. Records good. Concerning regulation and diversions see REMARKS for Mokelumne River below Camanche Dam (station 11323500). Between Woodbridge and Camanche Dam there are many additional diversions for irrigation, including Woodbridge Canal (station 11325000). Nearest diversion is 0.5 mi upstream. See schematic diagram of Mokelumne River basin.

AVERAGE DISCHARGE (since start of diversion through East Bay Municipal Utility District aqueduct).--59 years (water years 1929-88), 619 ft<sup>3</sup>/s, 448,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft<sup>3</sup>/s, Nov. 22, 1950, gage height, 29.58 ft, from rating curve extended above 6,200 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; minimum daily, 0.23 ft<sup>3</sup>/s, Nov. 15, 1977. Maximum discharge since construction of Camanche Dam in 1963, 5,340 ft<sup>3</sup>/s, Mar. 8, 1986, gage height, 23.19 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,140 ft<sup>3</sup>/s, Oct. 15, gage height, 10.72 ft; minimum daily, 7.2 ft<sup>3</sup>/s, Apr. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	42	52	45	45	20	22	10	15	18	18	14
2	25	41	47	45	44	26	15	11	15	18	19	14
3	25	42	48	57	45	34	16	10	15	17	17	13
4	25	43	58	55	45	28	17	10	14	16	15	12
5	25	43	50	48	45	23	17	10	15	16	8.0	11
6	30	44	54	46	45	27	17	14	15	17	7.4	11
7	58	43	48	46	45	31	13	23	17	17	7.8	12
8	47	42	58	48	45	30	9.6	20	18	17	8.1	12
9	65	45	50	46	45	28	12	12	17	17	8.3	12
10	40	42	48	46	47	29	14	9.9	17	17	8.5	12
11	21	42	46	48	49	31	11	12	17	17	8.7	12
12	26	45	46	46	47	31	7.2	17	16	16	8.5	12
13	53	62	47	46	45	28	11	17	16	16	8.7	13
14	61	51	47	47	44	28	15	17	16	15	8.8	11
15	429	48	48	52	45	26	15	20	17	18	8.9	12
16	243	47	55	66	45	30	15	25	19	21	9.2	13
17	72	64	52	82	38	30	16	24	20	19	9.2	21
18	60	54	48	70	32	30	16	19	20	20	9.3	26
19	56	50	48	56	28	30	41	13	19	19	9.3	27
20	54	56	48	50	34	30	95	11	18	22	10	29
21	56	51	47	47	34	29	47	15	18	20	9.9	27
22	54	48	49	47	28	28	22	15	15	20	9.9	27
23	53	46	49	46	25	29	51	16	14	20	10	26
24	55	47	48	46	19	29	40	15	16	21	10	19
25	50	45	49	46	16	29	26	15	16	23	10	18
26	48	45	50	46	29	29	18	15	16	22	10	23
27	49	47	50	46	39	29	17	15	16	20	12	23
28	51	48	68	46	40	29	15	15	17	19	15	23
29	52	47	55	48	35	29	10	11	17	19	15	23
30	47	59	50	46	---	30	9.9	9.0	18	19	15	23
31	44	---	46	46	---	31	---	11	---	18	16	---
TOTAL	2001	1429	1559	1555	1123	891	650.7	456.9	499	574	340.5	531
MEAN	64.5	47.6	50.3	50.2	38.7	28.7	21.7	14.7	16.6	18.5	11.0	17.7
MAX	429	64	68	82	49	34	95	25	20	23	19	29
MIN	21	41	46	45	16	20	7.2	9.0	14	15	7.4	11
AC-FT	3970	2830	3090	3080	2230	1770	1290	906	990	1140	675	1050

CAL YR 1987 TOTAL 28755.2 MEAN 78.8 MAX 494 MIN 7.8 AC-FT 57040  
WTR YR 1988 TOTAL 11610.1 MEAN 31.7 MAX 429 MIN 7.2 AC-FT 23030



## SAN JOAQUIN RIVER BASIN

11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1951 to current year.

CHEMICAL DATA: Water year 1951 to current year.

BIOLOGICAL DATA: Water years 1975-81.

SPECIFIC CONDUCTANCE: Water years 1952-58, 1975-77.

WATER TEMPERATURE: Water years 1951-58, 1961-86

SEDIMENT DATA: Water year 1975 to current year.

PERIOD OF DAILY RECORD.--

CHEMICAL DATA: March 1951 to September 1958.

SPECIFIC CONDUCTANCE: March 1951 to September 1958, October 1974 to September 1977.

WATER TEMPERATURE: March 1951 to September 1958, November 1960 to September 1986.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
DEC 08...	1050	79	60	7.4	11.0	13	770	10.8		96
MAR 09...	1230	28	62	7.4	15.0	1.8	770	10.4		101
JUN 08...	1200	19	62	7.1	18.5	5.8	765	9.3		98
SEP 14...	1120	12	89	7.2	21.5	3.5	765	8.7		97
DATE		COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI KF AGAR (COLS. PER 100 ML)	HARD- NESS WH WAT TOT FLD AS CACO3	NONCARB WH WAT TOT FLD AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO
DEC 08...	--	--	--	22	0	5.8	1.7	3.3	23	0.3
MAR 09...	K40	--	--	20	0	5.2	1.8	3.1	24	0.3
JUN 08...	120	130	21	2	5.3	1.9	3.3	24	24	0.3
SEP 14...	K45	2000	33	2	8.4	2.9	5.5	26	26	0.4
DATE		POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WHOLE IT-FLD (MG/L)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L CACO3)	ALKA- LINITY WH WAT TOTAL FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
DEC 08...	1.5	24	20	22	6.3	2.2	0.10	11		47
MAR 09...	1.2	23	19	20	5.4	2.5	0.10	11		45
JUN 08...	1.0	23	19	19	5.4	2.6	<0.10	11		38
SEP 14...	0.70	38	31	31	8.2	4.3	<0.10	14		70

See footnotes at end of table.

## SAN JOAQUIN RIVER BASIN

11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA--Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1987

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
DEC								
08...	47	0.06	<0.010	0.100	0.090	0.080	0.60	0.110
MAR								
09...	43	0.06	<0.010	0.120	<0.010	0.040	0.60	0.010
JUN								
08...	42	0.05	<0.010	<0.100	0.010	0.030	0.60	0.010
SEP								
14...	63	0.09	<0.010	<0.100	<0.010	0.030	0.20	0.060
DATE	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC, DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC								
08...	0.040	0.040	90	1	20	<0.5	<1	<1
MAR								
09...	<0.010	<0.010	20	<1	21	<0.5	<1	<1
JUN								
08...	<0.010	<0.010	30	1	24	<0.5	<1	<1
SEP								
14...	0.020	0.020	<10	2	28	<0.5	<1	<1
DATE	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	
DEC								
08...	<3	3	110	<5	<4	18	<0.1	
MAR								
09...	<3	2	37	<5	<4	7	<0.1	
JUN								
08...	<3	3	22	<5	<4	5	<0.1	
SEP								
14...	<3	1	54	<5	<4	30	0.1	
DATE	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
DEC								
08...	<10	<1	<1	<1	55	<6	11	
MAR								
09...	<10	<1	<1	<1	55	<6	<3	
JUN								
08...	<10	3	<1	<1	57	<6	5	
SEP								
14...	<10	<1	<1	<1	92	<6	7	

K Results based on colony count outside the acceptable range (non-ideal count).  
 < Actual value is known to be less than the value shown.

## SAN JOAQUIN RIVER BASIN

11325500 MOKELUMNE RIVER AT WOODBRIDGE, CA--Continued

## CROSS-SECTIONAL DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM HG)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR								
09...*	1245	4.5	62	7.4	15.0	770	10.3	100
09...*	1249	13.5	62	7.4	14.5	770	10.4	101
09...*	1253	22.5	62	7.4	14.5	770	10.4	101
09...*	1255	31.5	62	7.4	15.0	770	10.5	102
09...*	1300	40.5	62	7.5	15.0	770	10.4	101
JUN								
08...*	1115	5.0	63	7.1	18.5	765	9.3	98
08...*	1117	14	64	7.0	18.5	765	9.2	97
08...*	1119	23	62	7.1	18.5	765	9.4	99
08...*	1122	32	62	7.1	18.5	765	9.3	98
08...*	1124	41	62	7.1	18.5	765	9.3	98

\* Instantaneous streamflow at the time of cross-sectional measurement: March 9, 28 ft<sup>3</sup>/s;  
June 8, 19 ft<sup>3</sup>/s.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC						
08...	1025	79	11.0	23	4.9	87
MAR						
09...	1250	28	15.0	6	0.45	86
JUN						
08...	1120	19	18.5	11	0.56	90
SEP						
14...	1030	12	21.5	11	0.36	71

## SAN JOAQUIN RIVER BASIN

11333000 CAMP CREEK NEAR SOMERSET, CA

LOCATION.--Lat 38°39'26", long 120°39'46", in SW 1/4 SW 1/4 sec.4, T.9 N., R.12 E., El Dorado County, Hydrologic Unit 18040013, on right bank 0.2 mi upstream from mouth, 1.3 mi northeast of Somerset, and 5.6 mi south of Camino.

DRAINAGE AREA.--62.6 mi<sup>2</sup>.

PERIOD OF RECORD.--February to May 1924 (published as "near Pleasant Valley"), October 1954 to current year.

REVISED RECORDS.--WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,820 ft above National Geodetic Vertical Datum of 1929, from topographic map. Feb. 1 to May 31, 1924, nonrecording gage at site 0.2 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow partly regulated since January 1955 by Jenkinson Lake, usable capacity, 40,570 acre-ft. Water is released from Jenkinson Lake through Camino conduit for irrigation and domestic supply in North Fork Cosummes and South Fork American River basins. Some water is released from Jenkinson Lake for irrigation downstream from station. Footnoted adjustments provided by U.S. Bureau of Reclamation; not reviewed by U.S. Geological Survey.

AVERAGE DISCHARGE (adjusted for change in contents, evaporation, and diversion from Jenkinson Lake).--34 years (water years 1955-88), 86.7 ft<sup>3</sup>/s, 62,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,680 ft<sup>3</sup>/s, Feb. 16, 1982, gage height, 14.50 ft, from rating curve extended above 5,000 ft<sup>3</sup>/s; no flow Aug. 7-18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 58 ft<sup>3</sup>/s, Mar. 1, gage height, 2.75 ft; minimum daily, 0.34 ft<sup>3</sup>/s, Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	3.9	5.7	5.2	6.4	26	4.0	4.9	4.0	3.9	1.6	.46
2	1.3	3.8	6.6	5.1	6.0	18	4.0	4.8	3.9	3.5	2.3	.47
3	1.3	3.8	5.1	14	5.8	9.9	4.0	4.7	3.7	3.3	2.3	.44
4	1.2	3.8	4.6	16	5.5	7.6	4.0	4.6	3.6	3.1	2.3	.41
5	1.2	3.6	4.4	21	5.0	7.1	4.0	4.6	3.6	2.9	1.7	.36
6	1.3	3.7	4.9	15	5.0	6.8	4.0	4.6	3.7	3.0	.76	.35
7	1.3	4.1	8.6	9.0	5.1	6.4	4.0	4.8	4.3	3.0	.77	.35
8	1.3	3.8	7.4	11	5.1	5.9	4.0	5.4	4.4	2.7	.79	.35
9	1.4	3.8	7.5	11	5.1	5.6	4.0	4.8	3.9	2.8	.79	.34
10	1.4	3.8	8.0	9.1	5.1	5.4	4.0	4.6	3.7	2.5	.75	.35
11	1.5	3.7	6.0	19	5.0	5.2	4.0	4.4	3.5	2.4	.73	.37
12	1.7	3.6	5.1	13	5.0	5.0	3.9	4.3	3.4	2.4	.73	.36
13	1.8	5.5	4.6	8.5	4.8	4.9	3.8	4.3	3.4	2.4	.73	.36
14	1.8	6.4	4.3	6.6	4.8	4.8	6.0	4.1	3.2	2.3	.73	.36
15	1.8	4.2	4.1	14	4.8	4.8	5.4	4.0	3.1	2.1	.74	.40
16	1.9	3.9	4.5	18	4.8	4.8	4.5	4.0	3.1	2.1	.76	.41
17	2.0	4.2	5.0	17	4.7	4.7	4.4	5.1	3.2	2.1	.77	.43
18	1.9	4.5	4.4	12	4.6	4.6	4.3	4.5	4.8	1.7	.75	.48
19	1.8	3.9	4.7	8.7	4.6	4.6	8.5	4.2	6.1	1.6	.73	.54
20	1.8	4.6	4.6	7.1	4.4	4.5	16	4.0	5.8	1.4	.71	.59
21	1.9	9.1	4.3	6.4	4.4	4.4	9.4	3.8	5.6	1.3	.69	.67
22	2.0	4.9	13	7.8	4.4	4.4	7.7	3.8	5.5	1.2	.66	.79
23	4.2	4.1	10	7.4	4.4	4.4	12	3.6	5.3	1.2	.66	1.5
24	7.2	4.0	5.9	7.4	4.4	4.4	8.5	3.6	5.0	1.1	.62	1.6
25	4.7	4.4	4.5	7.0	4.3	4.4	6.9	3.6	5.3	1.1	.59	1.4
26	3.8	4.1	4.8	6.7	4.3	4.4	6.1	3.7	5.2	1.0	.57	1.3
27	3.4	3.9	4.5	6.5	4.3	4.3	5.6	3.7	4.9	1.1	.55	1.2
28	5.3	3.8	6.3	6.2	4.6	4.3	5.3	3.9	4.4	1.1	.52	1.2
29	6.9	3.8	8.2	6.3	6.5	4.3	5.1	7.3	4.2	.96	.52	1.2
30	4.9	3.8	7.5	9.2	---	4.3	5.1	4.9	4.0	.88	.51	1.1
31	4.0	---	5.7	7.1	---	4.1	---	4.1	---	.83	.49	---
TOTAL	79.3	128.5	184.8	318.3	143.2	194.3	172.5	136.7	127.8	62.97	27.82	20.14
MEAN	2.56	4.28	5.96	10.3	4.94	6.27	5.75	4.41	4.26	2.03	.90	.67
MAX	7.2	9.1	13	21	6.5	26	16	7.3	6.1	3.9	2.3	1.6
MIN	1.2	3.6	4.1	5.1	4.3	4.1	3.8	3.6	3.1	.83	.49	.34
AC-FT	157	255	367	631	284	385	342	271	253	125	55	40
a	-2006	-664	+77	+1714	+777	+1725	+1841	+1199	-661	-1738	-1826	-1439
b	1984	863	784	770	687	644	564	630	1295	2144	2154	1758
c	92	15	2	8	35	60	68	118	155	224	208	159

CAL YR 1987 TOTAL 2084.3 MEAN 5.71 MAX 63 MIN 1.1 AC-FT 4130 MEAN d 26.4 AC-FT d 19100  
WTR YR 1988 TOTAL 1596.33 MEAN 4.36 MAX 26 MIN .34 AC-FT 3170 MEAN d 24.2 AC-FT d 17590

a Change in contents, in acre-feet, in Jenkinson Lake.

b Diversion, in acre-feet, from Jenkinson Lake.

c Evaporation, in acre-feet, from Jenkinson Lake.

d Adjusted for change in contents, evaporation, and diversion from Jenkinson Lake.

## SAN JOAQUIN RIVER BASIN

11335000 COSUMNES RIVER AT MICHIGAN BAR, CA

LOCATION.--Lat 38°30'01", Long 121°02'39", in NW 1/4 SE 1/4 sec.36, T.8 N., R.8 E., Sacramento County, Hydrologic Unit 18040013, on downstream side of midstream pier of highway bridge at Michigan Bar, 5.5 mi southwest of Latrobe, and 12 mi downstream from confluence of North and Middle Forks of Cosumnes River.

DRAINAGE AREA.--536 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1907 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1953-80.

WATER TEMPERATURE: Water years 1963-79.

SEDIMENT DATA: Water years 1958-74.

REVISED RECORDS.--WSP 331: 1911-12. WSP 1315-A: 1908-9, 1911(M). WSP 1930: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 168.09 ft above National Geodetic Vertical Datum of 1929. Prior to July 10, 1930, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good except those for periods with flows below 5 ft<sup>3</sup>/s, which are poor. Flow partly regulated since January 1955 by Jenkinson Lake, usable capacity, 40,570 acre-ft. See REMARKS for Camp Creek near Somerset (station 11333000) for diversion out of basin. Numerous small diversions above station for irrigation and domestic use.

AVERAGE DISCHARGE.--81 years, 499 ft<sup>3</sup>/s, 361,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,100 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 14.76 ft, from rating curve extended above 34,000 ft<sup>3</sup>/s on basis of area-velocity study of peak flow; no flow at times in many years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1907 reached a stage of 16.3 ft, discharge unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 17	1445	*1,200	*4.83				

No flow for many days in August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.84	32	29	76	148	219	99	168	72	13	.00	.00
2	1.6	26	31	58	136	416	95	160	65	11	.04	.00
3	1.4	23	37	91	129	245	92	149	58	11	.01	.00
4	.74	21	42	153	118	210	92	140	52	10	.01	.00
5	1.2	22	38	241	112	190	91	135	46	9.1	.00	.00
6	1.8	22	37	292	106	184	88	128	44	8.1	.00	.00
7	1.7	22	38	203	107	178	85	134	45	7.4	.00	.00
8	1.0	21	103	168	103	172	86	137	47	7.7	.00	.00
9	1.7	22	87	165	101	165	87	139	52	6.9	.00	.00
10	1.9	22	71	155	101	163	86	131	51	6.3	.00	.00
11	1.5	21	89	193	103	157	83	122	45	6.5	.00	.00
12	1.9	21	83	270	104	147	83	115	40	6.0	.00	.00
13	3.6	24	67	184	108	139	85	112	38	5.5	.00	.00
14	4.1	30	54	152	110	132	95	107	35	4.5	.00	.00
15	3.9	36	42	182	110	127	144	103	32	5.1	.00	.00
16	5.9	42	44	538	110	123	133	101	29	4.9	.00	.00
17	6.0	36	49	953	110	119	118	100	28	4.2	.00	.00
18	8.5	34	49	559	107	113	111	109	26	4.3	.00	.00
19	12	32	45	281	106	109	144	104	25	3.9	.00	.00
20	8.4	34	41	202	101	108	344	95	23	3.4	.00	.00
21	8.4	38	42	172	98	108	343	86	23	2.7	.00	.00
22	8.5	51	43	153	97	108	224	79	22	3.1	.00	.00
23	9.8	47	83	142	99	108	251	74	21	1.9	.00	.00
24	11	38	106	133	99	107	224	70	22	1.4	.00	.00
25	24	33	64	129	99	114	197	66	19	2.1	.00	.00
26	32	30	48	128	100	112	187	63	18	1.7	.00	.00
27	25	29	49	129	102	113	186	55	18	1.1	.00	.00
28	22	29	73	129	109	114	189	53	17	.25	.00	.00
29	20	27	192	129	134	111	183	55	16	.38	.00	.00
30	29	27	144	145	---	106	176	76	14	.09	.00	.00
31	42	---	103	166	---	102	---	86	---	.01	.00	---
TOTAL	301.38	892	2023	6671	3167	4619	4401	3252	1043	153.53	0.06	0.00
MEAN	9.72	29.7	65.3	215	109	149	147	105	34.8	4.95	.002	.00
MAX	42	51	192	953	148	416	344	168	72	13	.04	.00
MIN	.74	21	29	58	97	102	83	53	14	.01	.00	.00
AC-FT	598	1770	4010	13230	6280	9160	8730	6450	2070	305	.1	.0

CAL YR 1987 TOTAL 35951.86 MEAN 98.5 MAX 1450 MIN .10 AC-FT 71310  
WTR YR 1988 TOTAL 26522.97 MEAN 72.5 MAX 953 MIN .00 AC-FT 52610

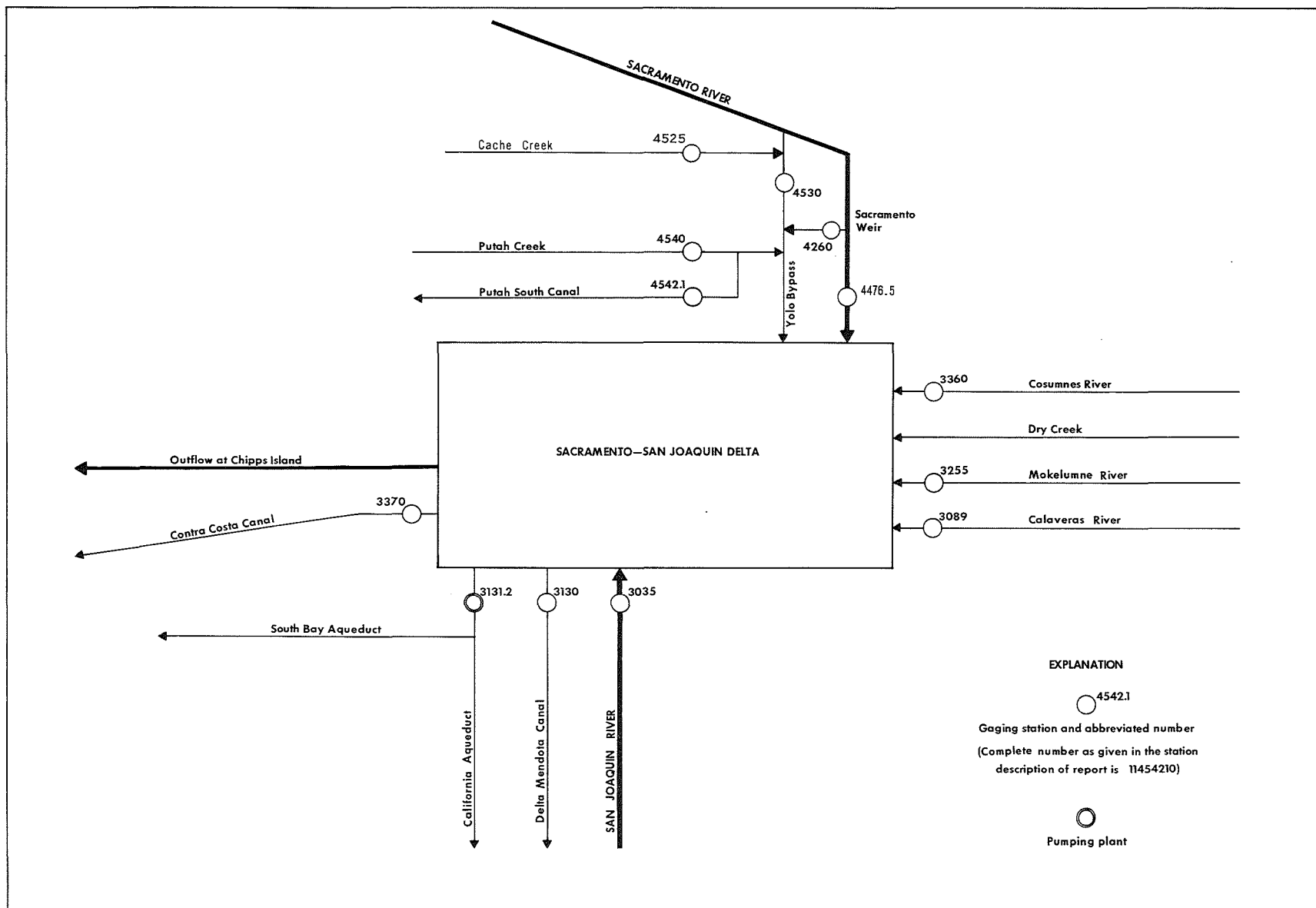


Figure 36.-- Schematic diagram showing principal inflows and diversions, Sacramento-San Joaquin Delta.

## SACRAMENTO-SAN JOAQUIN DELTA, INFLOWS AND DIVERSIONS

LOCATION.--See schematic diagram of inflows and diversions, Sacramento-San Joaquin Delta.

PERIOD OF RECORD.--October 1971 to current year. Data for periods prior to October 1971 can be obtained from published records for stations tabulated below.

COOPERATION.--Records for Delta-Mendota, Contra Costa, and Putah South Canals provided by U.S. Bureau of Reclamation; California Aqueduct and Sacramento Weir spill provided by California Department of Water Resources; these records were not reviewed by U.S. Geological Survey.

SUMMARY OF PRINCIPAL INFLOWS AND DIVERSIONS IN THE  
SACRAMENTO-SAN JOAQUIN DELTA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Inflows, in thousands of acre-feet												
Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Month Apr.	May	June	July	Aug.	Sept.	Water year
11303500 SAN JOAQUIN RIVER NEAR VERNALIS												
84.22	92.11	78.59	91.16	79.90	137.8	127.7	109.5	101.8	83.43	95.76	86.40	1168
11308900 CALAVERAS RIVER BELOW NEW HOGAN DAM												
2.47	2.01	2.05	2.03	1.21	3.10	4.73	3.76	8.61	10.36	9.40	3.66	53.39
11325500 MOKELUMNE RIVER AT WOODBRIDGE												
3.97	2.83	3.09	3.08	2.23	1.77	1.29	.91	.99	1.14	.68	1.05	23.03
11335000 COSUMNES RIVER AT MICHIGAN BAR												
.60	1.77	4.01	13.23	6.28	9.16	8.73	6.45	2.07	.30	0	0	52.60
11426000 SACRAMENTO WEIR SPILL												
0	0	0	0	0	0	0	0	0	0	0	0	0
11447650 SACRAMENTO RIVER AT FREEPORT												
584.7	483.7	968.1	1562	701.1	697.8	1005	674.8	629.5	900.3	817	686.5	9710
11453000 YOLO BYPASS NEAR WOODLAND <sup>1</sup>												
0	0	0	92.75	0	0	0	0	0	0	0	0	92.75
11454000 PUTAH CREEK NEAR WINTERS												
20.88	8.40	7.75	6.12	6.95	19.56	28.84	27.38	38.26	39.01	32.75	24.92	260.8
TOTAL												
696.8	590.8	1064	1770	797.7	869.2	1176	822.8	781.2	1035	955.6	802.5	11360
Diversion, in thousands of acre-feet												
Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Month Apr.	May	June	July	Aug.	Sept.	Water year
11313000 DELTA-MENDOTA CANAL												
245.8	233.9	248	249.9	235.7	251.1	243	182.7	178.1	275.4	278.6	273.2	2895
11313120 CALIFORNIA AQUEDUCT (DELTA PUMPING PLANT)												
104.1	81.56	298.2	383.1	332.7	258.9	255.2	184.4	166.9	199.9	244.6	196.8	2706
11337000 CONTRA COSTA CANAL												
11.16	9.06	7.70	7.90	7.35	11.35	12.27	11.94	12.45	15.21	15.68	13.25	135.3
11454210 PUTAH SOUTH CANAL												
17.23	5.75	5.32	4.01	5.94	16.82	25.55	23.96	32.83	33.72	28.87	22.59	222.6
TOTAL												
378.3	330.3	559.3	644.9	581.7	538.2	536	403	390.3	524.2	567.8	505.8	5960

<sup>1</sup>Flow not computed below 1,000 ft<sup>3</sup>/s.

NOTE.--Minor inflow streams and diversions are not included.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the U.S. Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at miscellaneous sites are given in separate tables.

## Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage station is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for the current year is given. Information on some lower floods may have been obtained but is not published here. The years given in the period of record represent water years for which the annual maximum has been obtained.

## Annual maximum discharge at crest-stage partial-record stations during water year 1988

Station No.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Date	Annual maximum	
						Gage height (feet)	Discharge (ft <sup>3</sup> /s)
Tulare Lake Basin							
11205680	Frazier Creek near Strathmore, CA	Lat 36°08'33", long 118°57'17", in NE 1/4 SE 1/4 sec.32, T.20 S., R.28 E., Tulare County, Hydrologic Unit 18030012, at culvert on county road J28, 5.9 mi east of Strathmore.	3.05	1974-88	4-22-88	(b)	e0.2
11205690	Lewis Creek near Lindsay, CA	Lat 36°11'11", long 118°59'46", in NW 1/4 NE 1/4 sec.13, T.20 S., R.27 E., Tulare County, Hydrologic Unit 18030012, at culvert on Road 258, 0.2 mi downstream from unnamed tributary, and 7.0 mi southeast of Lindsay.	21.5	1969a, 1974-88	1-05-88	(b)	e10
11210970	Antelope Creek at Woodlake, CA	Lat 36°25'42", long 119°06'22", in SE 1/4 SE 1/4 sec.13, T.17 S., R.26 E., Tulare County, Hydrologic Unit 18030012, at culverts on two separate channels at Cajon Avenue and 1.1 mi northwest of town of Woodlake.	19.2	1969a, 1974-88 (discontinued)	4-22-88	(b)	e5.8
11212000	Sand Creek near Orange Cove, CA	Lat 36°37'36", long 119°14'48", in SW 1/4 NW 1/4 sec.15, T.15 S., R.25 E., Tulare County, Hydrologic Unit 18030012, on right bank 3.8 mi east of Orange Cove.	31.6	1944-54, 1956d, 1967d, 1969d, 1971-84d, 1985-88	1-05-88	2.74	52

a Published as a miscellaneous measurement.

b Unknown.

d Computed as continuous record.

e Estimated.



## Discharge measurements made at miscellaneous sites during water year 1988

Stream	Tributary to	Location	Drainage area (mi <sup>2</sup> )	Measured previously (water years)	Measurements		
					Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)
SAN JOAQUIN RIVER BASIN							
11238270	San Joaquin River	Lat 37°09'46", long 119°15'12",	--	--	3-17-88	0.62	0.72
Middle Fork		in NE 1/4 NW 1/4, sec. 9,			4-18-88	0.60	0.74
Balsam Creek		T.9 S., R.25E., Fresno			5-24-88	0.74	1.03
below Balsam		County, Hydrologic Unit			5-26-88	0.85	1.57
Meadows Fore-		18040006, Sierra National			5-31-88	0.86	1.56
bay, near Big		Forest, non-recording gage			6-15-88	0.86	1.65
Creek <u>a</u> /		80 ft downstream from control			6-23-88	0.66	0.90
		house at base of Balsam Mead-			6-23-88	0.73	1.13
		ows Dam, 2.6 mi south of Big			8-03-88	0.83	1.48
		Creek.			9-13-88	0.85	1.58
					9-23-88	0.86	1.48
11238600	Sacramento-San	Lat 37°11'20", long 119°20'35",	1,197	1987	10-23-87	---	4.30
San Joaquin	Joaquin River	in SE 1/4 NE 1/4 sec.27,			12-21-87	4.68	4.68
River above	Delta	T.8 S., R.24 E., Fresno			2-11-88	4.22	4.56
Stevenson		County, Hydrologic Unit			3-10-88	4.26	4.84
Creek, near		18040006, Sierra National			4-20-88	4.60	8.25
Big Creek <u>a</u> /		Forest, non-recording gage			5-11-88	4.20	4.24
		at Dam 6 intake structure,			6-13-88	4.16	3.85
		2.4 mi upstream from			7-14-88	4.17	3.94
		Stevenson Creek and			8-18-88	4.17	4.27
		3.8 mi west of Big Creek.			9-12-88	4.18	4.20
					9-22-88	4.17	4.54
					9-27-88	4.10	3.88
11239300	San Joaquin River	Lat 37°08'14", long 119°15'13",	4.42	--	12-04-87	0.97	4.22
North Fork		in SE 1/4 NW 1/4 sec. 21,			12-09-87	1.16	5.30
Stevenson		T.9 S., R.25 E., Fresno			3-17-88	1.40	7.10
Creek at		County, Hydrologic Unit			3-17-88	1.40	7.30
Perimeter Road,		18040006, Sierra National			4-15-88	1.64	9.13
near Big Creek <u>a</u> /		Forest, non-recording gage			4-28-88	1.97	12.3
		150 ft upstream from Peri-			5-23-88	1.43	6.82
		meter Road and 4.8 mi south			6-14-88	1.21	5.75
		of Big Creek.			6-27-88	1.19	5.49
					7-14-88	1.20	5.63
					8-03-88	1.14	5.07
					8-26-88	1.13	4.95
					9-13-88	1.11	4.61
					9-23-88	1.16	4.43

a Provided by Southern California Edison Co., in connection with a Federal Energy Regulatory project.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

354225119424501 WESTFARMERS POND 1 NEAR LOST HILLS, CA

LOCATION.--Lat 35°42'25", long 119°42'45", SW 1/4 SE 1/4 sec.33, T.25 S., R.21 E., Kern County, Hydrologic Unit 18030012, 4.6 mi north of Lost Hills and east of Interstate Highway 5, on Westfarmers Pond.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1987.

REMARKS.--Several constituents exceed Environmental Protection Agency water-quality criteria.

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA)
MAR 25...	0930	31800	8.90	15.0	--	--	530	--	330	--	8200
AUG 25...	1000	45000	8.90	22.5	3300	3000	--	530	--	490	--
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT IT FIELD CACO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR 25...	--	--	--	9.0	--	68	120	256	257	13000	8700
AUG 25...	12000	89	92	--	7.5	17	180	314	312	14000	10000
DATE		FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
MAR 25...	0.90	18	--	--	--	--	0.440	--	0.6	19.0	19.0
AUG 25...	0.80	13	40300	37400	54.8	--	0.600	0.4	--	16.0	--
DATE		NITRO- GEN, NO2+NO3 TOT. IN BOT MAT (MG/KG AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NH4 TOTAL IN BOT. MAT. (MG/KG AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)
MAR 25...	<2.0	0.280	--	63	4.4	--	750	23	0.040	--	--
AUG 25...	<2.0	--	0.270	29	--	2.6	500	--	0.030	0.030	--

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

354225119424501 WESTFARMERS POND 1 NEAR LOST HILLS, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS TOTAL IN BOT. MAT. (MG/KG AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)
MAR 25...	--	770	8	--	<10	--	64000	--	40	--
AUG 25...	<0.010	890	--	4	--	<10	--	88000	--	<1

DATE	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
MAR 25...	10	--	220	70	--	260	--	300	--	50
AUG 25...	--	<1	--	--	6	--	140	--	<5	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 25...	--	1300	--	300	--	12	--	4700	--	40	--
AUG 25...	0.2	--	1800	--	400	--	<1	--	100	--	40

&lt; Actual value is known to be less than the value shown.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

354430119364801 KERN NATIONAL WILDLIFE REFUGE POND 6A NEAR LOST HILLS, CA

LOCATION.--Lat 35°44'30", long 119°36'48", SW 1/4 NW 1/4 sec.21, T.25 S., R.22 E., Kern County, Hydrologic Unit 18030012, on Kern National Wildlife Refuge, unit 6-A, near refuge levee road, east of Goose Lake Canal.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1987 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY REPORTED)

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	CALCIUM TOTAL RECOVERABLE (MG/L AS CA)	MAGNESIUM, TOTAL RECOVERABLE (MG/L AS MG)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA)	POTASSIUM, TOTAL RECOVERABLE (MG/L AS K)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3	CARBONATE WATER WH IT FIELD MG/L AS CO3	ALKALINITY WAT WH TOT IT FIELD M3/L AS CACO3	
MAR 24...	1630	1160	8.60	19.0	68	24	150	6.5	415	7	352	
DATE	TIME	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	NITROGEN, NITRITE TOT IN BOT MAT (MG/L AS N)	NITROGEN, NITRITE TOT IN BOT MAT (MG/KG AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOT. IN BOT MAT (MG/KG AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	
MAR 24...	350		84	180	1.2	23	0.030	<0.4	<0.100	<0.100	0.070	
DATE	TIME	NITROGEN, NH4 TOTAL IN BOT. MAT. (MG/KG AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS, ORTHOPHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS TOTAL (MG/KG AS P)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BORON, TOTAL RECOVERABLE (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	
MAR 24...	22		4.0	1400	0.510	0.140	320	13	<10	710	<10	<10
DATE	TIME	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL RECOVERABLE (UG/L AS SE)	STRONTIUM, TOTAL RECOVERABLE (UG/L AS SR)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAR 24...		<50	<10	2500	100	110	<0.10	1	<100	<1	870	10

< Actual value is known to be less than the value shown.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

355548119283601 PRYSE POND EAST CELL NEAR ALPAUGH, CA

LOCATION.--Lat 35°55'48", long 119°28'36", SW 1/4 NW 1/4 sec.15, T.23 S., R.23 E., Tulare County, Hydrologic Unit 18030012, 3.7 mi north of Alpaugh and 200 ft west of Homeland Canal.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1987.

REMARKS.--Several constituents exceed Environmental Protection Agency water-quality criteria.

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA)
MAR 24...	1000	36200	8.70	12.5	--	--	140	--	650	--	9400
AUG 26...	1340	66900	8.50	28.5	6000	5400	--	260	--	1300	--
DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD HCO3	CAR- BONATE WATER WH IT FIELD CO3	ALKA- LINITY WAT WH TOT IT FIELD CACO3	ALKA- LINITY WAT WH TOT FET FIELD CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR 24...	--	--	--	28	--	273	58	484	475	14000	11000
AUG 26...	21000	88	120	--	50	520	108	592	606	23000	20000
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, NO2+NO3 TOT (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOT. IN BOT MAT (MG/KG AS N)
MAR 24...	0.20	24	--	--	--	0.050	--	0.8	0.200	<0.100	<2.0
AUG 26...	0.20	47	64600	66000	87.9	--	0.020	--	--	<0.100	--
DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NH4 TOTAL IN BOT. MAT. (MG/KG AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	
MAR 24...	0.210	--	42	8.4	--	2000	8.6	0.100	--	--	
AUG 26...	--	0.140	51	--	2.0	1000	--	0.880	0.150	0.080	

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

355548119283601 PRYSE POND EAST CELL NEAR ALPAUGH, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	PHOS- PHOROUS TOTAL IN BOT. MAT. (MG/KG AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
MAR 24...	770	350	--	<10	--	14000	--	50	--	20
AUG 26...	790	--	25	--	<10	--	28000	--	<1	--

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
MAR 24...	--	270	80	--	220	--	300	--	320	--
AUG 26...	<1	--	--	1	--	250	--	<5	--	0.3

DATE	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 24...	1900	--	400	--	<1	--	1200	--	50	--
AUG 26...	--	3600	--	800	--	<1	--	35	--	60

&lt; Actual value is known to be less than the value shown.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

355701119524001 WESTLAKE NORTHEAST POND NEAR KETTLEMAN CITY, CA

LOCATION.--Lat 35°57'01", long 119°52'40", SW 1/4 SW 1/4 sec.1, T.23 S., R.19 E., Kings County, Hydrologic Unit 18030012, 1.9 mi east of Interstate Highway 5, 1.1 mi north of Utica Avenue, and 600 ft south of Blakely Canal.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1987.

REMARKS.--Several constituents exceed Environmental Protection Agency water-quality criteria.

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA)
MAR											
25...	1150	12300	8.80	16.5	--	--	290	--	400	--	240
AUG											
25...	1410	17000	8.90	29.0	3500	3300	--	380	--	610	--
DATE		SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD HCO3	CAR- BONATE WATER WH IT FIELD CO3	ALKA- LINITY WAT WH TOT IT FIELD CACO3	ALKA- LINITY WAT WH TOT FET FIELD CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR											
25...	--	--	--	37	--	178	26	189	190	5800	2100
AUG											
25...	2500	64	22	--	34	63	62	159	156	7700	1600
DATE		FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
MAR											
25...	0.40	6.5	--	--	--	0.180	--	<0.4	2.90	2.90	
AUG											
25...	0.30	12	15400	13300	20.9	<0.010	--	6.2	--	<0.100	
DATE		NITRO- GEN, NO2+NO3 TOT. IN BOT MAT (MG/KG AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NH4 TOTAL IN BOT. MAT. (MG/KG AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)
MAR											
25...	<2.0	0.180	--	36	4.6	--	390	7.5	0.180	--	
AUG											
25...	9.0	--	0.110	16	--	2.6	360	--	0.160	0.120	

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

355701119524001 WESTLAKE NORTHEAST POND NEAR KETTLEMAN CITY, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS TOTAL IN BOT. MAT. (MG/KG AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)
MAR 25...	--	270	16	--	<10	--	5700	--	20	--
AUG 25...	0.020	370	--	140	--	<10	--	8600	--	<1

DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
MAR 25...	--	10	--	60	40	--	810	--	200	--	140
AUG 25...	<1	--	<1	--	--	1	--	70	--	<5	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 25...	--	240	--	100	--	<1	--	2600	--	20	--
AUG 25...	0.2	--	210	--	100	--	<1	--	20	--	30

&lt; Actual value is known to be less than the value shown.



## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

361119119471701 MEYERS POND A NEAR STRATFORD, CA

LOCATION.--Lat 36°11'19", long 119°47'17", NW 1/4 SE 1/4 sec.15, T.20 S., R.20 E., Kings County, Hydrologic Unit 18030012, 2.0 mi east of Stratford and 400 ft south of Laurel Avenue.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1987.

REMARKS.--Several constituents exceed Environmental Protection Agency water-quality criteria.

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA)
MAR 24...	1345	10300	9.20	15.0	--	--	110	--	250	--	2200
AUG 26...	0935	11100	8.80	24.0	1200	1000	--	100	--	240	--
DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS K)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAR 24...	--	--	--	10	--	142	72	236	241	260	1000
AUG 26...	2300	80	29	--	9.4	205	36	228	225	4800	820
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	
MAR 24...	0.90	9.3	--	--	--	0.010	--	0.6	<0.100	<0.100	
AUG 26...	0.90	26	9550	8450	13.0	--	<0.060	0.6	--	2.80	
DATE	NITRO- GEN, NO2+NO3 TOT. IN BOT MAT (MG/KG AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NH4 TOTAL IN BOT. MAT. (MG/KG AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	
MAR 24...	<2.0	0.040	--	46	12	--	800	0.220	--	--	
AUG 26...	<2.0	--	0.290	8.2	--	3.0	810	0.070	0.010	<0.010	

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## TULARE LAKE BASIN

361119119471701 MEYERS POND A NEAR STRATFORD, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	PHOS- PHOROUS TOTAL IN BOT. MAT. (MG/KG AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, CADMIUM DIS- SOLVED (UG/L AS CD)	TOTAL RECOV- ERABLE (UG/L AS CR)
MAR 24...	970	11	--	<10	--	4200	--	20	--	<10
AUG 26...	360	--	5	--	<10	--	4200	--	<1	--

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)
MAR 24...	--	<50	30	--	310	--	200	--	40	--
AUG 26...	<1	--	--	2	--	30	--	<5	--	0.1

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 24...	--	180	--	<100	--	<1	--	900	--	20	--
AUG 26...	0.1	--	190	--	100	--	<1	--	32	--	10

&lt; Actual value is known to be less than the value shown.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365035119555300 SAN JOAQUIN RIVER AT HIGHWAY 99, NEAR HERNDON, CA

LOCATION.--Lat 36°50'35", long 119°55'53", NE 1/4 SE 1/4 sec.31, T.12 S., R.19 E., Fresno County, Hydrologic Unit 18040001, 0.1 mi upstream from Highway 99 and 0.8 mi northwest of Herndon.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1987 to September 1988 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)
NOV 17...	1530	49	60	6.90	14.0	0.50	755	9.8	<10	18	0	4.9
FEB 17...	1430	36	68	7.10	12.5	1.3	760	10.4	<10	20	0	5.5
APR 19...	1440	75	58	7.00	18.0	0.60	750	--	40	15	0	4.1
JUN 29...	1445	60	52	7.20	27.0	0.40	755	7.2	<10	13	0	3.2
SEP 20...	1615	88	53	6.70	22.5	0.80	750	8.2	<10	13	0	3.6
DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 17...	1.3	5.5	39	0.6	1.1	26	0	21	21	3.2	4.5	7.1
FEB 17...	1.4	6.0	38	0.6	1.4	30	0	25	24	3.2	4.4	3.9
APR 19...	1.2	5.9	44	0.7	1.0	24	0	20	20	3.1	4.7	5.6
JUN 29...	1.1	6.0	49	0.8	0.70	20	0	16	17	3.2	4.6	6.0
SEP 20...	1.0	5.4	46	0.7	0.70	21	0	17	18	2.4	4.3	5.2
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS, ORTHO, TOTAL (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)
NOV 17...	36	40	0.05	<0.100	0.040	0.20	<0.20	0.010	<0.010	<0.010	<0.010	60
FEB 17...	37	40	0.05	<0.100	0.010	0.30	0.20	0.020	<0.010	<0.010	<0.010	90
APR 19...	--	38	0.14	<0.100	0.020	0.30	0.30	0.020	0.010	<0.010	<0.010	80
JUN 29...	42	35	0.06	<0.100	<0.010	0.30	<0.20	0.010	0.010	<0.010	<0.010	60
SEP 20...	37	33	0.05	<0.100	<0.010	<0.20	0.30	0.020	0.020	<0.010	<0.010	20

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365035119555300 SAN JOAQUIN RIVER AT HIGHWAY 99, NEAR HERNDON, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 17...	10	1	1	2	<1	2	3	100	33	<5	<5
FEB 17...	<10	2	1	<1	<1	2	<1	120	24	8	<5
APR 19...	<10	2	2	2	<1	2	2	140	39	<5	<5
JUN 29...	20	2	2	<1	<1	3	<1	140	62	<5	<5
SEP 20...	<10	2	1	<1	1	3	1	80	36	<5	<5

DATE	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE DIS- SOLVED (MG/L AS CN)	CYANIDE TOTAL (MG/L AS CN)
NOV 17...	<10	2	<0.10	<0.1	<1	<1	<10	<3	1.5	<0.01	<0.010
FEB 17...	20	5	<0.10	<0.1	<1	<1	<10	<3	2.0	<0.01	<0.010
APR 19...	<10	5	<0.10	<0.1	5	5	<10	6	--	<0.01	<0.010
JUN 29...	20	<1	<0.10	<0.1	8	3	10	8	2.8	<0.01	<0.010
SEP 20...	10	2	<0.10	<0.1	1	4	<10	<3	2.2	<0.01	<0.010

DATE	PHENOLS TOTAL (UG/L)	OIL AND GREASE, TOTAL RECOV. GRAVI- METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
NOV 17...	3	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
FEB 17...	1	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
APR 19...	1	<1	--	--	--	--	--	--	--	--	--
JUN 29...	2	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
SEP 20...	<1	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
NOV 17...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<2.0	<0.01	<0.01	<0.01	<0.01
FEB 17...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<2.0	<0.01	<0.01	<0.01	<0.01
APR 19...	--	--	--	--	--	--	--	--	--	--	--
JUN 29...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.5	<0.01	<0.01	<0.01	<0.01
SEP 20...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.5	<0.01	0.01	<0.01	<0.01

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365035119555300 SAN JOAQUIN RIVER AT HIGHWAY 99, NEAR HERNDON, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV 17...	<0.10	<0.01	<0.1	<2.0	<1	<0.01	0.01	<0.01	<0.01	<2.0	<0.01
FEB 17...	<0.10	<0.01	<0.1	<2.0	<1	<0.01	<0.01	<0.01	<0.01	<2.0	<0.01
APR 19...	--	--	--	--	--	--	--	--	--	--	--
JUN 29...	<0.10	<0.01	<0.1	<0.5	<1	<0.01	<0.01	<0.01	<0.01	<0.50	<0.01
SEP 20...	<0.10	<0.01	<0.1	<0.5	<1	<0.01	<0.01	<0.01	<0.01	<0.50	<0.01

&lt; Actual value is known to be less than the value shown.

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 17...	1530	49	14.0	3	64
FEB 17...	1430	36	12.5	3	97
APR 19...	1440	75	18.0	3	80
JUN 29...	1445	60	27.0	6	30
SEP 20...	1615	88	22.5	8	19

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365106119510700 SAN JOAQUIN RIVER BELOW SAN JOAQUIN COUNTRY CLUB, NEAR FRESNO, CA

LOCATION.--Lat 36°51'06", long 119°51'07", SW 1/4 SW 1/4 sec.25, T.12 S., R.19 E., Fresno County, Hydrologic Unit 18040001, 0.2 mi downstream from San Joaquin Country Club, 1.0 mi north of Herndon Avenue, near Fresno.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1988 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	ALUM- INUM, RECOV. FM BOT- TOM MA- TIERIAL (UG/G)	ARSENIC TOTAL IN BOT- TOM MA- TIERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TIERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TIERIAL (UG/G)	COPPER, RECOV. FM BOT- TOM MA- TIERIAL (UG/G AS CU)	IRON, RECOV. FM BOT- TOM MA- TIERIAL (UG/G AS FE)	LEAD, RECOV. FM BOT- TOM MA- TIERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TIERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TIERIAL (UG/G AS HG)	SELE- NIUM, TOTAL IN BOT- TOM MA- TIERIAL (UG/G)	
SEP 29...	1400	2600	2	<1	40	2	4000	<100	87	<0.10	<1	
DATE	TIME	ZINC, RECOV. FM BOT- TOM MA- TIERIAL (UG/G AS ZN)	CARBON, ORGANIC TOT. IN BOTTOM MAT. (GM/KG AS C)	CARBON, INOR- GANIC, TOT IN BOT MAT (G/KG AS C)	CARBON, INORG + ORGANIC TOT. IN BOT MAT (MG/KG AS C)	OIL AND GREASE, TOT. IN BOT MAT GRAVI- METRIC (MG/KG)	PCB, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)
SEP 29...	10	--	0.1	7.4	<1	<1	<1.0	<0.1	<1.0	<0.1	0.1	
DATE	TIME	DDT, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	DI- AZINON, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	ENDO- SULFAN, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	ENDRIN, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	ETHION, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	MALA- THION, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)
SEP 29...	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
DATE	TIME	METHYL PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI- THION, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	PARA- THION, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	PER- THANE TOT. IN BOT- TOM MA- TIERIAL (UG/KG)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	TRI- THION, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	2,4-D, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	2,4-DP, IN BOTTOM MAT. (UG/KG)	2,4,5-T TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)	SILVEX, TOTAL IN BOT- TOM MA- TIERIAL (UG/KG)
SEP 29...	1400	<0.1	<0.1	<0.1	<0.1	<1.00	<10	<0.1	<0.1	<0.1	<0.1	<0.1

&lt; Actual value is known to be less than the value shown.

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
SEP 29...	1400	0	1	3	20	51	77	85	88	91	100

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365106119510700 SAN JOAQUIN RIVER BELOW SAN JOAQUIN COUNTRY CLUB, NEAR FRESNO, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	ALUM- INUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G)	
JUN 28...	1715	3600	<1	<1	10	3	3600	<100	100	<0.10	<1	
DATE		ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	CARBON, ORGANIC TOT. IN BOTTOM MAT. (GM/KG AS C)	CARBON, INOR- GANIC, TOT IN BOT MAT (G/KG AS C)	CARBON, INORG + ORGANIC TOT. IN BOT MAT (MG/KG AS C)	OIL AND GREASE, TOT. IN BOT MAT GRAVI- METRIC (MG/KG)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
JUN 28...	20	--	1.8	0.6	<1	<1	<1.0	<0.1	<1.0	<0.1	<0.1	
DATE		DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDO- SULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)
JUN 28...	<0.1	<0.1	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.1
DATE		METHYL PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI- THION, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PARA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PER- THANE IN BOT- TOM MA- TERIAL (UG/KG)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-DP, IN BOTTOM MAT. (UG/KG)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
JUN 28...	<0.1	<0.1	<0.1	<0.1	<0.1	<1.00	<10	<0.1	<0.1	<0.1	<0.1	<0.1

&lt; Actual value is known to be less than the value shown.

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
JUN 28...	1715	0	1	5	29	67	84	88	89	92	100

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365130119504200 SAN JOAQUIN RIVER ABOVE SAN JOAQUIN COUNTRY CLUB, NEAR FRESNO, CA

LOCATION.--Lat 36°51'30", long 119°50'42", NE 1/4 SW 1/4 sec.25, T.12 S., R.19 E., Fresno County, Hydrologic Unit 18040001, 0.4 mi upstream from San Joaquin Country Club and 1.5 mi north of Herndon Avenue.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1987 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)		SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (FTU)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	HARD-NESS TOTAL (MG/L AS CACO3)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS-SOLVED (MG/L AS CA)
SEP 29...	1400	64		54	7.60	25.5	0.60	760	10.3	<10	13	0	3.8
DATE		MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE WATER WH IT FIELD MG/L AS HCO3	CAR-BONATE WATER WH IT FIELD MG/L AS CO3	ALKA-LINITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)
SEP 29...	0.78	4.7		42	0.6	0.90	22	0	18	18	2.4	2.9	5.8
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. TOTAL (MG/L AS N)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)
SEP 29...	33	32		0.04	<0.100	0.020	0.20	<0.20	0.020	0.020	<0.010	0.020	50
DATE		ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	
SEP 29...	<10		2	2	<1	<1	7	1	--	33	<5	<5	
DATE		MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	NICKEL, DIS-SOLVED (UG/L AS NI)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE DIS-SOLVED (MG/L AS CN)	CYANIDE TOTAL (MG/L AS CN)	
SEP 29...	<10		3	0.20	<0.1	<1	5	--	4	2.1	<0.01	<0.010	
DATE		PHENOLS TOTAL (UG/L)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	
SEP 29...	<1	<1		<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	

See footnote at end of table.



## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365130119504200 SAN JOAQUIN RIVER ABOVE SAN JOAQUIN COUNTRY CLUB, NEAR FRESNO, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
SEP 29...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<2.0	<0.01	<0.01	<0.01	<0.01
DATE	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
SEP 29...	<0.10	<0.01	<0.1	<2.0	<1	<0.01	<0.01	<0.01	<0.01	<2.0	<0.01

&lt; Actual value is known to be less than the value shown.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
SEP 29...	1400	64	25.5	3	49

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365235119465800 SAN JOAQUIN RIVER AT STATE HIGHWAY 41, NEAR PINEDALE, CA

LOCATION.--Lat 36°52'35", long 119°46'58", SE 1/4 NW 1/4 sec.21, T.12 S., R.20 E., Fresno County, Hydrologic Unit, 18040001, at State Highway 41, 2.3 mi north of Pinedale.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1986 to September 1987 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)
SEP 29...	0915	74	49	7.10	20.0	1.4	760	9.5	38	13	0	3.6
DATE		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)
SEP 29...	0.92	4.8	43	0.6	0.80	22	0	18	17	2.4	2.9	6.9
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHOS, TOTAL (MG/L AS P)	PHOS- PHOROUS ORTHOS, DIS- SOLVED (MG/L AS P)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)
SEP 29...	31	33	0.04	<0.100	0.030	0.20	0.30	0.020	0.010	<0.010	<0.010	10
DATE		ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)
SEP 29...	<10	2	2	9	<1	--	1	--	49	<5	<5	
DATE		MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE DIS- SOLVED (MG/L AS CN)	CYANIDE TOTAL (MG/L AS CN)
SEP 29...	20	4	<0.10	<0.1	--	5	--	<3	2.5	<0.01	<0.010	
DATE		PHENOLS TOTAL (UG/L)	OIL AND GREASE, TOTAL RECOV. METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
SEP 29...	<1	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365235119465800 SAN JOAQUIN RIVER AT STATE HIGHWAY 41, NEAR PINEDALE, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
SEP 29...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<2.0	<0.01	<0.01	<0.01	<0.01
DATE	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
SEP 29...	<0.10	<0.01	<0.1	<2.0	<1	<0.01	<0.01	<0.01	<0.01	<2.0	<0.01
DATE	TIME	ALUM- INUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	IRON, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS FE)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/G AS HG)	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G)
SEP 29...	0845	3400	1	<1	60	3	3800	<100	100	<0.10	<1
DATE	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)	CARBON, ORGANIC TOT. IN BOTTOM MAT. (MG/KG AS C)	CARBON, INOR- GANIC, TOT. IN BOT MAT (G/KG AS C)	CARBON, INORG + ORGANIC TOT. IN BOT MAT (MG/KG AS C)	OIL AND GREASE, TOT. IN BOT MAT GRAVI- METRIC (MG/KG)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
SEP 29...	10	--	0.1	2.7	<1	<1	<1.0	<0.1	<1.0	<0.1	<0.1
DATE	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDO- SULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)
SEP 29...	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DATE	METHYL PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI- THION, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PARA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PER- THANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-DP, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
SEP 29...	<0.1	<0.1	<0.1	<0.1	<1.00	<10	<0.1	<0.1	<0.1	<0.1	<0.1

&lt; Actual value is known to be less than the value shown.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365235119465800 SAN JOAQUIN RIVER AT STATE HIGHWAY 41, NEAR PINEDALE, CA--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
SEP 29...	0915	74	20.0	2	94

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
(NOT PREVIOUSLY PUBLISHED)

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
SEP 29...	0915	0	2	6	17	30	40	43	45	58	100

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365235119470700 SAN JOAQUIN RIVER ABOVE STATE HIGHWAY 41, NEAR PINEDALE, CA

LOCATION.--Lat 36°52'35", long 119°47'07", NE 1/4 NE 1/4 sec.21, T.12 S., R.20 E., Fresno County, Hydrologic Unit 18040001, 0.5 mi upstream from State Highway 41 and 2.8 mi north of Pinedale.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1987 to September 1988 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (FTU)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	HARD- NESS TOTAL (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)
NOV												
17...	1230	67	51	7.20	13.0	0.50	755	10.6	<10	13	0	3.8
FEB												
17...	0945	51	59	7.30	11.5	0.80	765	10.6	19	16	0	4.7
APR												
19...	0845	92	54	7.20	15.5	0.70	750	--	<10	13	0	4.0
JUN												
29...	0945	108	48	6.60	21.0	1.2	755	9.1	26	13	0	3.6
SEP												
20...	0930	112	49	7.10	17.0	1.2	750	9.0	<10	12	0	3.5
DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE WATER WH IT FIELD MG/L AS HCO3	CAR- BONATE WATER WH IT FIELD MG/L AS CO3	ALKA- LINITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKA- LINITY WAT WH TOT FET FIELD MG/L AS CACO3	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV												
17...	0.83	4.6	42	0.6	0.80	22	0	18	17	2.7	6.4	7.4
FEB												
17...	1.0	5.5	41	0.6	1.2	24	0	20	19	3.7	4.5	6.3
APR												
19...	0.82	5.6	46	0.7	0.90	20	0	16	17	3.1	4.7	7.4
JUN												
29...	1.0	5.5	46	0.7	0.80	19	0	16	15	3.4	4.5	6.8
SEP												
20...	0.81	5.0	46	0.7	0.70	21	0	17	17	2.7	4.1	7.4
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHOROUS TOTAL (MG/L AS P)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)
NOV												
17...	44	37	0.06	<0.100	0.030	0.20	<0.20	0.020	0.010	0.010	<0.010	30
FEB												
17...	37	39	0.05	<0.100	0.040	0.70	0.40	0.030	0.010	0.010	0.030	50
APR												
19...	--	37	0.14	<0.100	0.020	0.30	0.20	0.030	0.020	<0.010	<0.010	80
JUN												
29...	36	35	0.05	<0.100	<0.010	0.40	0.20	0.020	0.020	0.020	<0.010	40
SEP												
20...	32	35	0.04	<0.100	<0.010	<0.20	<0.20	0.020	0.020	0.010	<0.010	60

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365235119470700 SAN JOAQUIN RIVER ABOVE STATE HIGHWAY 41, NEAR PINEDALE, CA--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 17...	<10	2	1	2	<1	2	2	150	89	<5	<5
FEB 17...	<10	2	2	<1	<1	2	<1	180	89	<5	<5
APR 19...	<10	2	2	2	<1	2	1	200	66	<5	5
JUN 29...	10	2	2	<1	2	3	1	200	100	<5	<5
SEP 20...	10	2	1	1	<1	3	1	120	71	<5	<5

DATE	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CYANIDE DIS- SOLVED (MG/L AS CN)	CYANIDE TOTAL (MG/L AS CN)
NOV 17...	10	12	<0.10	<0.1	<1	<1	<10	6	2.0	<0.01	<0.010
FEB 17...	40	25	<0.10	<0.1	<1	<1	<10	<3	2.6	<0.01	<0.010
APR 19...	10	11	<0.10	<0.1	4	2	<10	<3	--	<0.01	<0.010
JUN 29...	30	11	<0.10	<0.1	7	2	10	12	2.8	<0.01	<0.010
SEP 20...	20	15	0.10	<0.1	2	1	<10	5	2.3	<0.01	<0.010

DATE	PHENOLS TOTAL (UG/L)	OIL AND GREASE, TOTAL RECOV- GRAVI- METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN, TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)
NOV 17...	1	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
FEB 17...	1	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
APR 19...	<1	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
JUN 29...	2	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
SEP 20...	1	<1	<0.1	<0.010	<0.1	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
NOV 17...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<2.0	<0.01	<0.01	<0.01	<0.01
FEB 17...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<2.0	<0.01	<0.01	<0.01	<0.01
APR 19...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.5	<0.01	<0.01	<0.01	<0.01
JUN 29...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.5	<0.01	<0.01	<0.01	<0.01
SEP 20...	<0.010	<0.01	<0.010	<0.010	<0.010	<0.01	<0.5	<0.01	<0.01	<0.01	<0.01

See footnote at end of table.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365235119470700 SAN JOAQUIN RIVER ABOVE STATE HIGHWAY 41, NEAR PINEDALE, CA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRIETHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV 17...	<0.10	<0.01	<0.1	<2.0	<1	<0.01	<0.01	<0.01	<0.01	<2.0	<0.01
FEB 17...	<0.10	0.01	<0.1	<2.0	<1	<0.01	<0.01	<0.01	<0.01	<2.0	<0.01
APR 19...	<0.10	<0.01	<0.1	<0.5	<1	<0.01	<0.01	<0.01	<0.01	<0.50	<0.01
JUN 29...	<0.10	<0.01	<0.1	<0.5	<1	<0.01	<0.01	<0.01	<0.01	<0.50	<0.01
SEP 20...	<0.10	<0.01	<0.1	<0.5	<1	<0.01	<0.01	<0.01	<0.01	<0.50	<0.01
DATE	TIME	ALUMINUM, RECOV. FM BOT-TOM MATERIAL (UG/G)	ARSENIC TOTAL IN BOT-TOM MATERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOT-TOM MATERIAL (UG/G AS CD)	CHROMIUM, RECOV. FM BOT-TOM MATERIAL (UG/G)	COPPER, RECOV. FM BOT-TOM MATERIAL (UG/G AS CU)	IRON, RECOV. FM BOT-TOM MATERIAL (UG/G AS FE)	LEAD, RECOV. FM BOT-TOM MATERIAL (UG/G AS PB)	MANGANESE, RECOV. FM BOT-TOM MATERIAL (UG/G)	MERCURY RECOV. FM BOT-TOM MATERIAL (UG/G AS HG)	SELENIUM, TOTAL IN BOT-TOM MATERIAL (UG/G)
JUN 28...	1500	3800	1	<1	4	3	5900	<100	110	<0.10	<1
DATE	ZINC, RECOV. FM BOT-TOM MATERIAL (UG/G AS ZN)	CARBON, ORGANIC TOT. IN BOTTOM MAT. (GM/KG AS C)	CARBON, INORGANIC, TOT IN BOT MAT (G/KG AS C)	CARBON, INORG + ORGANIC TOT. IN BOT MAT (MG/KG AS C)	OIL AND GREASE, TOT. IN BOT MAT GRAVIMETRIC (MG/KG)	PCB, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PCN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ALDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	CHLORDANE, TOTAL IN BOT-TOM MATERIAL (UG/KG)	DDD, TOTAL IN BOT-TOM MATERIAL (UG/KG)	DDE, TOTAL IN BOT-TOM MATERIAL (UG/KG)
JUN 28...	20	--	0.1	1.1	<1	<1	<1.0	<0.1	<1.0	<0.1	0.1
DATE	DDT, TOTAL IN BOT-TOM MATERIAL (UG/KG)	DI-AZINON, TOTAL IN BOT-TOM MATERIAL (UG/KG)	DI-ELDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDOSULFAN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ENDRIN, TOTAL IN BOT-TOM MATERIAL (UG/KG)	ETHION, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTACHLOR, TOTAL IN BOT-TOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	MALATHION, TOTAL IN BOT-TOM MATERIAL (UG/KG)	METHOXYCHLOR, TOT. IN BOTTOM MATL. (UG/KG)
JUN 28...	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.1
DATE	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRIETHION, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PARATHION, TOTAL IN BOT-TOM MATERIAL (UG/KG)	PERTHANE TOTAL IN BOT-TOM MATERIAL (UG/KG)	TOXAPHENE, TOTAL IN BOT-TOM MATERIAL (UG/KG)	TRIETHION, TOTAL IN BOT-TOM MATERIAL (UG/KG)	2,4-D, TOTAL IN BOT-TOM MATERIAL (UG/KG)	2,4-DP, IN BOTTOM MAT. (UG/KG)	2,4,5-T TOTAL IN BOT-TOM MATERIAL (UG/KG)	SILVEX, TOTAL IN BOT-TOM MATERIAL (UG/KG)
JUN 28...	<0.1	<0.1	<0.1	<0.1	<1.00	<10	<0.1	<0.1	<0.1	<0.1	<0.1

&lt; Actual value is known to be less than the value shown.

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## SAN JOAQUIN RIVER BASIN

365235119470700 SAN JOAQUIN RIVER ABOVE STATE HIGHWAY 41, NEAR PINEDALE, CA--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE WATER (DEG C)	SEDI- MENT, SUS- PENDE (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV					
17...	1230	67	13.0	3	81
FEB					
17...	0945	51	11.5	2	93
APR					
19...	0845	92	15.5	2	92
JUN					
28...	1500	--	26.0	--	--
29...	0945	108	21.0	4	56
SEP					
20...	0930	112	17.0	2	64

PARTICLE-SIZE DISTRIBUTION OF BED MATERIAL, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
JUN											
28...	1500	0	1	4	15	25	31	35	43	61	100



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## FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
cfs-days	$2.447 \times 10^3$	cubic meters (m <sup>3</sup> )
	$2.447 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons

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