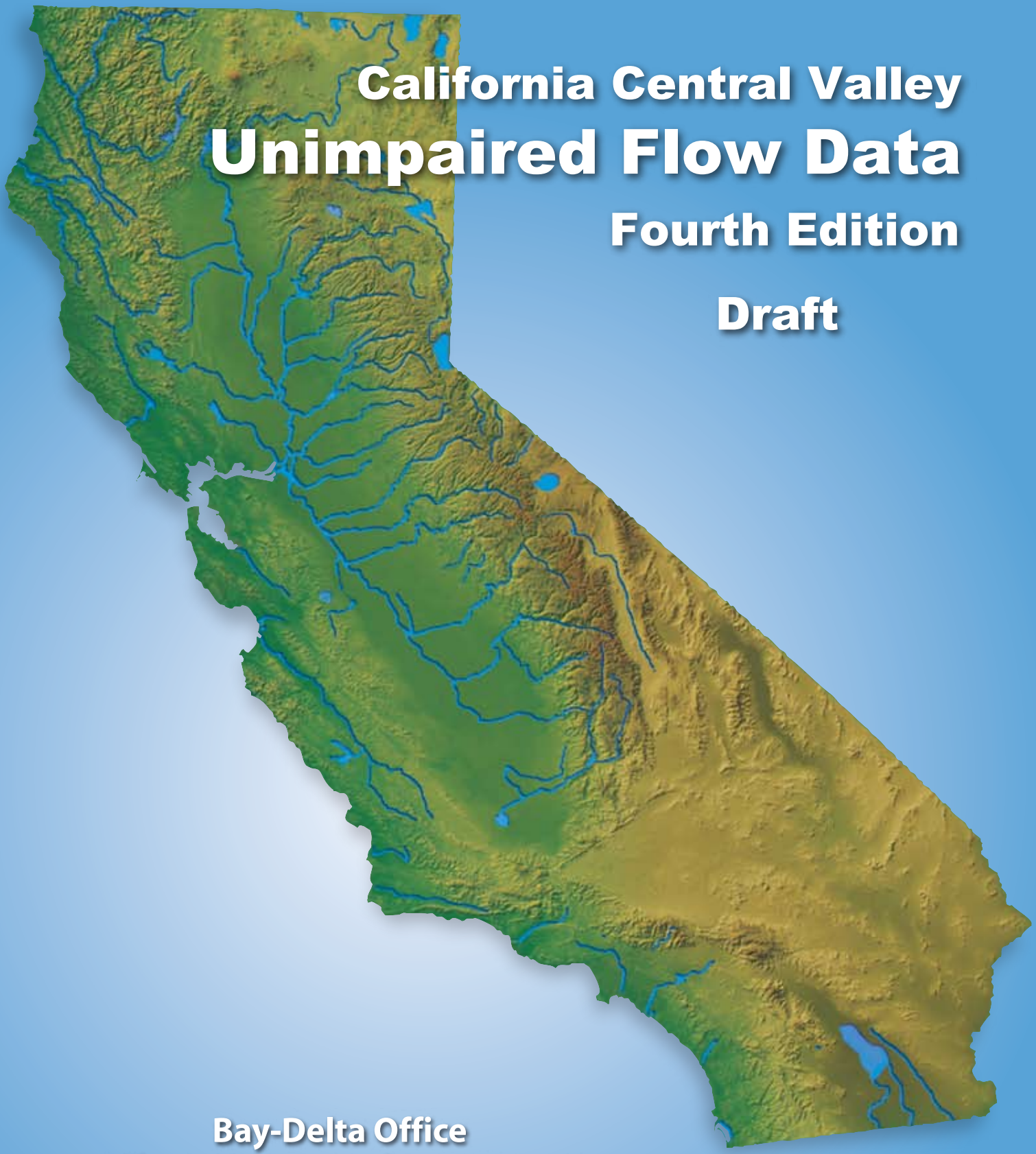
California Central Valley
Unimpaired Flow Data
Fourth Edition
Draft



Bay-Delta Office
California Department of Water Resources
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Foreword

This report contains the estimated unimpaired flows for 24 Central Valley sub-basins and the Sacramento-San Joaquin Delta for October 1920 through September 2003. Data for October 1920 through September 1983 was published in a 1987 report titled "California Central Valley Unimpaired Flow Data, Second Edition." The extension from October 1983 through September 1992 was published in August 1994 as the Third Edition report. This report is the Fourth Edition with added data for October 1992 through September 2003.

Unimpaired flow is runoff that would have occurred had water flow remained unaltered in rivers and streams instead of stored in reservoirs, imported, exported, or diverted. The data is a measure of the total water supply available for all uses after removing the impacts of most upstream alterations as they occurred over the years. Alterations such as channel improvements, levees, and flood bypasses are assumed to exist.

The description of the procedures used to calculate the unimpaired flows for each sub-basin and the Delta was presented in the 1987 report and is included in the main text. The main text also describes any changes from previous procedures in extending the data through 1992. The 1993 through 2003 data extension generally follows the same procedures as those used in the Third Edition.

Katherine F. Kelly
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Introduction

This report presents an extension of data through water year 2003 of the 1921-1992 data found in "California Central Valley Unimpaired Flow Data Third Edition" (August 1994), prepared by the Division of Planning. The text describing the procedures used to estimate the unimpaired flows is taken from the 1994 report. The information below also explains any differences in how the calculations were made between the 1994 report and this report.

Full natural flow, natural flow, natural runoff and unimpaired flow are all phrases that have been used by the Department of Water Resources (DWR) in various publications to represent the runoff from a basin that would have occurred had man not altered the flow of water in the basin.

The first edition of this report was titled "California Central Valley Natural Flow Data." The title has been changed from NATURAL to UNIMPAIRED because it better describes the data contained herein. The word natural connotes that the Central Valley landscape is in a pre-historical or virgin state. Unimpaired, on the other hand, implies only that certain items in the measured flows have been adjusted. Unimpaired flow could be synonymous with natural flow if all of the items in the unimpaired computation matched the natural flow computation. In practice, this is not usually the case; it is customary to include only those items in the unimpaired flow computation for which either reliable data are readily available or reasonable estimates can be made. In this report the data is better described as unimpaired data, primarily because of the difficulty in computing four items of significance.

First, the ground water accretions from the very large area of the Central Valley floor probably were considerably higher under natural conditions but no data is available. Second, the consumptive use of the riparian vegetation and the water surfaces in the swamps and channels of the Central Valley under a natural state could be significant but are difficult to estimate. Third, during periods of high flow, Central Valley rivers would overflow their banks and water could be stored in the valley for long periods of time and could interact with item two. Fourth, the outflow from the Tulare Lake Basin under natural conditions is difficult to estimate. The unimpaired flows in this report assume that the river channels of the valley are in their present configuration.

This report contains estimates of the monthly flow for 24 sub-basins in the Central Valley. A table of the Sacramento River Index, previously known as Unimpaired Four Rivers Flow, is also included. In addition, estimates are included of the total unimpaired inflow to the Sacramento-San Joaquin Delta, net use in the Delta (unimpaired and natural), and the total unimpaired outflow from the Delta. The unimpaired inflow to the Delta is the sum of the unimpaired flow estimates of the 24 sub-basins. The total Delta unimpaired outflow is the total unimpaired inflow minus the unimpaired Delta net use. Data is provided for 83 years — October 1920 through September 2003.

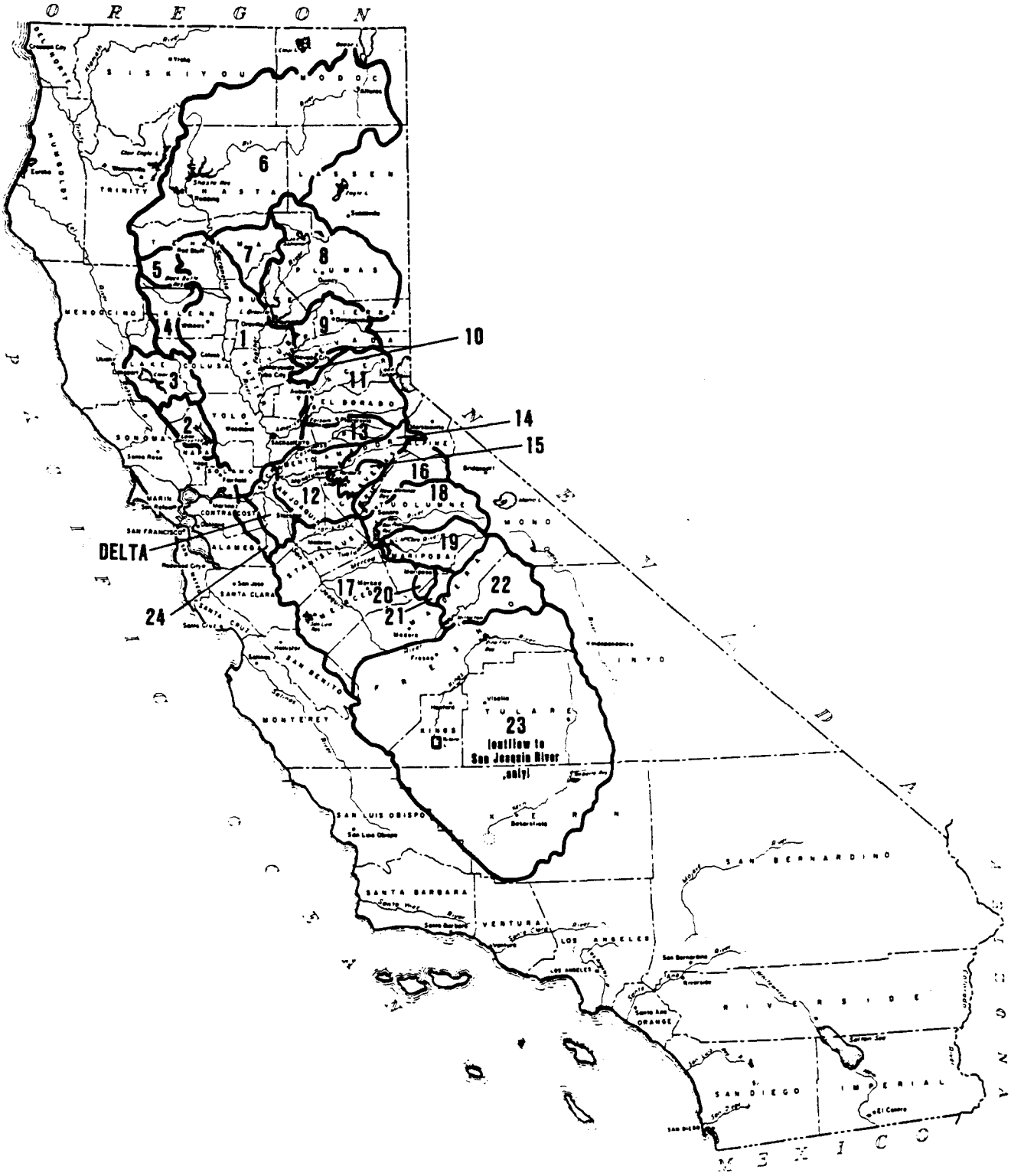

Figure 1. California Central Valley Unimpaired Flow Areas

A description of the procedures used to calculate the unimpaired flows is included. For some areas, the estimated flows were determined by the California Cooperative Snow Surveys and stored in California Data Exchange Center's database. Descriptions of the calculations for these locations are not included in this report.

UF 1— Sacramento Valley Floor

These values represent the estimated unimpaired flow for the Sacramento Valley floor and the minor streams from the Stony Creek drainage area to the Cache Creek drainage area, from the Cache Creek drainage area to the mouth of the Sacramento River, and from the Feather River drainage area to the American River drainage area (Bulletin No. 1 areas 2-8, 2-9, 2-16, and 2-19). With Bulletin No. 1 mean seasonal runoff as a base, these minor streams were estimated to be 2.18 times the Bear River near Wheatland. In the unimpaired flow data published in the 1966 "Surface Water Hydrology of Yuba-Bear Rivers Hydrographic Unit" office report, the 1911-1960 average runoff of the Bear River near Wheatland was 5.05 times that of Dry Creek near Wheatland. The resulting runoff for the 1921 through 1960 period was computed by multiplying 11 (2.18 x 5.05) by the estimated monthly runoff of Dry Creek near Wheatland.

Unimpaired runoff for the 1961-1992 period was estimated as the product of 2.18 times the estimated unimpaired flow of the Bear River near Wheatland due to the discontinued Dry Creek record. Since this computation showed abnormally high summer flows, the June flows were reduced by one-half and flows for July, August and September were made equal to zero.

The unimpaired flow data for the 1993 – 2003 period was computed using similar procedure as that of the 1961 – 1992 period flow data. However, we note the rationale for reducing June flows by one-half and setting the July to September flows to zero as subjective that need to be revisited and verified in future updates.

UF 2 — Putah Creek near Winters

The unimpaired flow for Putah Creek near Winters for water year 1921 was obtained from the 1964 DWR office report "Surface Water Hydrology of Putah-Cache Hydrographic Unit." The unimpaired flow of Putah Creek near Winters for the 33 year period (1922-1954) was assumed to be equal to the historical outflow of Putah Creek near Winters. Flows for the 1955-1992 period were obtained from the U.S. Geological Survey (USGS) water supply papers and were adjusted for the changes in storage and evaporation from Lake Berryessa starting in January 1957. Flows for the 1993 to 2003 period were extended similarly.

UF 3 — Cache Creek above Rumsey

These flows represent the estimated unimpaired flow of Cache Creek above Rumsey.

The 1921 unimpaired flow was based on the 1964 "Surface Water Hydrology of Putah-Cache Creeks Hydrographic Unit" office report and was calculated by adding together Table 18 (Cache Creek at Lower Lake, unimpaired flow), Table 21 (Bear Creek near Rumsey), Table 22 (North Fork Cache Creek near Lower Lake), and data from an incremental ungaged area equivalent to 0.41 times the flow of North Fork Cache Creek. The factor 0.41 was used in estimating historical outflow of depletion Study Area 16 (Cache Creek above Rumsey) in the 1966 joint DWR - U.S. Bureau of Reclamation (USBR) Central Valley depletion study.

Unimpaired runoff for the 1922 through 1960 water year period was obtained by adding the differences between Table 18 (Cache Creek at Lower Lake, unimpaired flow) and Table 20 (Cache Creek near Lower Lake, recorded flow) of the 1964 office report mentioned above to the historical outflow of Joint Depletion Study Area 16 (Cache Creek above Rumsey). The difference between Table 18 and 20 corrects the historical flow for upstream depletion and regulation due to Clear Lake.

Unimpaired flows for 1961-1970 were calculated by the same method except that the computer program OUTFLOW (developed by the DWR Statewide Planning Branch) was used to find Cache Creek at Lower Lake unimpaired flow instead of Table 18. This program determined the unimpaired outflow of Clear Lake with a given net supply. The net supply for Clear Lake was calculated by adding together the historical outflow of Cache Creek near Lower Lake, (USGS water supply papers), the average lake evaporation (lake area at average monthly gage height times average monthly evaporation), and change in gage height times average lake area).

Beginning with water year 1971, the unimpaired flow of Cache Creek above Rumsey was estimated as the sum of the computed unimpaired outflow of Clear Lake plus the flows from Bear Creek near Rumsey, North Fork Cache Creek near Lower Lake and the remaining area between the gages at those three locations and the Rumsey gage. For water years 1971 through 1973 and 1976 through 1978, the accretions were calculated as the difference in measured flow of Cache Creek above Rumsey and the three upstream gages. For water years 1974 and 1975, the accretions were estimated by graphical correlation with the unimpaired flow of North Fork Cache Creek near Lower Lake. The equation is:

Accretions = 0.47674 (North Fork) – 11,688 acre-feet

Adjustments for the estimated changes in storage and evaporation of Indian Valley Reservoir began in December 1974. For water years 1981 through 1983, the unimpaired flow was computed as the sum of the historical flow of Cache Creek at Rumsey plus the net effects of Indian Valley Reservoir and Clear Lake.

Flows for 1984-1992 were computed as the sum of historical flow of Cache Creek at Rumsey plus net effects of Clear Lake and Indian Valley Reservoir. The net effect of Clear Lake is

computed as:

Clear Lake outflow from the Cache HEC-3 Model minus historical Clear Lake flow near Lower Lake (Clear Lake historical outflow).

For the 1993 to 2003 period, similar procedure as the 1984 to 1992 period was used except that USGS gage (11451000) data for Clear Lake outflow was used instead of HEC-3 model output. It is assumed that the gage data is more representative than the HEC-3 model output.

UF 4 — Stony Creek at Black Butte

These flows are the estimated unimpaired flows of Stony Creek at Black Butte Reservoir. Unimpaired flows for water year 1921 were obtained from the DWR office report "Surface Water Hydrology-Upper Sacramento Valley," January 1968. Runoff for 1922 through 1949 was obtained from USBR Appendix I "Hydrology on Black Butte Unit, Stony Creek Division, Central Valley Basin," February 1951. Extensions of the flows were made in about 1960 by USBR personnel to cover water years 1950 through 1957. The flows for the 1958-1992 period were computed by adding together the historical outflow of Stony Creek at Black Butte (USGS water supply papers), historical export of South Diversion Canal, and the changes in storage and evaporation from Stony Gorge, East Park, and Black Butte Reservoirs. Flows for the 1993 to 2003 period were extended similarly.

UF 5 — Sacramento Valley West Side Minor Streams

These flows represent the estimated unimpaired flow of the west side area between the Red Bluff gage on the Sacramento River and the Stony Creek drainage area on the west side of the Sacramento Valley.

The runoff for water year 1921 was derived by adding the historical outflows of the Redbank Creek group, Thomes Creek at Paskenta, Thomes Creek above 500-foot contour, and Elder Creek near Henleyville.

Flows for the 1922-1954 period were derived by adding the historical outflow of Thomes and Elder Creeks (Joint Depletion Study Area 5, Elder Creek group) to Tables 33 (Redbank Creek group) and 36 (unmeasured area, Thomes Creek above 500-foot contour) of the 1957 Joint Hydrology Study.

Estimated historical flows for Thomes Creek at Paskenta are from a DWR 1968 office report, "Surface Water Hydrology-Upper Sacramento Valley."

The annual flows for Redbank Creek group and Elder Creek near Henleyville were derived by correlation with Elder Creek near Paskenta as set forth in the 1968 "Surface Water Hydrology-Upper Sacramento Valley" report. The data on annual flows for Elder Creek near Henleyville were then distributed according to the monthly flows of Elder Creek at Paskenta. Annual flow data for the Redbank Creek group were distributed according to the

monthly flows of Thomes Creek at Paskenta.

Thomes Creek above the 500-foot contour was correlated to Thomes Creek at Paskenta to obtain the yearly flows, which were then distributed according to the monthly flows of the same creek.

Unimpaired runoff for the 1955-1983 period was derived by adding the outflow of the Redbank Creek group, Thomes Creek at Paskenta, Thomes Creek above 500-foot contour, and Elder Creek at Gerber.

Flows for Thomes Creek at Paskenta, Elder Creek at Paskenta, and Elder Creek at Gerber were obtained from the USGS water supply papers. The gage Elder Creek at Gerber was discontinued in 1979, and flows after that time were correlated with Elder Creek near Paskenta. Also, the gage Red Bank Creek near Red Bluff was discontinued in 1982 and later flows were estimated by correlation with Thomes Creek at Paskenta.

Annual flows (1955-1983) for Thomes Creek above 500-foot contour were obtained by correlation with Thomes Creek at Paskenta and distributed according to the monthly flows of Elder Creek at Gerber and Thomes Creek at Paskenta after Elder Creek at Gerber was discontinued.

Annual flows (1955-1959) for the Redbank Creek group were obtained by correlation with historical flows of Elder Creek near Paskenta and distributed according to the monthly flows of Elder Creek at Paskenta. Monthly flows (1960-1983) for the Redbank Creek group were computed by multiplying Redbank Creek near Red Bluff by an area precipitation ratio of 1.88.

Since there was negligible historical development within this area, historical flows were assumed to be unimpaired.

Unimpaired runoff for 1984 to 1992 was derived by adding the outflows of:

1. The Redbank group
2. Thomes Creek at Paskenta
3. Thomes Creek above 500-foot contour
4. Elder Creek at Gerber

Unimpaired runoff for the 1993 to 2003 period was estimated using the same procedure used for the 1984 to 1992 period unimpaired flow calculation.

UF 6 — Sacramento River near Red Bluff

Data was taken from DWR Snow Survey records.

In 1969 USGS moved the Red Bluff gage upstream to a new site 3 miles above Bend Bridge. The new gage no longer measures Paynes Creek flows. To be consistent with pre-1969

Sacramento River near Red Bluff, the flows of Paynes Creek near Red Bluff are added to the unimpaired flows developed by DWR Snow Surveys Branch.

In 1970 USGS discontinued the gage of Paynes Creek near Red Bluff. Therefore, Paynes Creek was estimated by graphical correlation with Mill Creek near Los Molinos, using measured data from 1950-1960.

UF 7 — Sacramento Valley East Side Minor Streams

This area is located on the east side of the Sacramento Valley between the Red Bluff gage (Sacramento River) and the Feather River drainage area. Runoff for the 10/21-9/80 period was computed by adding the historical outflow of Joint Depletion Study Areas 6 (Antelope Creek Group), 7 (Mill Creek), 8 (Deer Creek Group), 9 (Big Chico Creek), and 14 (Minor East Side Tributaries, Big Chico to Feather). Runoff for the 10/20-9/21 period was estimated by correlation with Deer Creek near Vina.

Unimpaired runoff is equivalent to the historical runoff within these basins minus the historical import from the west branch of the Feather River. Import for the period 10/20-9/30 is estimated. Data for the period 10/30-9/83 is taken from USGS Water Supply Reports. The data is listed under "Butte Creek near Chico."

The flows for 1984-1992 were assumed to be the same as historical outflow of depletion areas 66 and 14, minus the import from the west branch of the Feather River. Flows for the 1993 to 2003 period were extended similarly.

UF 8 — Feather River near Oroville

Data was taken from DWR Snow Survey records.

UF 9 — Yuba River at Smartville

Data was taken from DWR Snow Survey records.

UF 10 — Bear River near Wheatland

The unimpaired flow for the Bear River for the period 1921-58 were obtained from the DWR Nov. 1966 Office Report "Surface Water Hydrology of Yuba-Bear Rivers Hydrologic Unit." Flows for 1959-63 were obtained from the DWR Snow Surveys Branch. The period 1964-1983 was calculated by adding the following:

1. Historical flow of Bear River near Wheatland - USGS water supply papers.
2. South Yuba Canal - DWR Snow Surveys.

3. Boardman Canal - USGS water supply papers.
4. Towle Canal - DWR Snow Surveys, until 1971, after which it was neglected.
5. Gold Hill Canal - Depletion Study Area 56 historical export data.
6. Bear River Canal - Depletion Study Area 56 historical export data.
7. Camp Far West Diversion - (Includes Camp Far West North and South Canals and South Sutter Conveyance Canal).

And deducting the following items:

1. Drum Canal - DWR Snow Surveys
2. Lake Valley Canal - Depletion Study Area 22 historical export data.
3. South Yuba Canal - DWR Snow Surveys
4. D. S. Canal to Bear River via Greenhorn Creek - DWR Snow Surveys.

Plus the changes in storage of the following reservoirs:

1. Camp Far West (1921-1958) - DWR Snow Surveys; (1959-1983) - USGS water supply papers.
2. Rollins - USGS water supply papers.
3. Combie - DWR Snow Surveys.

Unimpaired runoff for 1984 to 1992 was calculated by adding the following:

1. Unimpaired Bear River flow at the Van Trent gage (1922-29); flow at the gage near Wheatland (1929-92)
2. Evaporation from Camp Far West Reservoir
3. Evaporation from Combie Reservoir
4. Evaporation from Rollins Reservoir
5. Change in storage at Camp Far West Reservoir
6. Change in storage at Combie Reservoir
7. Change in storage at Rollins Reservoir
8. Total exports above Camp Far West Reservoir
9. Camp Far West WD South Canal diversion
10. Camp Far West WD North Canal diversion
11. South Sutter WD diversion
12. Historical depletion

And deducting the following items:

1. Consumptive use of replaced native vegetation
2. Total imports above Camp Far West

Flows for the 1993 to 2003 period were extended in the same way as that of the 1984 to 1992 extension.

UF 11 — American River at Fair Oaks

Data was taken from DWR Snow Survey records.

UF 12 — San Joaquin Valley East Side Minor Streams

These flows represent the estimated unimpaired runoff on the valley floor east of the Delta for the minor streams that lie between the Stanislaus River drainage area and the American River drainage area. The runoff was computed by multiplying the area precipitation ratio of 3.85 by the monthly runoff of Dry Creek near Galt.

UF 13 — Cosumnes River at Michigan Bar

Data was taken from DWR Snow Survey records.

UF 14 — Mokelumne River at Pardee Reservoir

Data was taken from DWR Snow Survey records.

UF 15 — Calaveras River at Jenny Lind

The unimpaired runoff of the Calaveras River at Jenny Lind was estimated to be the measured flow plus the change in storage and net evaporation of Old and New Hogan Reservoirs. Occasional computed negative flows were assumed to be zero.

The estimated unimpaired flow for the 1921 to 1948 period of the Calaveras River above Jenny Lind was assumed to be equal to the historical outflow of Joint Depletion Study Area 32 (Calaveras River above Jenny Lind). Historical upstream depletions were considered to be negligible and probably offset by small imports from the Mokelumne River.

Adjustment for the effect of Old Hogan Reservoir was made for the period January 1949 to December 1963. Prior to 1949, no records were kept on the storage of Old Hogan Reservoir. Since there were no gates prior to 1949 with which to regulate Hogan Reservoir, the only effect on the runoff was a short-term delay in heavy flood runoff. Unimpaired runoff of the Calaveras River then was assumed to be the same as the measured flow.

Old Hogan Reservoir was inundated in the fall of 1963. No records of Old Hogan storage operation could be found from November 1, 1962 to December 1963. To determine the impairment during this period, the inflow to Hogan Reservoir was estimated from measured releases and estimates of net reservoir evaporation and storage changes. Inflow from November 1962 through December 1963 was estimated to be the sum of measured flow in the Calaveras River below Hogan Dam (159,360 AF) plus estimated net reservoir evaporation of

1,700 AF, plus the gain in storage at the end of December 1963 (1,240 AF in New Hogan Dam less the 1,000 AF in Old Hogan Dam on November 1, 1962). Thus, total inflow was 161,300 AF. The total inflow consisted of the sum of the North and South Forks of the Calaveras River plus Calaveritas Creek (all USGS stations) at 133,060 AF and an unmeasured accretion calculated to be 28,240 AF by difference. The monthly pattern of the unmeasured accretion was assumed to be distributed on the average of the pattern of the three upper stations and the pattern of Cosgrove Creek near Valley Springs.

After December 1963, unimpaired runoff was estimated by adjusting the Calaveras River flows for changes in storage in, evaporation from, and precipitation on New Hogan Reservoir. Storage and evaporation were reported in USGS water supply papers. Precipitation was computed by multiplying precipitation at the Hogan Dam station times New Hogan Reservoir area. The surface area was based on the storage-capacity table in the 1972 USGS water supply paper.

The Calaveras at Jenny Lind station was discontinued in 1966. The Jenny Lind station was extended by adding estimated accretions between Jenny Lind and New Hogan to the runoff of Calaveras River below New Hogan Dam. The accretions were estimated to be 1.42 times those of Cosgrove Creek near Valley Springs. The factor 1.42 is the ratio of the drainage area (30 sq. miles) of the Jenny Lind to New Hogan Reach to that of Cosgrove Creek near Valley Springs (21.1 sq. miles).

Flow for 1984-1992 was computed as the sum of historical flow of the Calaveras River below New Hogan Dam plus the net effects of New Hogan Dam, historical gross evaporation of New Hogan Reservoir and accretions to Calaveras River between Jenny Lind and New Hogan Dam. Flows for the 1993 to 2003 period were extended similarly.

UF 16 — Stanislaus River at Melones Reservoir

Data was taken from DWR Snow Survey records.

UF 17 — San Joaquin Valley Floor

These figures represent the estimated unimpaired valley-floor flows of the minor streams from the San Joaquin River at Friant to San Joaquin River at Vernalis, and the west side of the San Joaquin Valley above the valley floor tributary to the San Joaquin River. With Bulletin No. 1 mean seasonal runoff as a base, these minor streams were found to be 2.615 (238,500/91,300) times the Chowchilla River flows at Buchanan Damsite. The 1922-1954 average runoff for the Chowchilla River at the gage was 66,000 acre-feet. Comparable minor-stream 1922-1954 runoff was 172,400 acre-feet. Runoff from Joint Depletion Study Area 43 (Chowchilla River above Buchanan Damsite) was 67,600 acre-feet, slightly higher than the gage because some adjacent drainage area was included. The resulting monthly runoff for the minor streams was computed by multiplying a factor of 2.55 (172,400/67,600) by the historical outflow of Joint Depletion Study Area 43.

Flow for 1984-1992 was computed by multiplying the factor 2.55 by the sum of the historical outflow of DA43 Chowchilla River above Buchanan Damsite plus net effect of Eastman Lake. Flows for the 1993 to 2003 period were extended similarly.

UF 18 — Tuolumne River at Don Pedro Reservoir

Data was taken from DWR Snow Survey records.

UF 19 — Merced River at Exchequer Reservoir

Data was taken from DWR Snow Survey records.

UF 20 — Chowchilla River at Buchanan Reservoir

The estimated unimpaired flow for the Chowchilla River at Buchanan Reservoir was assumed to be equal to the historical outflow of Joint Depletion Study Area 43 (Chowchilla River above Buchanan Damsite). Historical upstream depletions and imports were considered to be negligible.

Flow for 1984-1992 was computed as the sum of the historical outflow of DA43 Chowchilla River above Buchanan Damsite plus net effect of Eastman Lake. Flows for the 1993 to 2003 period were extended similarly.

UF 21 — Fresno River near Daulton

The estimated unimpaired flow for the Fresno River near Daulton was assumed to be equal to the historical outflow from Joint Depletion Study Area 45 (Fresno River). Historical upstream depletions and imports were considered to be negligible.

Flow for 1984-1992 was computed as the sum of the historical outflow of DA45 plus net effect of Hensley Lake (Hidden Dam). Flows for the 1993 to 2003 period were extended similarly.

UF 22 — San Joaquin River at Millerton Reservoir

Data was taken from DWR Snow Survey records.

UF 23 — Tulare Lake Basin Outflow

The amounts of unimpaired flow originating in the Tulare Lake Basin that would reach the Delta are subject to considerable conjecture. The historical outflow of Joint Depletion Study Area 60 (Tulare Lake Basin) was considered to be a reasonable estimate for present purposes. The historical outflow represents that flow in Fresno Slough. Data was obtained directly from USGS gage 11253500.

UF 24 — San Joaquin Valley West Side Minor Streams

The estimated unimpaired flows for the minor streams on the west side of the San Joaquin Valley tributary to the Delta were assumed to be equal to the historical outflow of Joint Depletion Study Area 51 (west side minor streams, south Delta). This consisted of the estimated historical flow of Marsh Creek near Byron.

Sacramento Valley Unimpaired Total Outflow

Flow for 1921-2003 was computed as the sum of UF 1 through UF 11.

East Side Streams Unimpaired Total Outflow

Flow for 1921-2003 was computed as the sum of UF 12 through UF 15.

San Joaquin Valley Unimpaired Total Outflow

Flow for 1921-2003 was computed as the sum of UF 16 through UF 24.

Delta Unimpaired Total Inflow

Flow for 1921-2003 was computed as the sum of:

1. Sacramento Valley Unimpaired Total Outflow
2. East Side Streams Unimpaired Total Outflow
3. San Joaquin Valley Unimpaired Total Outflow

Delta Unimpaired Net Use

The Delta water use was computed as the sum of Delta uplands net water use and Delta lowlands net water use. Delta net water use under unimpaired conditions assumes that existing Delta levees and islands would remain intact.

Net use in the lowlands is computed as the sum of water surface evaporation, plus consumptive use of riparian vegetation, plus seepage from the channels, minus the precipitation on the lowland channels and riparian vegetation areas. Precipitation on the islands and seepage from the lowland channels are assumed to be fully depleted. The DOP Consumptive Use Model was used to compute water surface evaporation and evapotranspiration of riparian vegetation. Seepage losses were estimated using data from Chapter 4 of the Appendix to DWR Bulletin 76 (1962).

Net use in the uplands was computed as the sum of the consumptive use of native vegetation, plus the consumptive use of riparian vegetation, plus the evaporation from the water surfaces, minus the precipitation on the entire uplands. In the uplands, all historical irrigated agriculture and urban areas were replaced with native vegetation. Consumptive use of native vegetation is limited to precipitation and stored soil moisture, whereas a full water supply is assumed available for riparian vegetation. Consumptive uses for the uplands were computed using the DOP Consumptive Use Model.

Delta Unimpaired Total Outflow

Flow for 1921-1992 was computed as the Delta Unimpaired Total Inflow minus the Uplands Net Use (DA55)[1] minus the Lowlands Unimpaired Net Use (DA54)[2]. Flows for the 1993 to 2003 period were extended similarly.

Delta Natural Net Use

The Delta net water use under natural conditions was estimated based on the assumption that in the Delta lowlands all historical irrigated agriculture and urban areas are replaced with riparian vegetation. Under this assumption, net use in the lowlands was equal to the sum of the consumptive use of riparian and native vegetation, plus the evaporation from water surfaces minus the precipitation on the lowlands. Net use in the Delta uplands under natural conditions is assumed to be the same as described under the unimpaired condition.

Sacramento River Index

Flow for 1921-1992 was computed as the sum of
1. UF 6 Sacramento River near Red Bluff,
2. UF 8 Feather River near Oroville,

[1] This is equal to the Total Unimpaired Consumptive Use for the Delta Uplands minus Delta Upland Total Basin Precipitation (Area 55)

[2] This is equal to the Total Unimpaired Consumptive Use for the Delta Uplands plus Lowlands seepage (1369 cfs, DWR Bulletin 76, 1962) minus Delta Lowland Unimpaired Total Basin Precipitation (Area 54).

3. UF 9 Yuba river at Smartville, and
4. UF 11 American River at Fair Oaks.

Unimpaired Flow Data Comparisons

Unimpaired flow data of the entire California Central Valley were analyzed using the three major basin inflows (Sacramento Valley, East Side Streams and San Joaquin Valley) to the Sacramento San Joaquin Delta. Comparisons were made in terms of the previously published unimpaired flow data for the 1921 to 1992 historical period and the 1993 to 2003 extension period. Figure 2 shows the data comparisons between the three basins. On annual average basis, the extension period has more volume of water than the corresponding previously published data. Note the frequency of wet years in the extension period is higher than in the previously reported historical period of 1921 to 1992.

Figure 3 shows the comparisons for the two time periods. Figure 4 shows the general trend of the Sacramento River Index, which is the sum of unimpaired flows of the 1) Sacramento River near Red Bluff, 2) Feather River near Oroville, 3) Yuba River at Smartville, and 4) American River at Fair Oaks.

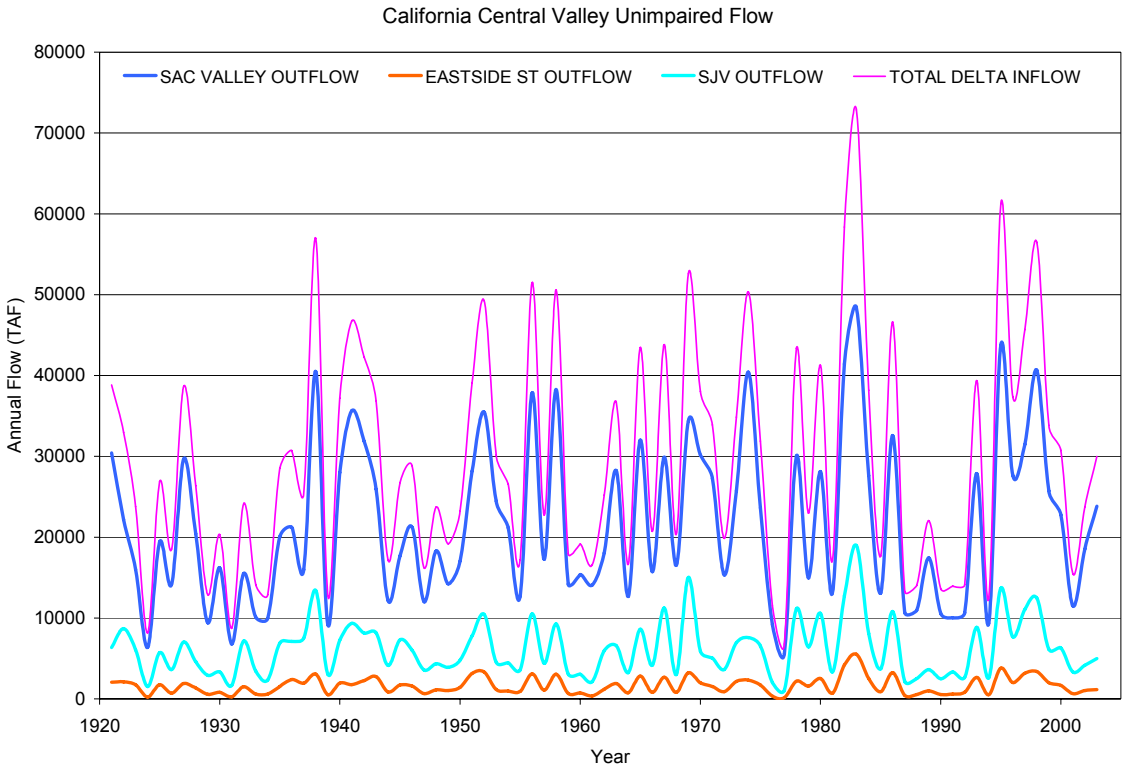

Figure 2. California Central Valley estimated unimpaired annual flow.

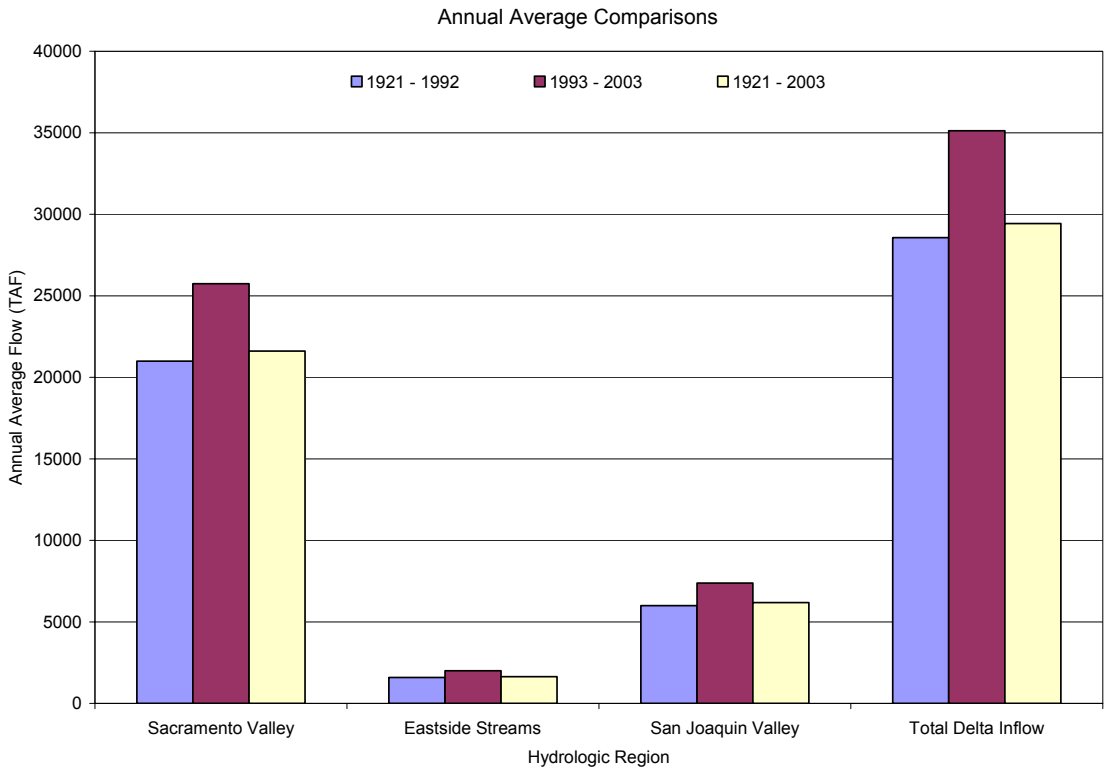

Figure 3. Comparison of previously published flow to extended flow

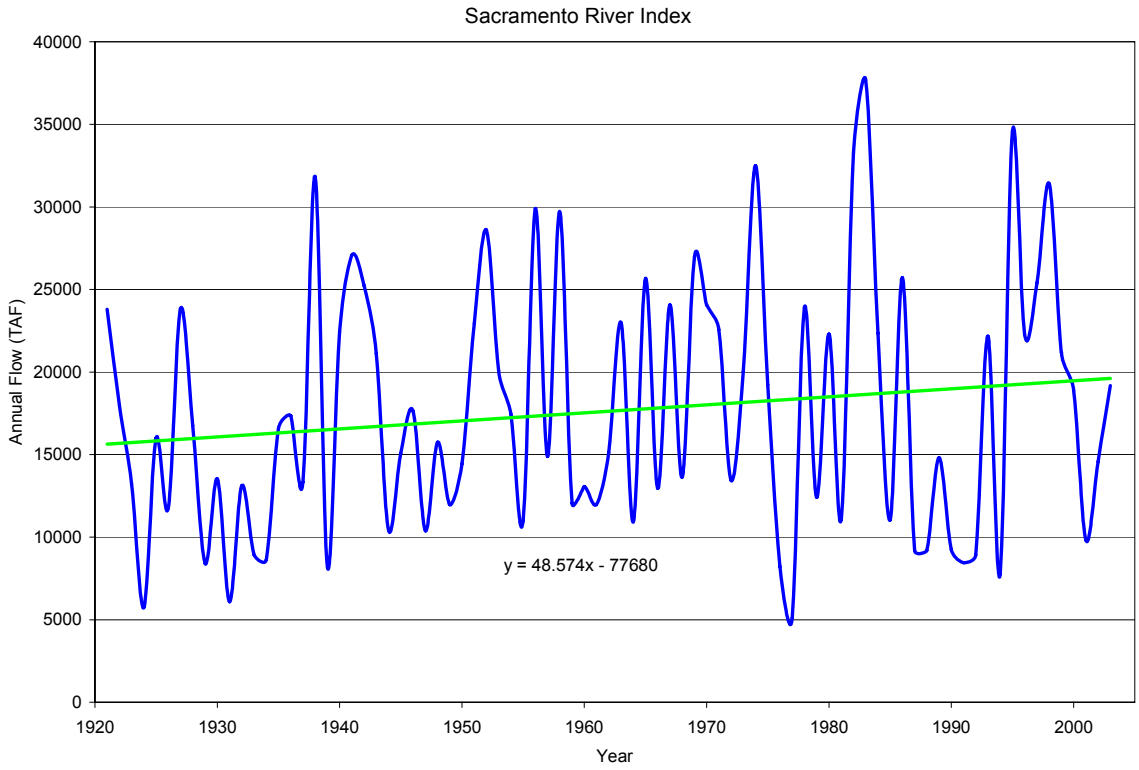

Figure 4. Sacramento River Index estimated unimpaired flow trend

UF 1 – Sacramento Valley Floor estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	0	100	269	450	375	319	77	21	1	0	0	0	1612
1922	0	11	167	140	466	289	175	15	0	0	0	0	1263
1923	0	14	173	109	75	50	58	7	0	0	0	0	486
1924	0	0	4	8	17	2	3	0	0	0	0	0	34
1925	0	9	39	67	290	45	40	9	5	0	0	0	504
1926	0	3	8	20	113	23	25	2	0	0	0	0	194
1927	0	65	37	144	595	141	85	0	0	0	0	0	1067
1928	0	22	30	76	99	327	56	0	0	0	0	0	610
1929	0	3	11	8	25	22	17	0	0	0	0	0	86
1930	0	0	81	73	110	116	28	6	0	0	0	0	414
1931	0	2	1	8	8	10	1	0	0	0	0	0	30
1932	0	9	113	136	166	125	53	18	1	0	0	0	621
1933	0	0	5	18	13	54	12	10	0	0	0	0	112
1934	0	0	9	17	29	12	3	0	0	0	0	0	70
1935	0	14	28	109	147	107	195	23	0	0	0	0	623
1936	0	2	10	253	412	94	50	6	1	0	0	0	828
1937	0	0	5	14	142	136	104	25	0	0	0	0	426
1938	0	20	156	138	358	508	148	45	0	0	0	0	1373
1939	0	3	7	11	15	45	14	1	0	0	0	0	96
1940	0	0	7	194	395	267	49	4	1	0	0	0	917
1941	0	7	140	286	384	153	61	20	1	0	0	0	1052
1942	0	7	156	382	425	97	91	34	2	0	0	0	1194
1943	0	30	133	434	213	287	45	8	0	0	0	0	1150
1944	0	0	6	25	60	59	24	8	0	0	0	0	182
1945	0	14	37	38	270	59	35	8	1	0	0	0	462
1946	0	21	290	161	70	94	45	7	0	0	0	0	688
1947	0	2	28	3	70	115	37	3	0	0	0	0	258
1948	0	0	4	37	22	94	123	23	0	0	0	0	303
1949	0	0	16	7	30	278	13	10	0	0	0	0	354
1950	0	0	4	168	271	94	39	9	0	0	0	0	585
1951	0	353	493	371	103	47	20	30	5	0	0	0	1422
1952	0	4	235	744	170	302	19	3	0	0	0	0	1477
1953	0	0	63	285	27	153	41	13	0	0	0	0	582
1954	0	4	7	147	174	148	105	11	0	0	0	0	596
1955	0	2	41	131	20	12	21	5	0	0	0	0	232
1956	0	4	730	589	89	24	17	14	0	0	0	0	1467
1957	0	1	0	10	103	68	23	33	4	0	0	0	242
1958	1	1	21	119	401	207	406	20	1	0	0	0	1177
1959	0	1	4	39	211	13	6	2	0	0	0	0	276
1960	0	0	0	18	197	41	15	5	0	0	0	0	276
1961	2	22	26	15	53	57	31	18	3	0	0	0	227
1962	0	6	33	35	286	106	44	13	0	0	0	0	523
1963	187	22	86	66	178	95	251	62	8	0	0	0	955
1964	11	66	37	119	37	40	31	44	0	0	0	0	385
1965	11	35	464	341	48	44	147	29	6	0	0	0	1125
1966	2	40	53	88	66	66	42	22	2	0	0	0	381
1967	0	73	146	248	85	163	180	88	15	0	0	0	998
1968	10	10	32	66	164	71	22	8	0	0	0	0	383
1969	9	32	89	528	264	146	103	41	6	0	0	0	1218
1970	15	11	137	430	100	89	20	6	0	0	0	0	808
1971	23	94	276	120	60	155	67	39	15	0	0	0	849
1972	1	10	73	46	97	61	48	17	1	0	0	0	354
1973	1	74	83	326	237	174	62	24	1	0	0	0	982
1974	12	172	202	262	84	292	161	36	13	0	0	0	1234
1975	0	7	19	41	195	197	100	46	1	0	0	0	606
1976	11	35	21	11	24	25	7	0	0	0	0	0	134
1977	0	2	1	19	11	10	0	3	0	0	0	0	46
1978	0	7	70	351	127	178	116	38	6	0	0	0	893
1979	0	17	10	93	134	141	54	43	0	0	0	0	492
1980	8	25	69	339	316	132	53	33	6	0	0	0	981
1981	0	1	18	55	29	95	20	0	0	0	0	0	218
1982	10	158	325	221	238	214	382	54	6	0	0	0	1608
1983	26	114	203	141	323	455	152	99	11	0	0	0	1524
1984	6	132	305	85	98	83	53	39	12	0	0	0	813
1985	19	49	30	23	66	81	49	20	5	0	0	0	342
1986	1	22	55	95	683	267	42	32	5	0	0	0	1202
1987	3	0	9	11	60	81	16	8	3	0	0	0	191
1988	0	1	40	101	16	21	19	12	4	0	0	0	214
1989	0	30	43	59	41	331	70	45	8	0	0	0	627
1990	5	16	14	63	61	58	20	8	16	0	0	0	261
1991	0	0	3	2	5	184	48	33	12	0	0	0	287
1992	0	5	6	13	145	61	22	7	0	0	0	0	259
1993	0	1	54	314	170	141	73	27	15	0	0	0	795
1994	4	0	27	15	58	34	15	12	2	0	0	0	167
1995	2	14	116	458	56	451	111	108	20	0	0	0	1337
1996	0	35	39	143	250	128	96	83	22	0	0	0	797
1997	2	26	380	533	49	31	18	26	8	0	0	0	1072
1998	1	0	79	297	426	127	133	100	28	0	0	0	1191
1999	10	13	75	164	319	132	75	42	11	0	0	0	841
2000	0	5	9	118	330	155	43	32	8	0	0	0	700
2001	9	8	1	0	7	2	0	0	0	0	0	0	28
2002	12	23	159	199	134	222	149	131	56	0	0	0	1085
2003	0	0	119	85	46	76	114	90	12	0	0	0	543
Average	**5**	**26**	**92**	**153**	**161**	**129**	**68**	**25**	**4**	**0**	**0**	**0**	**663**

UF 2 – Putah Creek near Winters estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	1	62	115	223	52	27	11	5	2	1	1	1	501
1922	0	0	35	8	132	35	15	4	1	0	0	0	230
1923	0	13	141	54	23	9	32	5	1	0	0	0	278
1924	0	0	0	4	32	2	1	0	0	0	0	0	39
1925	0	8	26	10	215	28	31	23	6	1	0	0	348
1926	0	0	1	36	167	15	121	7	1	0	0	0	348
1927	0	63	38	57	236	39	98	9	3	1	0	0	544
1928	0	25	24	28	67	100	48	7	1	0	0	0	300
1929	0	1	13	5	32	10	4	1	0	0	0	0	66
1930	0	0	113	76	53	63	11	5	1	1	0	0	323
1931	0	1	1	15	4	10	2	1	1	0	0	0	35
1932	0	0	109	41	33	7	4	4	2	1	0	0	201
1933	0	0	2	38	12	27	9	5	1	1	0	0	95
1934	0	0	44	34	42	17	5	2	1	0	0	0	145
1935	0	7	5	122	18	114	70	12	3	1	0	0	352
1936	0	0	1	63	215	27	30	6	3	1	0	0	346
1937	0	0	1	7	148	90	24	6	3	1	0	0	280
1938	0	24	136	45	359	216	52	14	4	1	1	1	853
1939	1	1	4	7	9	15	3	1	1	0	0	0	42
1940	0	0	2	138	312	149	56	11	4	1	1	1	675
1941	1	2	179	237	215	164	162	28	9	4	2	1	1004
1942	1	2	134	141	254	56	87	25	9	3	2	1	715
1943	1	6	21	183	37	42	16	8	3	1	1	1	320
1944	0	1	1	12	62	83	10	6	2	1	0	0	178
1945	0	8	18	12	108	38	14	6	2	0	0	0	206
1946	1	15	162	39	16	13	11	3	1	1	0	0	262
1947	0	7	14	3	40	45	16	2	2	0	0	0	129
1948	1	2	2	16	4	23	63	18	4	0	0	0	133
1949	1	1	6	10	37	120	12	4	1	0	0	0	192
1950	0	0	2	49	91	20	15	4	1	0	0	0	182
1951	3	48	142	88	45	42	10	9	1	0	0	0	388
1952	0	7	119	243	98	86	22	8	3	1	1	0	588
1953	0	1	139	190	19	43	17	10	3	1	0	0	423
1954	0	5	4	77	82	55	52	8	1	0	0	0	284
1955	0	10	26	13	8	9	19	7	1	0	0	0	93
1956	0	0	314	229	237	48	16	11	3	1	1	1	861
1957	0	2	2	13	70	29	13	18	4	1	1	1	154
1958	14	4	32	84	347	153	184	20	8	4	3	2	855
1959	0	0	3	46	112	15	7	5	5	4	2	3	202
1960	0	0	2	24	134	53	14	9	5	5	2	1	249
1961	0	4	25	36	38	34	13	5	6	4	2	0	167
1962	0	5	19	9	169	85	11	5	4	3	1	0	311
1963	82	3	49	141	111	65	129	28	9	6	3	1	627
1964	2	29	4	58	9	12	6	6	6	6	4	3	145
1965	4	14	216	214	26	13	49	11	5	6	4	0	562
1966	1	24	36	128	62	20	12	6	4	3	4	4	304
1967	0	39	100	259	47	98	110	31	17	5	4	1	711
1968	1	2	13	105	74	52	12	6	4	3	1	0	273
1969	0	3	72	289	228	77	29	13	4	4	1	0	720
1970	0	1	117	416	103	67	15	13	7	5	1	0	745
1971	0	55	171	72	14	50	18	10	7	7	3	1	408
1972	0	1	23	13	28	11	11	8	4	3	1	0	103
1973	2	31	27	242	178	82	23	12	6	4	0	0	607
1974	2	123	69	155	55	200	76	17	9	5	0	1	712
1975	1	0	10	9	158	160	29	14	7	5	1	1	395
1976	2	0	2	2	6	7	7	6	4	0	0	0	36
1977	0	0	0	2	3	6	4	3	3	2	1	1	25
1978	1	13	44	284	147	111	36	12	3	2	0	1	654
1979	0	0	0	47	97	41	17	10	4	1	0	0	217
1980	4	7	61	166	238	74	24	10	6	5	0	0	595
1981	0	0	26	80	28	37	12	7	7	0	1	0	198
1982	1	85	147	144	105	140	252	23	7	3	0	0	907
1983	3	52	89	208	295	421	85	46	13	6	2	1	1221
1984	0	92	248	46	34	36	13	10	5	3	2	1	490
1985	0	44	19	10	54	32	12	5	5	2	2	0	185
1986	0	6	16	57	493	188	23	10	2	0	0	0	795
1987	0	0	0	8	35	49	7	3	2	0	0	1	105
1988	1	0	36	67	9	4	0	3	2	1	0	0	123
1989	0	7	8	7	4	83	9	3	1	2	0	2	126
1990	3	1	0	25	23	8	2	11	4	1	0	0	78
1991	0	4	0	1	5	172	13	5	1	2	0	1	204
1992	0	0	2	3	59	36	6	2	4	2	2	1	117
1993	4	0	50	277	156	47	18	7	5	0	0	0	564
1994	0	2	18	8	36	9	2	2	0	0	0	0	77
1995	0	6	15	467	50	381	50	39	8	1	0	0	1017
1996	0	0	63	105	198	115	42	28	7	3	0	0	561
1997	0	5	169	374	38	19	9	6	0	0	0	0	620
1998	0	27	40	157	459	77	108	0	21	5	0	0	894
1999	1	24	13	26	159	82	57	12	3	0	0	0	377
2000	0	2	0	37	170	73	17	7	2	0	0	0	308
2001	0	0	2	19	77	49	7	3	0	0	0	0	157
2002	0	16	118	115	20	20	6	4	1	0	0	0	300
2003	0	5	233	80	30	44	43	29	2	0	0	0	466
Average	**2**	**13**	**54**	**93**	**102**	**67**	**34**	**10**	**4**	**2**	**1**	**0**	**382**

UF 3 – Cache Creek above Rumsey estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	0	31	70	118	146	113	61	44	30	18	11	7	649
1922	5	4	9	11	48	41	38	27	17	10	6	3	219
1923	3	4	28	35	32	23	33	18	12	7	4	2	201
1924	2	2	1	3	7	3	2	1	0	0	0	0	21
1925	1	5	20	14	108	43	59	54	37	23	14	10	388
1926	7	6	8	15	61	35	44	35	24	16	9	5	265
1927	4	27	53	111	280	176	114	64	38	23	15	9	914
1928	7	10	15	37	51	93	76	48	30	19	12	7	405
1929	5	4	9	9	16	12	11	7	5	2	1	0	81
1930	0	0	26	29	36	41	30	22	14	8	4	2	212
1931	1	1	1	9	4	7	4	2	1	0	0	0	30
1932	0	0	51	27	19	13	10	10	5	2	0	0	137
1933	0	0	1	9	9	20	9	8	4	1	0	0	61
1934	0	0	16	16	19	16	10	7	4	2	0	0	90
1935	0	5	4	50	28	61	68	45	27	17	10	6	321
1936	4	3	4	61	146	86	67	43	33	20	13	8	488
1937	5	3	3	4	52	65	48	32	22	15	9	6	264
1938	4	35	119	72	378	424	190	81	43	26	17	11	1400
1939	8	7	9	11	15	17	11	8	4	2	0	0	92
1940	0	0	0	59	179	172	116	61	37	22	13	9	668
1941	6	6	103	234	290	279	225	109	53	31	20	13	1369
1942	8	8	67	123	245	139	117	84	52	30	20	13	906
1943	9	12	36	142	94	85	62	49	33	21	13	9	565
1944	6	5	6	14	27	52	27	22	15	8	4	2	188
1945	1	6	16	15	64	41	34	25	16	9	5	2	234
1946	4	14	123	79	52	48	40	28	18	10	6	3	425
1947	2	3	7	3	15	31	19	12	7	4	2	1	106
1948	1	1	1	10	4	16	56	33	22	13	7	4	168
1949	2	2	6	9	21	88	41	29	18	11	6	3	236
1950	2	2	2	23	45	36	32	23	14	7	4	2	192
1951	5	21	73	109	107	85	51	50	28	17	10	7	563
1952	5	11	113	178	204	154	85	54	36	22	14	9	885
1953	6	5	85	191	87	77	57	50	35	21	14	9	637
1954	6	10	10	74	64	65	71	44	30	18	12	8	412
1955	6	9	22	23	20	20	27	23	12	7	4	2	175
1956	1	1	183	306	342	173	66	51	35	21	14	9	1202
1957	6	6	5	15	53	60	36	44	25	15	9	6	280
1958	28	12	44	110	431	375	275	119	58	33	23	16	1524
1959	11	8	7	29	75	46	33	25	17	10	6	3	270
1960	2	2	2	9	75	56	35	29	20	11	7	4	252
1961	2	4	21	20	41	44	36	29	19	12	7	5	240
1962	3	6	16	11	84	81	47	35	23	15	9	6	336
1963	26	10	23	48	73	63	129	78	45	29	19	13	556
1964	10	17	13	34	22	21	16	13	9	5	2	1	163
1965	1	10	186	249	119	62	79	55	34	21	15	10	841
1966	8	17	28	100	75	61	43	31	20	15	10	7	415
1967	5	15	62	157	89	94	114	86	52	35	22	14	745
1968	10	8	14	74	99	78	50	36	23	15	11	9	427
1969	6	6	41	190	274	257	125	57	35	23	15	12	1041
1970	8	7	56	347	216	124	63	42	29	19	13	9	933
1971	6	22	95	106	60	73	59	45	33	25	15	11	550
1972	6	5	13	20	27	26	22	17	11	5	2	1	155
1973	1	12	22	166	222	183	82	48	29	18	10	9	802
1974	6	74	105	220	144	237	175	72	40	28	18	12	1131
1975	9	7	12	13	113	188	123	59	34	24	16	10	608
1976	9	8	5	6	5	10	10	4	2	1	2	0	62
1977	0	0	0	1	0	0	0	0	0	0	0	0	1
1978	0	3	18	192	161	191	118	63	39	30	17	13	845
1979	8	7	6	28	64	61	43	40	25	18	14	6	320
1980	6	12	44	166	245	167	101	38	30	22	15	10	856
1981	7	4	15	50	41	44	31	24	19	14	6	2	257
1982	4	44	117	157	141	157	243	102	50	35	22	16	1088
1983	14	32	78	227	321	662	320	149	69	43	28	21	1964
1984	16	86	330	150	94	81	52	36	21	10	4	2	882
1985	3	35	39	30	39	40	34	19	9	1	1	0	250
1986	1	5	16	41	422	310	97	51	31	18	9	6	1007
1987	4	2	3	11	25	42	21	14	8	2	1	0	133
1988	0	0	25	82	30	24	20	17	13	6	0	1	218
1989	0	4	6	11	7	64	30	17	4	6	1	3	153
1990	4	3	3	19	20	17	10	9	6	1	0	0	92
1991	1	0	0	1	2	66	25	15	8	2	1	1	122
1992	0	2	4	6	50	43	28	23	14	9	3	0	182
1993	5	3	49	264	291	176	74	56	43	29	16	8	1014
1994	5	5	14	19	43	27	24	19	27	0	1	2	186
1995	0	2	8	484	158	476	210	78	28	39	26	20	1529
1996	10	0	27	108	286	208	61	45	46	44	15	6	856
1997	10	3	92	404	245	20	15	19	20	23	35	12	898
1998	6	15	34	215	653	346	142	109	100	71	30	13	1734
1999	22	0	0	7	108	202	71	86	43	49	54	24	666
2000	7	2	1	16	93	104	28	53	44	35	46	28	457
2001	9	1	1	12	39	53	4	22	21	25	16	1	204
2002	0	6	43	101	6	7	0	48	33	29	34	19	326
2003	0	0	64	201	11	53	155	97	37	52	43	20	733
Average	**5**	**10**	**37**	**86**	**111**	**104**	**66**	**42**	**26**	**18**	**12**	**7**	**524**

UF 4 – Stony Creek at Black Butte estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	0	58	115	202	100	57	27	25	11	1	0	0	596
1922	1	1	12	12	68	36	50	41	13	0	0	0	234
1923	2	12	48	43	22	15	34	13	4	0	0	0	193
1924	1	1	3	6	16	4	2	0	0	0	0	0	33
1925	0	6	26	25	202	42	67	81	17	2	0	1	469
1926	2	3	5	22	137	27	72	12	1	0	0	0	281
1927	1	37	83	55	254	77	54	28	8	0	0	0	597
1928	1	9	23	47	87	98	62	18	2	0	0	0	347
1929	1	4	11	8	28	12	11	8	2	0	0	0	85
1930	0	0	33	33	44	69	26	14	4	0	0	0	223
1931	0	2	2	21	13	18	7	3	0	0	0	0	66
1932	0	2	49	48	23	37	21	22	7	0	0	0	209
1933	0	0	3	12	9	33	25	19	12	0	0	0	113
1934	0	1	29	39	37	27	11	5	2	0	0	0	151
1935	0	12	8	64	37	70	87	33	7	1	0	0	319
1936	0	1	4	83	143	48	41	15	9	0	0	0	344
1937	0	0	2	2	73	77	69	29	6	0	0	0	258
1938	1	44	133	51	214	248	101	79	27	5	0	0	903
1939	1	3	10	8	11	22	10	5	0	0	0	0	70
1940	0	0	6	114	225	119	63	21	4	0	0	0	552
1941	1	3	133	252	260	231	180	79	25	4	0	1	1169
1942	1	4	90	155	195	49	110	55	21	2	0	1	683
1943	0	11	39	162	52	69	29	23	6	1	0	0	392
1944	1	1	3	14	33	54	29	33	7	0	0	0	175
1945	1	10	27	25	76	28	32	14	4	0	0	0	217
1946	2	20	148	74	22	22	20	8	2	0	0	0	318
1947	0	8	14	2	36	53	19	2	1	0	0	0	135
1948	1	2	3	28	9	19	75	41	17	2	0	0	197
1949	0	2	6	7	21	134	57	24	5	1	0	0	257
1950	0	1	3	35	59	41	39	26	9	2	0	1	216
1951	5	36	96	102	93	49	24	38	9	4	0	0	456
1952	1	6	97	147	139	94	77	62	17	4	0	1	645
1953	1	2	104	233	39	45	45	47	18	5	0	1	540
1954	0	6	9	94	83	67	75	27	10	5	0	1	377
1955	1	13	29	15	13	16	22	24	3	2	0	0	138
1956	1	2	143	239	147	64	45	54	16	4	0	1	716
1957	5	3	2	17	83	45	45	45	16	5	0	2	268
1958	27	16	42	118	480	156	140	68	21	5	0	3	1076
1959	1	3	4	55	96	41	20	6	2	0	0	1	229
1960	0	0	0	14	139	79	22	16	5	0	0	0	275
1961	0	6	42	32	73	41	25	17	4	0	0	0	240
1962	0	4	24	11	100	75	44	16	5	0	0	0	279
1963	25	7	42	22	168	59	146	44	12	3	0	0	528
1964	3	23	8	30	18	11	9	6	2	0	0	0	110
1965	0	25	277	201	48	27	109	25	4	0	2	0	718
1966	0	36	22	115	64	45	40	17	5	0	0	0	344
1967	0	24	89	182	67	54	70	62	41	5	0	0	594
1968	1	3	15	82	142	47	19	9	3	0	0	0	321
1969	0	5	59	259	210	129	84	47	15	1	0	0	809
1970	2	3	80	406	89	65	19	10	4	0	0	0	678
1971	0	37	123	138	38	87	39	26	11	2	0	0	501
1972	0	5	16	38	37	51	20	11	2	0	0	0	180
1973	3	40	60	207	228	119	53	30	5	0	0	0	745
1974	3	83	123	250	54	166	99	30	11	1	0	0	820
1975	0	4	16	20	149	226	67	44	15	0	0	0	541
1976	4	6	7	4	12	18	12	4	1	0	1	0	69
1977	0	2	2	3	2	6	0	2	0	0	0	0	17
1978	0	4	49	320	190	146	57	28	13	2	0	0	809
1979	1	2	2	30	55	70	30	24	5	0	0	0	219
1980	5	23	45	192	257	95	35	17	7	0	0	0	676
1981	0	2	15	82	51	43	21	8	3	0	0	0	225
1982	5	77	150	109	115	93	163	56	16	5	0	1	790
1983	7	36	122	235	284	461	130	107	40	9	2	2	1435
1984	2	100	304	70	48	40	22	10	0	0	0	0	596
1985	1	54	39	13	27	22	26	2	0	0	0	0	184
1986	1	7	30	70	441	171	36	13	0	0	0	0	769
1987	0	1	2	9	27	47	10	2	0	0	0	0	98
1988	0	2	59	108	31	15	9	5	0	0	0	0	229
1989	0	13	7	16	11	95	26	5	0	0	0	0	173
1990	2	3	2	20	11	17	4	5	6	0	0	0	70
1991	0	2	2	2	3	83	34	6	0	0	0	0	132
1992	0	0	8	9	82	65	51	5	0	0	0	0	220
1993	1	2	43	243	206	108	48	27	18	0	0	0	696
1994	0	0	7	9	28	18	5	4	0	0	0	0	71
1995	0	3	11	556	108	365	85	73	19	2	0	0	1222
1996	0	0	40	124	208	145	46	39	9	0	0	0	611
1997	0	8	136	290	56	30	15	5	0	0	0	0	540
1998	1	16	45	217	551	173	113	101	77	12	0	0	1306
1999	0	13	29	29	107	111	71	29	7	0	0	0	396
2000	0	5	5	33	137	86	42	21	4	0	0	0	333
2001	0	2	4	16	36	101	16	5	0	0	0	0	180
2002	0	20	134	148	33	27	14	5	0	0	0	0	381
2003	0	6	166	137	38	50	43	56	7	0	0	0	503
Average	**2**	**13**	**49**	**94**	**102**	**77**	**48**	**27**	**9**	**1**	**0**	**0**	**422**

UF 5 – Sacramento Valley West Side Minor Streams estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	2	177	171	205	140	137	79	52	17	5	0	0	985
1922	0	3	38	49	53	44	117	78	10	2	0	0	394
1923	2	10	57	54	29	20	67	22	11	2	0	0	274
1924	1	1	4	8	29	7	6	3	0	0	0	0	59
1925	6	25	46	41	202	69	108	87	16	6	2	2	610
1926	3	6	14	19	117	43	57	14	4	0	0	0	277
1927	0	48	91	76	221	131	116	63	20	4	1	0	771
1928	0	52	31	64	104	161	87	30	13	2	0	0	544
1929	0	1	17	14	19	14	15	15	4	0	0	0	99
1930	0	1	68	32	59	60	38	14	5	0	0	0	277
1931	0	1	3	20	16	26	11	5	1	0	0	0	83
1932	1	4	17	25	22	52	28	27	8	1	0	0	185
1933	0	0	2	5	6	32	42	31	17	1	0	0	136
1934	0	1	18	31	32	35	19	10	2	0	0	0	148
1935	1	18	15	32	44	42	110	42	8	2	0	0	314
1936	0	2	5	103	106	52	41	18	9	1	0	0	337
1937	0	1	1	4	14	55	85	57	14	2	0	0	233
1938	2	82	143	44	114	220	185	141	39	7	2	1	980
1939	1	4	14	9	11	32	16	11	2	0	0	0	100
1940	0	1	22	108	206	146	82	31	8	2	0	0	606
1941	2	8	142	168	252	263	208	130	49	13	3	2	1240
1942	2	7	131	128	151	50	86	69	30	7	2	0	663
1943	0	19	57	130	71	74	44	23	9	2	0	0	429
1944	0	3	4	10	16	30	22	24	8	2	0	0	119
1945	0	16	31	19	71	24	45	26	9	1	0	0	242
1946	9	28	146	73	26	45	56	33	12	7	5	5	445
1947	0	9	13	4	36	51	22	7	6	0	0	0	148
1948	10	6	4	61	12	17	83	57	23	3	0	2	278
1949	2	7	14	6	16	94	92	36	9	2	0	0	278
1950	0	1	1	28	34	56	50	23	5	0	0	0	198
1951	22	32	71	80	100	34	30	30	7	1	0	0	407
1952	2	13	89	65	137	99	139	76	21	7	2	0	650
1953	0	3	54	198	55	40	65	47	28	8	2	1	501
1954	2	15	15	97	118	99	108	32	12	3	1	0	502
1955	0	24	39	20	15	15	29	35	6	1	0	0	184
1956	0	9	282	235	156	82	102	82	22	5	2	1	978
1957	3	4	4	13	94	69	38	40	8	1	0	1	275
1958	40	24	57	124	523	161	175	83	24	8	3	1	1223
1959	0	3	4	62	66	47	31	11	2	0	0	1	227
1960	0	0	2	9	144	89	31	22	7	1	0	0	305
1961	0	3	30	32	77	40	32	17	6	1	0	0	238
1962	0	2	15	7	77	62	52	15	4	1	0	0	235
1963	24	9	36	43	142	58	127	54	9	2	1	0	505
1964	1	36	8	24	19	10	11	6	12	0	0	0	127
1965	1	31	288	169	52	29	156	43	10	2	1	1	783
1966	1	44	15	97	52	64	62	20	4	1	0	0	360
1967	0	26	83	144	67	50	69	83	37	4	1	1	565
1968	1	2	12	86	134	43	25	13	3	1	1	0	321
1969	1	4	53	256	185	130	151	99	19	3	1	0	902
1970	1	3	86	364	67	67	18	14	6	2	1	0	629
1971	1	34	92	142	53	95	58	41	14	4	1	1	536
1972	1	4	9	31	31	70	23	12	4	1	0	1	187
1973	5	41	71	148	120	93	74	38	8	2	1	1	602
1974	3	100	125	279	42	170	107	44	14	5	2	1	892
1975	1	2	16	15	111	232	71	75	20	5	2	1	551
1976	3	8	7	5	13	19	18	10	2	1	1	0	87
1977	0	1	1	1	2	6	5	5	1	0	0	0	22
1978	1	10	69	265	133	152	75	43	18	5	1	2	774
1979	1	1	1	22	43	74	34	27	6	2	0	1	212
1980	7	26	27	178	179	69	45	24	9	3	1	1	569
1981	1	1	26	80	68	55	29	11	3	1	0	0	275
1982	5	94	152	73	133	88	125	54	15	5	1	1	746
1983	8	39	112	169	203	300	134	178	70	16	5	3	1237
1984	3	102	209	62	38	51	28	20	8	2	0	0	523
1985	2	72	37	17	27	24	45	12	4	0	0	0	240
1986	2	4	20	65	391	158	43	20	6	2	0	3	714
1987	3	1	4	11	40	65	29	11	1	0	0	0	165
1988	0	3	84	61	40	26	21	15	8	2	0	0	260
1989	0	25	12	24	20	127	46	15	6	2	0	3	280
1990	6	4	3	24	12	24	9	17	13	1	0	0	113
1991	0	0	1	3	8	56	41	23	5	1	0	0	138
1992	0	3	4	11	70	76	51	13	4	3	0	0	235
1993	2	5	33	111	113	182	75	66	43	7	3	0	640
1994	1	1	6	10	14	25	11	10	2	0	0	0	80
1995	0	3	8	307	138	278	112	93	33	7	2	1	982
1996	1	1	56	95	181	131	68	73	17	4	1	1	629
1997	2	13	158	195	59	47	32	15	6	1	0	0	528
1998	2	21	42	160	339	159	132	243	116	19	5	3	1241
1999	4	20	20	25	73	94	98	53	15	4	1	1	408
2000	1	8	7	37	148	98	111	52	15	5	2	1	485
2001	2	8	6	35	123	104	98	48	13	4	1	1	443
2002	3	8	23	51	54	96	43	23	6	2	0	0	309
2003	1	17	133	135	42	52	47	32	9	2	1	0	471
Average	**3**	**18**	**50**	**79**	**91**	**80**	**65**	**41**	**14**	**3**	**1**	**1**	**446**

UF 6 – Sacramento River near Red Bluff estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	226	1236	1557	2123	1576	1583	931	792	541	369	281	261	11476
1922	242	289	542	432	967	880	1067	896	511	338	263	239	6666
1923	256	339	646	678	446	422	884	431	398	314	240	233	5287
1924	232	250	269	306	517	286	269	263	266	246	199	191	3294
1925	211	439	445	463	2508	789	1275	700	466	299	246	237	8078
1926	220	274	343	437	1598	548	832	431	314	266	212	199	5674
1927	206	858	1167	1205	2589	1345	1505	781	490	337	249	239	10971
1928	221	633	550	722	1059	1585	1194	538	359	306	236	231	7634
1929	215	338	381	369	647	482	526	432	350	257	200	202	4399
1930	196	219	973	662	881	1106	575	487	324	258	198	217	6096
1931	219	232	235	470	385	461	300	243	214	186	177	174	3296
1932	204	213	781	548	420	845	556	608	310	215	198	184	5082
1933	180	201	246	390	319	1117	644	552	356	218	188	180	4591
1934	193	200	505	738	728	609	438	324	232	192	176	167	4502
1935	197	483	400	986	732	965	1895	822	371	248	204	190	7493
1936	219	209	282	1571	1779	780	724	482	401	247	195	186	7075
1937	200	196	224	262	682	1441	1194	731	425	250	186	188	5979
1938	250	1165	1908	950	2614	3185	1769	1286	632	375	282	261	14677
1939	305	326	466	426	406	750	454	339	249	225	209	215	4370
1940	207	212	443	1729	2577	2188	1458	581	346	275	231	246	10493
1941	270	320	1881	2528	2339	2111	2048	1124	650	413	325	305	14314
1942	311	321	1655	1733	2540	751	1340	990	658	382	300	280	11261
1943	305	364	628	1687	1077	1408	1002	668	490	331	275	262	8497
1944	290	291	295	387	694	696	485	463	378	274	229	221	4703
1945	268	527	723	495	1416	794	629	672	453	268	235	219	6699
1946	332	619	2161	1249	556	755	767	598	356	283	257	236	8169
1947	256	354	421	275	624	995	618	342	480	259	228	221	5073
1948	370	302	288	1031	343	821	1720	1151	745	338	268	273	7650
1949	274	286	350	277	504	1937	811	584	332	234	226	217	6032
1950	243	243	250	750	962	883	816	542	333	244	225	227	5718
1951	665	768	1517	1263	1517	922	654	702	345	252	244	235	9084
1952	295	520	1765	1463	1753	1429	1621	1111	575	404	305	302	11543
1953	283	300	1271	2746	687	897	861	913	734	388	295	293	9668
1954	308	490	442	1487	1625	1474	1445	650	437	318	308	298	9282
1955	302	516	789	566	447	473	767	682	335	278	250	257	5662
1956	256	414	2898	3226	1849	1200	951	1009	542	361	311	290	13307
1957	371	325	321	423	1115	1446	817	968	459	316	278	330	7169
1958	584	527	913	1482	4414	2085	2149	1069	731	458	362	346	15120
1959	355	326	361	1308	1283	789	631	476	343	284	257	326	6739
1960	288	265	300	546	1431	1216	622	615	403	270	248	254	6458
1961	281	423	965	576	1344	1043	691	627	418	283	259	256	7166
1962	283	425	830	477	1861	1100	772	564	382	274	251	245	7464
1963	898	400	918	558	1360	913	2402	1033	476	347	309	286	9900
1964	353	699	400	850	473	451	470	415	404	246	223	232	5216
1965	263	498	2500	2089	803	593	1632	682	406	330	297	267	10360
1966	283	725	485	1121	950	1186	913	490	337	275	254	259	7278
1967	253	691	1279	1405	1083	1338	1544	1273	714	375	294	261	10510
1968	303	302	437	764	1668	1061	597	500	343	306	327	301	6909
1969	321	356	980	2549	2209	1307	1482	1072	539	361	293	329	11798
1970	356	330	1486	4536	1369	1233	561	514	411	323	306	288	11713
1971	343	1032	1705	1648	766	1493	1110	957	674	421	313	322	10784
1972	370	360	512	731	760	1236	872	525	376	297	277	289	6605
1973	381	655	818	1818	1746	1436	802	677	397	324	292	295	9641
1974	407	2107	1846	3355	1054	2579	1849	911	595	458	362	354	15877
1975	345	380	503	507	1452	2307	1177	1044	634	379	327	332	9387
1976	435	379	402	371	443	625	554	391	304	258	304	295	4761
1977	298	272	275	303	282	313	255	338	271	242	245	318	3412
1978	282	320	969	3115	1632	2074	1459	801	441	336	281	314	12024
1979	271	264	270	474	945	1010	667	706	271	267	232	240	5617
1980	379	479	690	1776	2262	1520	783	592	362	309	257	309	9718
1981	299	278	509	969	908	1227	661	468	312	273	243	244	6391
1982	324	1546	2104	1293	1737	1687	2208	929	534	290	313	310	13275
1983	383	542	1367	1915	2925	4677	1817	1530	853	475	341	356	17181
1984	377	987	2569	1029	824	1069	726	615	441	314	277	293	9521
1985	372	963	661	428	497	554	555	338	329	252	245	312	5506
1986	330	343	551	1100	3671	2288	764	623	361	338	260	318	10947
1987	323	275	330	463	751	1337	455	371	245	270	219	239	5278
1988	250	279	1015	1045	473	419	426	492	354	247	201	210	5411
1989	231	537	397	470	384	2242	903	455	288	229	223	264	6623
1990	414	262	250	680	370	616	327	663	477	257	215	208	4739
1991	241	244	225	247	269	981	516	439	263	208	189	191	4013
1992	238	226	269	336	1268	921	635	353	265	244	190	212	5157
1993	259	244	650	1573	1410	2167	1339	914	808	319	260	249	10192
1994	311	256	447	458	653	537	382	374	244	185	159	220	4226
1995	229	267	396	3867	1431	3904	1744	1513	693	416	333	354	15147
1996	307	274	786	1046	2277	1527	967	1053	481	307	284	282	9591
1997	330	495	2299	3075	1032	708	621	464	359	276	276	296	10231
1998	375	614	667	2621	3960	2100	1541	1650	1322	562	384	381	16177
1999	426	768	942	953	1741	1590	1113	799	513	354	321	335	9855
2000	373	426	413	1186	2500	1793	1027	662	439	305	299	347	9770
2001	375	337	408	533	924	1067	585	461	316	273	273	276	5828
2002	292	558	1507	1477	810	829	650	507	331	272	280	280	7793
2003	286	335	1920	1845	746	1015	1225	1214	490	321	283	286	9966
Average	**307**	**464**	**850**	**1181**	**1285**	**1259**	**976**	**699**	**443**	**303**	**260**	**264**	**8291**

UF 7 – Sacramento Valley East Side Minor Streams estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	30	197	222	403	207	219	171	159	85	43	34	32	1802
1922	39	37	109	83	228	167	188	259	149	51	36	32	1378
1923	37	69	227	123	70	70	150	75	45	31	29	33	959
1924	30	26	29	32	81	50	40	25	21	21	21	20	396
1925	25	38	57	42	245	92	154	73	38	25	22	22	833
1926	25	35	45	63	191	78	220	54	26	21	21	20	799
1927	26	146	85	138	372	178	206	128	54	34	28	26	1421
1928	29	96	64	70	131	379	152	82	44	29	28	25	1129
1929	27	37	43	34	66	60	59	53	35	23	20	20	477
1930	22	21	192	126	134	186	131	92	43	29	24	24	1024
1931	24	26	25	49	40	70	38	31	22	17	16	16	374
1932	23	26	140	75	61	103	121	126	53	27	22	20	797
1933	21	23	28	41	39	104	80	79	49	23	20	19	526
1934	23	22	98	88	106	86	58	37	26	19	17	17	597
1935	22	52	44	159	93	165	333	178	67	33	24	22	1192
1936	26	25	34	211	303	119	150	85	57	33	24	23	1090
1937	23	23	27	32	110	191	188	136	58	29	22	21	860
1938	31	137	395	129	419	461	272	333	208	96	52	44	2577
1939	36	36	44	39	42	95	67	44	29	22	20	21	495
1940	25	23	47	251	495	410	228	94	54	35	28	29	1719
1941	32	41	292	340	471	324	349	194	85	52	38	33	2251
1942	34	44	320	331	423	105	266	204	121	57	40	35	1980
1943	35	47	90	307	164	326	216	128	79	47	36	32	1507
1944	34	36	39	53	105	124	83	92	50	31	26	24	697
1945	29	67	109	62	249	132	104	107	63	37	28	26	1013
1946	41	75	370	146	73	97	119	96	47	34	28	26	1152
1947	28	54	79	34	106	116	114	46	38	26	24	22	687
1948	47	52	33	109	38	179	314	208	143	48	32	28	1231
1949	30	35	43	35	51	238	109	79	39	25	23	22	729
1950	24	27	29	111	218	123	169	117	56	32	25	23	954
1951	47	150	244	222	227	129	116	115	52	33	28	27	1390
1952	34	66	302	268	325	259	264	266	118	60	40	33	2035
1953	32	34	199	411	80	117	160	162	110	54	37	32	1428
1954	35	54	45	156	231	220	283	116	59	39	33	31	1302
1955	31	60	101	79	53	66	100	105	47	30	24	24	720
1956	26	37	556	533	347	152	140	192	95	49	35	32	2194
1957	37	34	35	52	157	180	96	153	61	35	29	43	912
1958	64	54	120	214	568	352	340	226	134	61	42	36	2211
1959	36	38	40	151	222	91	79	58	38	29	26	28	836
1960	29	27	31	60	183	159	89	74	46	28	25	24	775
1961	26	68	110	69	176	135	93	80	52	29	24	23	885
1962	25	39	114	62	296	139	122	96	54	29	24	22	1022
1963	217	48	183	123	209	139	385	164	64	39	32	29	1632
1964	34	80	40	117	54	53	74	67	45	28	24	25	641
1965	26	86	502	419	109	100	271	119	66	40	37	30	1805
1966	31	72	57	127	98	103	130	78	37	29	24	24	810
1967	25	109	186	298	142	234	244	270	143	56	35	30	1772
1968	35	37	59	172	248	150	89	68	41	30	32	25	986
1969	33	56	210	640	351	161	219	236	97	48	35	31	2117
1970	38	44	289	832	191	234	78	76	60	37	31	29	1939
1971	33	162	251	195	85	237	149	147	96	52	38	32	1477
1972	34	37	67	65	91	142	127	74	45	31	28	29	770
1973	40	91	96	327	287	209	141	144	61	36	30	30	1492
1974	38	361	286	541	141	502	291	162	99	63	43	36	2563
1975	38	42	60	60	265	327	165	206	119	54	42	34	1412
1976	45	45	46	37	54	69	64	49	30	26	27	25	517
1977	27	27	28	34	27	34	30	34	24	20	19	23	327
1978	24	31	89	417	231	365	237	135	80	45	31	29	1714
1979	27	30	32	70	193	162	104	123	45	28	28	24	866
1980	46	68	148	416	432	189	105	108	61	40	30	27	1670
1981	32	30	69	143	97	137	77	56	33	26	23	23	746
1982	45	336	307	212	261	263	435	166	80	54	38	36	2233
1983	63	109	208	268	387	616	226	261	215	124	67	51	2595
1984	46	187	476	163	126	162	106	105	70	44	37	34	1556
1985	40	104	70	49	75	74	94	54	32	25	24	30	671
1986	33	52	64	150	741	346	113	103	64	43	32	38	1779
1987	34	36	40	61	104	218	79	59	28	22	20	21	722
1988	22	27	106	123	58	66	65	53	39	22	20	19	620
1989	24	53	46	60	56	394	142	71	48	28	25	29	976
1990	46	39	36	85	59	90	58	53	44	23	20	22	575
1991	22	25	28	29	34	173	91	63	36	23	19	17	560
1992	20	25	35	45	160	101	78	42	23	20	16	16	581
1993	24	27	68	298	245	296	208	181	125	56	39	30	1597
1994	30	32	69	57	90	80	58	55	28	19	17	17	552
1995	23	29	75	610	199	623	303	310	152	87	50	38	2499
1996	35	37	120	165	372	211	182	191	75	44	34	31	1497
1997	33	55	469	779	159	104	81	53	41	36	34	33	1877
1998	38	64	88	400	507	281	229	278	208	107	58	45	2303
1999	44	106	142	143	305	232	158	131	80	46	38	34	1459
2000	38	56	55	133	363	239	144	97	59	38	32	32	1286
2001	34	37	43	60	114	128	81	65	30	24	21	22	659
2002	26	56	155	172	90	130	121	72	45	27	25	23	942
2003	25	38	292	289	141	212	259	221	98	49	37	31	1692
Average	35	63	132	185	195	188	157	121	68	39	30	28	1241

UF 8 – Feather River near Oroville estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	82	549	549	849	562	960	743	831	456	177	108	87	5953
1922	81	100	194	192	422	433	933	1570	721	210	119	89	5064
1923	95	129	347	309	206	362	651	482	230	125	85	75	3096
1924	84	79	92	107	298	122	168	101	64	63	63	56	1297
1925	78	137	140	155	754	378	534	422	192	113	93	80	3076
1926	89	115	139	156	619	408	862	324	139	94	78	74	3097
1927	81	448	299	369	1270	782	931	750	382	164	108	86	5670
1928	83	291	187	229	365	1410	727	440	163	118	87	72	4172
1929	74	93	118	101	185	259	268	350	177	91	66	62	1844
1930	59	57	890	326	420	618	650	452	209	115	85	70	3951
1931	72	102	83	148	146	280	202	143	89	68	58	53	1444
1932	79	82	264	237	210	554	606	681	326	129	84	73	3325
1933	70	73	85	147	89	261	343	398	295	106	71	62	2000
1934	67	68	205	278	314	372	264	156	99	75	65	54	2017
1935	63	140	139	276	240	347	1380	962	401	149	96	77	4270
1936	80	78	102	663	944	601	719	521	278	130	93	81	4290
1937	70	69	78	92	252	505	705	784	319	132	89	72	3167
1938	77	337	1130	346	748	1370	1500	1700	828	293	158	117	8604
1939	114	122	141	144	130	328	364	194	109	82	67	63	1858
1940	69	66	123	675	1220	1500	977	498	226	132	101	88	5675
1941	101	152	660	686	1100	949	839	1060	451	219	145	120	6482
1942	106	139	817	892	1060	483	1070	923	637	253	152	120	6652
1943	108	214	405	986	585	1180	892	529	321	172	124	104	5620
1944	93	108	118	159	247	400	478	608	274	211	98	78	2872
1945	82	217	295	214	780	392	527	617	276	143	107	86	3736
1946	121	222	851	483	250	460	673	569	228	135	106	87	4185
1947	81	204	214	117	359	515	419	212	165	93	81	71	2531
1948	140	122	97	404	140	272	934	838	533	181	107	86	3854
1949	80	112	137	101	146	453	638	504	179	100	80	65	2595
1950	60	81	77	333	568	557	834	698	318	138	98	79	3841
1951	178	767	1090	668	768	522	601	546	230	134	101	86	5691
1952	108	191	644	532	830	677	1830	1690	820	336	176	128	7962
1953	107	110	271	1260	352	443	738	793	620	254	143	120	5211
1954	108	194	168	321	504	766	1020	559	241	145	108	96	4230
1955	89	148	220	187	159	277	347	537	231	115	85	77	2472
1956	74	111	1960	1370	748	717	898	1060	513	261	142	120	7974
1957	142	136	124	155	649	708	447	635	290	136	104	98	3624
1958	154	176	341	392	1435	852	1146	1275	663	265	160	111	6970
1959	105	119	131	418	459	427	436	301	159	118	90	88	2851
1960	80	72	104	153	688	758	502	380	219	114	81	74	3225
1961	72	147	200	160	396	361	388	403	232	113	94	72	2638
1962	70	95	169	133	696	425	868	579	318	139	92	76	3660
1963	855	186	487	389	1082	408	1267	903	317	164	104	104	6266
1964	112	311	156	266	192	241	416	404	225	124	83	59	2589
1965	69	153	1997	1199	510	504	1005	728	358	173	146	95	6937
1966	93	224	164	266	199	436	662	401	151	106	86	73	2861
1967	61	273	481	748	560	880	610	1265	891	279	135	100	6283
1968	116	121	167	320	797	583	466	379	186	130	114	79	3458
1969	114	160	308	1635	733	600	1196	1341	560	208	116	98	7069
1970	116	130	824	2471	654	678	361	423	261	151	105	97	6271
1971	99	348	551	491	375	1009	885	1041	694	242	113	111	5959
1972	115	140	217	264	348	708	527	427	205	112	81	89	3233
1973	123	210	339	745	597	628	687	783	286	138	107	97	4740
1974	139	1041	713	1489	444	1559	1131	882	504	243	127	89	8361
1975	114	123	155	182	536	864	611	1159	662	205	127	120	4858
1976	151	180	145	130	181	265	222	184	113	98	111	69	1849
1977	64	71	68	90	94	92	100	126	92	74	62	62	995
1978	57	83	320	1114	618	1120	792	742	438	194	92	113	5683
1979	63	123	101	235	301	493	505	670	222	134	97	79	3023
1980	149	144	196	1447	1158	650	580	565	282	158	72	130	5531
1981	94	91	234	263	362	407	386	281	119	89	76	78	2480
1982	147	1240	1326	655	1146	883	1689	998	442	221	126	123	8996
1983	213	350	633	713	1196	2029	1024	1427	1122	368	197	146	9418
1984	156	747	1398	595	495	711	513	511	278	154	98	111	5767
1985	131	324	195	158	239	329	560	290	132	102	84	99	2643
1986	91	140	198	516	2678	1486	583	442	216	126	93	154	6723
1987	120	104	119	171	342	531	296	187	102	73	67	60	2172
1988	62	85	352	289	184	249	236	217	134	86	69	46	2009
1989	63	243	119	142	203	1516	680	305	159	115	72	88	3705
1990	150	131	68	250	181	389	320	217	211	98	68	59	2142
1991	62	67	62	69	101	540	401	361	182	99	68	55	2067
1992	142	71	89	100	385	341	368	169	92	80	60	52	1949
1993	73	66	231	672	566	1359	949	902	515	161	101	90	5685
1994	97	95	153	151	226	328	269	247	109	66	60	58	1859
1995	60	104	204	1521	606	2283	1338	1682	870	354	153	105	9280
1996	104	108	351	460	1279	857	882	1018	337	170	111	104	5781
1997	105	223	1506	2539	530	532	497	325	187	116	101	92	6753
1998	103	192	233	970	1117	981	886	1082	977	370	161	126	7198
1999	129	339	420	568	952	811	683	695	319	146	117	100	5279
2000	103	160	126	433	981	756	698	500	208	135	91	85	4276
2001	111	96	123	138	212	396	339	297	107	86	71	65	2041
2002	63	168	365	495	305	445	506	340	163	89	72	62	3073
2003	53	132	662	740	370	568	640	831	346	135	109	87	4673
Average	**107**	**196**	**373**	**506**	**558**	**661**	**685**	**636**	**330**	**153**	**101**	**87**	**4393**

UF 9 – Yuba River at Smartville estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	43	280	329	421	280	473	414	498	315	64	30	22	3169
1922	25	31	113	122	318	261	421	869	650	104	36	22	2972
1923	27	57	296	165	113	159	432	459	221	84	33	28	2074
1924	33	24	55	40	127	62	137	78	17	6	9	14	602
1925	33	53	121	111	563	232	403	396	127	38	25	21	2123
1926	25	38	55	64	411	220	454	213	72	20	17	19	1608
1927	30	314	201	226	745	422	586	539	366	67	23	21	3540
1928	22	149	135	178	155	798	465	380	87	33	17	17	2436
1929	20	36	48	42	84	145	190	275	118	23	0	30	1011
1930	13	13	291	179	209	321	345	269	113	26	19	19	1817
1931	5	48	17	61	61	148	140	94	37	8	9	12	640
1932	26	36	166	147	196	278	347	533	300	46	26	13	2114
1933	16	16	27	40	35	142	217	284	239	36	12	15	1079
1934	22	27	97	128	150	234	172	86	37	15	7	13	988
1935	17	66	72	153	150	199	672	558	274	44	21	16	2242
1936	27	32	42	345	528	332	500	461	226	54	21	21	2589
1937	17	16	31	32	231	281	415	566	198	42	18	13	1860
1938	22	107	496	141	423	711	590	845	527	114	36	23	4035
1939	34	39	47	56	55	214	263	126	48	13	3	9	907
1940	22	21	32	392	577	723	495	403	129	29	18	19	2860
1941	25	69	256	374	504	425	421	645	251	117	27	23	3137
1942	24	70	370	497	512	238	535	554	426	108	40	31	3405
1943	29	135	283	587	308	631	502	358	189	56	34	21	3133
1944	29	31	42	64	143	213	215	421	162	37	22	18	1397
1945	22	107	149	105	466	203	319	450	196	50	26	20	2113
1946	36	117	492	260	146	257	407	445	149	47	25	17	2398
1947	31	96	101	54	184	301	263	179	90	27	20	17	1363
1948	55	52	41	209	68	128	509	509	323	65	34	16	2009
1949	22	38	62	42	77	245	412	408	111	31	19	19	1486
1950	14	31	38	237	331	309	461	469	227	47	24	30	2218
1951	69	677	794	411	378	286	360	365	112	30	33	25	3540
1952	41	102	315	325	481	356	692	929	582	221	45	30	4119
1953	43	32	127	570	143	214	383	403	410	133	51	45	2554
1954	31	65	63	155	238	385	491	323	96	34	18	19	1918
1955	17	40	107	100	82	123	182	388	181	35	16	15	1286
1956	17	40	1192	776	308	287	334	576	296	86	23	28	3963
1957	45	48	44	65	313	389	252	493	222	45	23	19	1958
1958	41	59	140	182	686	443	582	799	434	99	32	32	3529
1959	20	37	33	201	226	189	232	171	71	25	12	21	1238
1960	10	17	19	74	389	418	313	265	133	32	15	11	1696
1961	15	50	64	37	155	176	219	252	107	23	16	12	1126
1962	17	21	73	56	435	219	454	361	204	44	26	13	1923
1963	451	79	248	214	596	205	557	608	204	56	31	24	3273
1964	33	212	77	133	108	123	247	320	152	40	19	16	1480
1965	16	63	1341	678	240	198	502	442	264	72	41	26	3883
1966	25	91	76	123	99	227	402	282	58	20	10	11	1424
1967	16	129	282	393	260	420	299	657	603	177	44	20	3300
1968	26	30	69	143	442	275	243	222	78	21	18	6	1573
1969	28	89	130	964	377	278	522	768	388	42	66	17	3669
1970	31	39	386	1278	263	287	173	275	127	34	14	8	2915
1971	0	184	338	288	205	394	358	562	374	86	44	24	2857
1972	31	47	104	135	214	358	294	291	162	35	15	30	1716
1973	47	152	243	512	353	308	324	502	146	27	19	27	2660
1974	35	559	394	706	176	681	492	500	285	109	29	18	3984
1975	12	39	48	83	285	398	272	598	443	100	52	41	2371
1976	72	79	59	49	72	127	128	134	33	9	27	15	804
1977	0	39	17	27	29	35	58	79	40	23	12	11	370
1978	9	23	179	557	286	527	430	494	328	84	29	40	2986
1979	17	29	37	130	170	315	296	521	133	28	19	32	1727
1980	36	74	127	946	599	317	336	397	224	86	25	19	3186
1981	21	25	55	101	165	227	249	179	47	17	12	0	1098
1982	40	613	777	376	669	468	885	636	305	101	26	29	4925
1983	119	191	361	310	566	926	428	715	713	275	62	40	4706
1984	51	519	816	308	244	326	255	396	175	41	14	19	3164
1985	34	172	97	61	127	162	328	233	61	14	13	17	1319
1986	36	53	112	275	1351	792	317	294	144	36	18	42	3470
1987	37	24	26	49	156	218	200	114	25	6	13	6	874
1988	6	17	141	156	93	146	157	124	53	14	8	3	918
1989	7	137	71	85	137	819	508	282	78	62	18	22	2226
1990	61	58	38	138	101	232	243	191	121	35	6	11	1235
1991	12	19	21	20	31	323	263	294	143	31	7	13	1177
1992	17	29	34	40	242	197	219	91	19	13	4	6	911
1993	20	20	111	452	294	565	425	555	330	82	29	20	2903
1994	31	19	70	52	103	172	186	168	44	17	3	10	875
1995	17	43	146	806	322	993	555	829	552	238	45	24	4570
1996	19	17	202	267	829	403	457	762	197	41	33	20	3247
1997	22	114	912	1482	305	215	292	247	102	21	8	15	3735
1998	28	66	86	529	566	454	433	587	595	201	44	34	3623
1999	37	106	191	354	523	371	306	466	284	67	18	21	2744
2000	33	49	31	234	524	374	385	368	107	36	11	18	2170
2001	19	42	44	48	94	210	202	205	28	10	9	11	922
2002	13	62	179	239	173	278	332	282	108	21	9	9	1705
2003	13	61	277	325	172	268	339	522	190	53	14	20	2254
Average	**33**	**93**	**198**	**271**	**296**	**330**	**363**	**408**	**211**	**57**	**23**	**20**	**2303**

UF 10 – Bear River near Wheatland estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	2	30	112	137	79	77	24	16	8	2	1	0	488
1922	0	3	31	23	166	112	62	43	15	3	2	1	461
1923	7	14	110	63	35	33	79	25	16	6	5	4	397
1924	6	3	6	9	14	9	6	6	4	3	1	2	69
1925	5	6	18	17	99	43	53	21	11	7	6	4	290
1926	5	6	8	14	102	22	72	22	4	3	2	2	262
1927	4	41	19	58	221	55	112	20	10	6	4	3	553
1928	3	18	27	14	29	141	58	10	9	5	1	4	319
1929	6	10	16	11	33	21	13	7	4	2	1	0	124
1930	2	1	37	45	20	70	20	8	5	3	3	2	216
1931	4	9	13	12	14	14	4	2	0	0	0	0	72
1932	2	9	59	40	70	24	18	13	6	3	2	3	249
1933	4	5	12	13	16	35	14	16	3	2	1	0	121
1934	2	3	31	30	29	14	2	4	3	2	1	2	123
1935	3	14	21	52	39	70	114	21	10	5	3	4	356
1936	13	3	18	89	188	44	46	13	8	3	2	3	430
1937	4	4	16	13	94	99	58	18	7	5	2	3	323
1938	6	18	55	34	169	167	72	28	10	5	3	2	569
1939	6	8	13	12	19	37	14	5	3	1	1	0	119
1940	2	2	6	75	126	126	44	12	3	2	1	1	400
1941	2	9	71	106	106	74	74	22	9	4	3	1	481
1942	6	9	68	95	118	48	83	47	16	6	3	4	503
1943	4	21	39	134	62	134	33	18	9	4	3	2	463
1944	4	4	11	18	52	55	22	12	5	2	1	2	188
1945	3	26	25	13	111	52	28	12	8	4	2	4	288
1946	9	21	117	45	26	48	30	9	4	3	2	3	317
1947	6	16	23	9	35	51	17	4	3	2	1	1	168
1948	9	8	10	19	12	35	70	36	13	4	3	3	222
1949	5	7	20	14	24	104	21	14	4	2	1	0	216
1950	3	5	9	59	77	50	41	14	5	4	1	2	270
1951	7	108	149	133	74	74	18	24	4	2	2	2	597
1952	4	21	68	153	142	112	60	27	6	5	2	4	604
1953	3	6	28	95	13	37	35	26	9	2	2	3	259
1954	4	10	18	48	55	71	38	11	5	2	2	2	266
1955	4	8	33	44	20	20	23	16	3	1	0	1	173
1956	2	6	225	172	63	40	14	25	5	2	1	3	558
1957	7	7	10	14	46	59	23	51	7	3	1	2	230
1958	8	8	23	43	127	111	141	20	7	0	0	1	489
1959	1	6	4	28	57	20	6	1	0	0	0	0	123
1960	1	2	6	20	87	41	15	8	1	0	0	1	182
1961	1	10	12	7	24	26	14	8	3	1	0	2	108
1962	0	3	15	16	130	48	20	6	0	1	0	0	239
1963	85	10	39	30	81	43	114	28	7	1	0	2	440
1964	5	30	17	54	17	18	14	20	0	2	2	0	179
1965	5	16	211	155	22	20	67	13	6	3	3	0	521
1966	1	18	24	40	30	30	19	10	2	1	0	1	176
1967	0	33	67	114	39	75	82	40	14	0	0	0	464
1968	5	4	15	30	75	32	10	4	0	0	0	0	175
1969	4	14	41	242	121	67	47	19	5	0	0	0	560
1970	7	5	63	197	46	41	9	3	0	0	0	0	371
1971	11	43	127	55	27	71	31	18	7	0	0	0	390
1972	1	5	34	21	44	28	22	8	1	0	0	0	164
1973	1	34	38	149	109	80	28	11	1	0	0	0	451
1974	5	79	93	120	38	134	74	17	12	9	0	0	581
1975	0	3	9	19	89	90	46	21	1	0	0	0	278
1976	5	16	10	5	11	11	3	0	0	0	0	1	62
1977	0	1	0	9	5	4	0	1	0	0	0	0	20
1978	0	3	32	161	58	82	53	18	5	0	0	4	416
1979	0	8	5	43	62	65	25	20	0	0	0	0	228
1980	4	12	32	156	145	61	24	15	6	0	0	0	455
1981	0	1	8	25	14	44	9	0	0	0	0	0	101
1982	4	73	149	101	109	98	175	25	6	0	0	0	740
1983	12	52	93	65	148	208	70	46	10	3	0	0	707
1984	3	60	140	39	45	38	24	18	11	7	4	4	393
1985	9	22	14	11	30	37	22	9	5	4	0	2	165
1986	0	10	25	44	313	123	19	15	4	6	1	0	560
1987	1	0	4	5	27	37	7	4	2	1	0	1	89
1988	0	0	19	46	7	10	9	6	3	0	0	0	100
1989	0	14	20	27	19	152	32	21	7	8	0	4	304
1990	2	8	6	29	28	27	9	4	15	3	0	0	131
1991	0	0	1	1	2	84	22	15	11	6	3	0	145
1992	0	2	3	6	66	28	10	3	0	2	0	1	121
1993	0	0	25	144	78	65	34	12	13	7	3	1	382
1994	2	0	13	7	27	16	7	6	2	1	0	0	81
1995	1	6	53	210	26	207	51	49	18	15	5	7	648
1996	0	16	18	66	115	59	44	38	20	10	5	2	393
1997	1	12	174	244	23	14	8	12	7	2	0	3	500
1998	1	0	36	136	195	58	61	46	26	12	6	3	580
1999	5	6	34	75	146	61	34	19	11	2	3	1	397
2000	0	2	4	54	151	71	20	15	8	0	2	1	328
2001	4	4	1	0	3	1	0	0	0	0	0	0	13
2002	5	11	73	91	62	102	68	60	52	36	33	18	611
2003	0	0	55	39	21	35	52	42	11	3	0	0	258
Average	**4**	**14**	**41**	**62**	**69**	**61**	**38**	**17**	**7**	**3**	**2**	**2**	**320**

UF 11 – American River at Fair Oaks estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	38	157	275	468	320	535	421	525	375	71	12	6	3203
1922	14	39	131	113	360	325	480	1027	677	94	14	6	3280
1923	19	56	398	275	183	225	564	616	283	97	18	18	2752
1924	23	21	27	42	112	58	123	105	26	4	1	2	544
1925	13	57	86	87	598	312	600	613	273	60	11	7	2717
1926	20	33	54	48	261	200	479	212	66	13	0	1	1387
1927	13	181	142	222	775	447	728	617	432	75	13	9	3654
1928	17	113	99	109	138	989	536	396	98	20	4	2	2521
1929	12	28	38	42	99	148	211	358	180	30	2	1	1149
1930	11	12	162	144	151	328	357	285	160	27	7	8	1652
1931	17	34	21	57	75	140	173	136	47	8	3	4	715
1932	16	30	165	161	320	298	403	659	426	93	17	9	2597
1933	11	14	23	43	47	135	239	354	342	42	10	9	1269
1934	22	34	108	159	171	255	196	106	49	11	7	6	1124
1935	11	59	54	156	148	213	818	668	360	70	17	11	2585
1936	21	30	34	408	775	432	636	587	358	83	18	14	3396
1937	11	15	23	44	336	396	503	688	234	52	15	12	2329
1938	20	54	436	130	539	806	732	1011	599	134	31	20	4512
1939	30	41	44	50	70	222	326	175	57	15	6	12	1048
1940	28	19	28	468	611	847	628	511	199	40	13	14	3406
1941	15	44	249	345	473	449	445	720	282	85	23	17	3147
1942	18	49	325	583	554	286	626	717	557	155	32	17	3919
1943	17	154	278	691	374	930	590	446	264	87	25	18	3874
1944	19	24	31	58	144	234	216	472	194	46	14	9	1461
1945	11	120	124	97	560	259	417	550	282	70	15	10	2515
1946	35	143	544	308	155	342	513	549	203	49	13	13	2867
1947	18	88	87	50	172	305	302	263	96	19	9	7	1416
1948	47	43	28	170	74	147	532	634	446	87	19	12	2239
1949	14	35	54	48	87	351	516	531	167	29	14	10	1856
1950	12	26	25	301	335	342	588	598	325	82	19	12	2665
1951	40	985	1054	576	425	431	431	456	156	44	18	14	4630
1952	30	98	317	540	545	501	817	1136	671	241	56	24	4976
1953	20	30	99	454	155	218	469	486	511	164	31	16	2653
1954	16	54	65	123	210	450	542	364	115	33	14	11	1997
1955	12	29	114	133	103	154	240	485	222	42	19	13	1566
1956	13	29	1247	952	327	306	408	754	431	124	34	21	4646
1957	32	31	49	58	284	443	305	567	289	53	18	8	2137
1958	22	37	98	164	588	553	846	1057	537	131	38	21	4092
1959	15	23	24	149	204	200	283	205	86	16	7	15	1227
1960	12	13	20	63	348	431	359	283	121	20	6	4	1680
1961	9	50	39	31	123	157	237	273	117	5	0	5	1046
1962	10	14	51	47	418	247	554	420	261	40	4	3	2069
1963	335	45	178	259	712	234	652	761	281	63	17	17	3554
1964	32	201	83	156	107	126	292	395	187	37	14	2	1632
1965	11	64	1509	774	282	238	618	511	316	95	52	15	4485
1966	26	75	80	122	113	237	412	276	48	3	0	0	1392
1967	7	77	278	421	266	540	439	898	751	241	34	15	3967
1968	19	45	85	143	450	292	291	250	92	10	18	4	1699
1969	14	100	128	1090	495	367	675	943	469	116	25	23	4445
1970	28	50	336	1315	334	341	208	295	199	40	10	7	3163
1971	10	179	342	297	212	404	414	554	419	107	25	10	2973
1972	14	54	134	110	194	456	333	381	158	26	5	7	1872
1973	24	93	227	597	395	355	419	637	199	34	13	15	3008
1974	31	430	349	819	187	585	649	539	470	163	34	18	4274
1975	27	30	46	99	252	448	303	762	503	105	30	14	2619
1976	82	84	66	44	67	120	141	152	22	3	11	9	801
1977	15	10	3	22	27	42	75	100	55	0	0	0	349
1978	0	19	181	550	293	568	522	595	377	88	7	24	3224
1979	2	22	32	182	217	360	364	653	170	34	4	2	2042
1980	31	66	94	1208	717	403	407	487	299	127	19	13	3871
1981	19	18	42	92	136	268	292	216	45	0	0	0	1128
1982	42	531	838	529	897	688	1130	842	387	136	41	61	6122
1983	168	278	565	454	696	1167	605	983	942	382	90	50	6380
1984	49	722	947	379	288	380	319	493	237	50	22	17	3903
1985	36	188	102	70	141	200	435	283	79	14	5	24	1577
1986	21	69	154	358	1866	967	402	419	310	0	0	12	4578
1987	28	12	12	50	133	209	212	177	31	9	3	4	880
1988	9	15	89	161	93	140	165	128	51	1	0	0	852
1989	6	85	62	66	109	866	553	316	145	17	3	19	2247
1990	36	40	29	101	101	241	271	181	109	6	2	3	1120
1991	4	6	10	11	24	331	276	327	169	25	0	7	1190
1992	15	41	19	25	231	210	239	92	17	14	0	0	903
1993	14	19	128	521	361	659	516	668	386	96	19	10	3397
1994	15	16	47	44	95	163	189	184	43	3	0	6	805
1995	10	62	152	926	304	1172	755	988	730	342	81	26	5548
1996	10	9	184	340	824	573	559	811	257	67	21	14	3669
1997	15	143	1024	1988	338	295	360	335	153	32	11	10	4704
1998	19	49	91	514	727	587	582	699	787	265	42	33	4395
1999	20	86	146	367	698	436	414	644	375	83	25	19	3313
2000	19	34	41	316	678	431	438	466	160	45	12	19	2659
2001	19	21	34	51	105	228	253	255	32	13	2	6	1019
2002	6	54	183	227	217	355	425	370	148	19	7	7	2018
2003	1	61	188	239	160	267	414	641	267	35	11	5	2289
Average	**25**	**89**	**199**	**304**	**329**	**385**	**439**	**498**	**270**	**68**	**16**	**12**	**2634**

UF 12 – San Joaquin Valley East Side Minor Streams estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	0	8	50	277	100	100	19	4	0	0	0	0	558
1922	0	0	35	39	270	104	69	23	0	0	0	0	540
1923	0	15	150	92	42	31	69	19	8	0	0	0	426
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	15	8	12	166	39	92	35	0	0	0	0	367
1926	0	0	4	4	77	12	27	0	0	0	0	0	124
1927	0	12	8	42	169	46	96	8	0	0	0	0	381
1928	0	0	4	8	39	135	69	4	0	0	0	0	259
1929	0	0	0	12	23	19	15	0	0	0	0	0	69
1930	0	0	0	19	12	65	8	0	0	0	0	0	104
1931	0	0	0	0	4	0	0	0	0	0	0	0	4
1932	0	0	39	46	208	12	4	0	0	0	0	0	309
1933	0	0	0	4	4	8	0	0	0	0	0	0	16
1934	0	0	12	42	46	15	0	0	0	0	0	0	115
1935	0	0	0	42	15	54	177	15	0	0	0	0	303
1936	0	0	0	77	497	50	50	8	4	0	0	0	686
1937	0	0	0	23	258	273	50	8	0	0	0	0	612
1938	0	0	8	19	389	296	54	15	0	0	0	0	781
1939	0	0	0	4	19	19	4	0	0	0	0	0	46
1940	0	0	0	62	112	131	65	4	0	0	0	0	374
1941	0	0	27	39	89	81	69	12	0	0	0	0	317
1942	0	0	23	196	177	58	73	35	8	0	0	0	570
1943	0	12	23	212	96	389	58	12	4	0	0	0	806
1944	0	0	0	0	54	92	12	0	0	0	0	0	158
1945	0	27	19	12	254	92	31	8	4	0	0	0	447
1946	0	4	173	46	27	39	31	4	0	0	0	0	324
1947	0	0	4	0	12	23	12	0	0	0	0	0	51
1948	0	0	0	0	4	42	65	19	4	0	0	0	134
1949	0	0	0	8	23	154	12	0	0	0	0	0	197
1950	0	0	0	46	108	35	39	4	0	0	0	0	232
1951	0	189	235	239	100	116	19	15	0	0	0	0	913
1952	0	4	104	331	127	262	46	12	0	0	0	0	886
1953	0	0	15	77	12	23	12	8	0	0	0	0	147
1954	0	0	0	8	23	62	27	0	0	0	0	0	120
1955	0	0	23	108	27	19	15	8	0	0	0	0	200
1956	0	0	335	389	65	35	15	15	0	0	0	0	854
1957	0	0	0	0	23	104	15	23	0	0	0	0	165
1958	0	0	0	39	189	246	466	19	4	0	0	0	963
1959	0	0	0	15	89	12	4	0	0	0	0	0	120
1960	0	0	0	0	50	42	8	0	0	0	0	0	100
1961	0	0	0	0	0	4	0	0	0	0	0	0	4
1962	0	0	0	0	123	58	4	0	0	0	0	0	185
1963	8	0	8	4	131	65	146	27	4	0	0	0	393
1964	0	12	4	58	12	12	8	0	0	0	0	0	106
1965	0	0	296	235	31	19	73	12	0	0	0	0	666
1966	0	0	23	35	39	8	4	0	0	0	0	0	109
1967	0	0	35	154	73	104	208	39	8	0	0	0	621
1968	0	0	4	23	58	46	15	4	0	0	0	0	150
1969	0	0	19	296	277	123	69	12	4	0	0	0	800
1970	0	0	27	196	58	112	15	4	0	0	0	4	416
1971	0	12	104	46	12	42	15	4	0	0	0	0	235
1972	0	0	31	8	31	8	4	0	0	0	0	0	82
1973	0	4	8	193	239	146	35	8	0	0	0	0	633
1974	0	19	112	154	31	112	85	12	4	4	0	0	533
1975	0	0	4	8	135	166	58	12	0	0	0	0	383
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	4	146	85	123	112	23	4	0	0	0	497
1979	0	0	0	50	162	127	23	8	0	0	0	0	370
1980	0	0	8	219	262	89	23	8	4	0	0	0	613
1981	0	0	0	27	8	81	15	0	0	0	0	0	131
1982	0	19	58	273	227	262	347	27	8	4	0	0	1225
1983	0	85	293	358	296	535	139	104	19	12	8	8	1857
1984	4	129	289	82	84	65	20	10	3	1	1	1	689
1985	0	26	25	10	39	49	15	2	1	1	0	0	168
1986	0	5	22	45	613	286	34	12	6	1	0	0	1024
1987	0	0	0	2	23	51	5	0	0	0	0	0	81
1988	12	34	63	41	8	6	33	8	3	0	0	0	208
1989	3	33	45	13	19	54	4	0	7	0	2	33	213
1990	10	8	0	15	16	8	5	16	0	0	0	0	78
1991	2	2	10	2	19	49	4	2	2	0	1	0	93
1992	58	9	32	40	141	54	18	0	5	0	0	0	357
1993	37	7	183	272	169	132	17	47	20	0	0	0	884
1994	3	30	15	20	42	0	18	17	0	0	0	1	146
1995	0	4	16	202	64	315	139	166	56	18	5	2	987
1996	2	2	9	45	111	104	63	59	15	5	2	2	419
1997	41	12	177	485	79	39	28	17	7	3	2	2	892
1998	3	6	11	106	219	161	132	124	74	19	6	4	865
1999	4	7	13	49	158	83	65	44	16	5	3	2	449
2000	2	4	4	44	135	71	36	29	8	3	2	2	340
2001	2	2	3	5	12	18	17	10	2	0	0	0	71
2002	0	3	14	25	24	40	26	15	5	1	0	0	153
2003	0	3	12	13	11	17	48	52	10	2	1	0	169
Average	**2**	**9**	**40**	**79**	**100**	**87**	**48**	**15**	**4**	**1**	**0**	**1**	**386**

UF 13 – Cosumnes River at Michigan Bar estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	3	11	39	99	59	89	48	38	17	3	0	0	406
1922	0	1	14	18	104	70	84	97	33	4	1	0	426
1923	1	12	104	76	45	40	99	41	16	4	1	1	440
1924	2	2	3	5	11	5	8	3	0	0	0	0	39
1925	1	5	15	14	136	45	99	48	15	2	1	1	382
1926	1	2	4	4	52	23	48	12	2	0	0	0	148
1927	1	15	14	34	133	71	122	42	17	3	1	0	453
1928	1	8	13	12	25	146	80	22	5	1	0	0	313
1929	1	2	5	7	19	20	30	21	10	1	0	0	116
1930	0	0	6	20	19	57	35	20	6	1	0	0	164
1931	1	2	2	6	11	12	7	4	1	0	0	0	46
1932	0	2	32	28	91	47	43	51	17	3	0	0	314
1933	0	1	2	5	7	19	24	34	20	2	0	0	114
1934	1	2	18	31	31	23	10	5	3	0	0	0	124
1935	0	4	6	33	24	44	174	61	18	3	1	0	368
1936	1	2	3	58	234	74	86	39	21	4	1	0	523
1937	1	1	3	10	92	114	91	67	16	3	1	0	399
1938	1	3	30	19	149	201	125	106	39	8	2	1	684
1939	3	4	5	6	11	27	24	9	2	0	0	0	91
1940	2	1	2	77	130	160	94	28	7	2	0	0	503
1941	1	2	28	50	80	84	81	56	17	3	1	1	404
1942	1	3	24	110	106	47	85	86	37	8	2	1	510
1943	2	21	38	138	82	249	74	34	15	5	2	1	661
1944	2	3	5	11	34	47	33	39	12	2	0	0	188
1945	0	23	18	15	120	56	59	40	20	3	1	0	355
1946	3	15	108	56	28	65	65	37	11	3	1	0	392
1947	2	10	12	8	23	43	32	11	3	0	0	0	144
1948	3	4	3	9	9	33	96	76	30	5	1	0	269
1949	1	2	6	8	17	84	63	42	11	2	0	0	236
1950	1	3	3	40	69	57	92	47	15	3	1	1	332
1951	4	148	181	134	86	95	47	47	12	4	2	1	761
1952	4	10	59	141	117	131	141	117	43	13	4	3	783
1953	2	4	15	58	19	32	49	44	30	7	2	1	263
1954	2	4	6	16	35	66	65	25	7	2	1	0	229
1955	1	3	20	43	24	27	33	40	10	2	0	0	203
1956	0	3	211	202	67	53	48	76	21	5	2	1	689
1957	3	4	5	8	38	87	33	50	15	3	1	1	248
1958	2	3	8	26	112	152	225	92	36	8	3	2	669
1959	2	3	3	16	41	26	20	9	2	2	1	1	126
1960	0	1	2	7	47	51	30	19	4	2	1	0	164
1961	1	3	4	3	7	13	13	13	4	2	1	0	64
1962	0	1	3	3	79	49	63	29	11	2	1	0	241
1963	22	3	12	20	125	43	133	84	21	6	2	1	472
1964	2	16	9	28	14	17	27	29	9	3	2	1	157
1965	1	7	222	176	54	39	100	48	21	5	3	1	677
1966	2	11	20	24	26	36	39	13	4	3	3	0	181
1967	0	5	41	84	54	104	128	132	57	14	4	2	625
1968	3	4	9	19	55	45	28	14	5	3	2	0	187
1969	1	7	17	234	126	86	117	82	26	6	2	2	706
1970	3	5	31	212	66	78	28	26	10	4	2	1	466
1971	2	19	72	75	32	63	55	44	20	5	2	1	390
1972	2	5	25	16	33	50	37	23	7	3	2	1	204
1973	2	8	18	125	107	91	59	47	12	3	2	2	476
1974	3	30	75	115	35	131	104	51	16	9	3	1	573
1975	2	4	7	13	59	105	71	85	31	7	3	2	389
1976	5	7	6	5	7	12	11	8	2	0	1	1	65
1977	1	1	1	2	3	3	3	4	1	0	0	0	19
1978	0	1	16	109	63	107	110	57	22	5	1	2	493
1979	0	2	4	32	58	93	71	71	9	0	0	0	340
1980	1	5	12	211	103	91	53	41	15	4	0	0	536
1981	0	2	4	16	13	52	28	14	0	0	0	0	129
1982	2	39	88	145	167	190	238	88	24	8	3	4	996
1983	12	50	149	146	194	329	135	138	67	23	7	4	1254
1984	4	103	201	68	58	67	39	26	11	3	2	0	582
1985	3	20	16	10	27	37	43	14	4	0	0	2	176
1986	1	8	20	48	350	199	46	25	9	3	1	1	711
1987	1	1	2	4	14	22	7	4	2	2	1	0	60
1988	0	1	2	15	7	11	11	8	5	3	2	1	66
1989	0	3	4	7	12	106	39	15	5	1	1	1	194
1990	3	4	3	9	13	33	19	9	9	3	0	0	105
1991	0	1	1	0	2	50	32	24	10	2	0	0	122
1992	0	1	2	4	40	41	19	4	2	2	1	0	116
1993	0	0	14	129	102	146	100	48	23	0	0	0	562
1994	0	0	5	5	16	16	11	11	3	1	1	0	69
1995	0	4	16	197	58	275	121	145	52	16	5	1	890
1996	0	1	10	53	125	111	66	63	19	8	4	2	462
1997	0	15	171	424	73	32	25	15	7	3	2	0	767
1998	2	5	9	104	217	145	119	112	69	19	7	5	813
1999	4	7	14	57	159	86	69	46	19	6	4	2	473
2000	1	4	4	52	152	77	40	33	10	5	3	3	384
2001	3	3	5	9	21	32	32	20	3	1	1	1	131
2002	1	4	20	33	33	60	37	22	7	2	1	1	221
2003	1	4	17	20	17	25	68	68	14	4	2	1	241
Average	**2**	**9**	**30**	**57**	**66**	**74**	**64**	**43**	**16**	**4**	**1**	**1**	**367**

UF 14 – Mokelumne River at Pardee Reservoir estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	8	23	36	80	62	110	125	225	183	20	1	1	874
1922	2	2	12	22	60	57	108	334	284	40	3	1	925
1923	4	11	60	47	35	46	129	231	111	31	2	4	711
1924	8	5	6	8	17	19	56	69	2	0	0	0	190
1925	6	20	24	23	108	84	169	247	129	20	2	3	835
1926	4	6	15	15	39	49	136	95	16	1	0	0	376
1927	2	31	37	42	105	82	159	211	189	32	3	2	895
1928	5	26	19	23	35	188	140	172	29	5	0	0	642
1929	2	2	6	9	14	29	66	148	61	5	1	0	343
1930	1	1	20	19	31	65	116	116	84	6	1	1	461
1931	2	5	3	6	15	30	73	64	11	0	0	1	210
1932	2	5	19	22	59	68	109	229	196	30	3	3	745
1933	0	2	3	5	9	28	64	126	163	16	4	5	425
1934	5	6	20	24	29	73	78	40	21	1	0	0	297
1935	0	13	13	23	33	41	179	229	153	16	2	1	703
1936	4	4	4	39	138	102	187	246	145	22	4	2	897
1937	3	3	7	7	61	73	127	279	117	15	2	2	696
1938	3	6	125	27	78	158	180	334	265	51	8	4	1239
1939	7	12	12	13	15	55	125	76	17	2	1	2	337
1940	8	4	9	81	95	157	168	240	89	8	2	2	863
1941	3	6	31	38	69	95	107	285	167	31	7	3	842
1942	4	11	66	96	76	59	154	221	241	51	8	4	991
1943	3	35	54	107	76	192	184	208	113	25	6	3	1006
1944	5	4	8	14	22	46	66	188	79	11	3	0	446
1945	2	33	34	28	112	56	122	208	148	23	5	2	773
1946	5	38	84	60	33	75	153	207	80	10	2	1	748
1947	4	19	21	14	28	57	91	130	29	1	0	0	394
1948	14	12	9	28	17	29	105	206	184	25	2	2	633
1949	3	4	9	8	9	47	146	204	78	4	3	2	517
1950	1	4	5	36	60	69	173	228	150	21	3	3	753
1951	10	270	264	93	83	88	122	156	59	10	3	2	1160
1952	3	13	53	78	93	96	223	374	268	94	17	11	1323
1953	5	8	15	64	35	51	130	139	181	42	6	4	680
1954	4	8	10	16	35	84	157	165	42	8	1	0	530
1955	1	5	19	20	24	38	63	168	90	8	2	0	438
1956	1	4	239	186	78	85	139	258	206	30	14	7	1247
1957	7	9	12	13	55	85	92	179	131	13	5	1	602
1958	5	9	18	25	85	97	188	343	223	55	12	5	1065
1959	5	6	7	30	36	55	102	89	33	7	0	6	376
1960	4	2	3	7	49	72	111	119	42	4	0	2	415
1961	0	4	8	7	19	29	73	102	33	3	0	1	279
1962	1	3	10	8	65	49	180	163	140	16	4	1	640
1963	19	7	18	37	176	47	128	263	145	23	7	4	874
1964	6	40	19	17	18	27	87	137	66	10	0	1	428
1965	3	15	295	151	68	57	156	205	168	47	27	4	1196
1966	8	28	21	22	28	64	139	127	15	3	0	2	457
1967	2	15	71	51	59	119	102	294	292	118	13	4	1140
1968	7	4	9	15	69	59	86	114	36	4	4	0	407
1969	4	34	22	195	96	88	208	385	228	60	6	3	1329
1970	16	12	65	238	80	81	79	191	125	21	3	0	911
1971	14	27	46	57	50	74	111	176	190	38	0	1	784
1972	6	12	28	22	32	104	81	159	70	10	2	3	529
1973	7	13	42	73	64	64	128	284	105	11	3	1	795
1974	7	85	68	105	40	118	136	246	146	38	9	3	1001
1975	3	6	10	19	40	83	72	257	235	42	8	4	779
1976	23	24	14	11	14	28	44	72	8	2	5	2	247
1977	3	2	2	4	6	9	34	42	25	0	1	1	129
1978	1	3	28	76	57	124	147	237	213	52	6	14	958
1979	2	5	9	45	43	91	121	261	94	11	3	1	686
1980	9	18	19	252	163	97	127	206	176	66	6	2	1141
1981	2	2	7	16	26	45	110	125	32	0	0	1	366
1982	6	78	131	90	201	150	296	305	172	56	9	16	1510
1983	65	62	101	95	141	254	140	317	377	203	29	16	1800
1984	8	156	192	85	56	84	87	218	98	16	14	0	1014
1985	5	30	16	16	29	43	131	142	34	4	1	3	454
1986	2	12	25	68	331	246	140	212	140	22	5	2	1205
1987	2	0	4	8	21	41	80	80	12	3	1	1	253
1988	2	6	11	17	19	41	67	68	23	2	0	0	256
1989	0	9	9	10	24	144	152	130	64	6	1	4	553
1990	12	16	12	17	16	57	97	73	33	4	1	0	338
1991	0	1	3	3	2	42	65	132	80	9	1	0	338
1992	4	7	8	8	35	51	106	54	7	8	0	0	288
1993	2	4	16	89	63	154	152	276	191	46	7	3	1003
1994	5	4	6	8	17	38	77	92	18	2	1	2	270
1995	4	15	20	134	74	249	191	332	314	189	26	12	1560
1996	12	4	26	53	159	131	152	263	111	21	8	6	946
1997	5	36	141	437	84	85	120	163	68	8	6	5	1158
1998	5	9	12	73	126	159	152	215	348	142	17	10	1268
1999	13	14	30	57	123	83	112	240	154	26	13	4	869
2000	4	11	9	59	102	100	140	212	74	16	7	7	741
2001	8	9	8	13	19	63	92	142	13	4	3	4	378
2002	0	14	32	46	38	67	138	164	65	10	4	2	580
2003	2	19	20	43	36	60	99	223	145	19	2	2	670
Average	**6**	**19**	**37**	**52**	**61**	**82**	**124**	**191**	**119**	**26**	**5**	**3**	**725**

UF 15 – Calaveras at Jenny Lind estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	1	6	29	110	32	25	7	4	1	0	0	0	215
1922	0	0	14	15	109	42	29	9	2	0	0	0	220
1923	0	5	64	33	26	11	20	8	3	1	0	0	171
1924	1	1	2	3	4	2	3	2	0	0	0	0	18
1925	0	3	8	6	83	12	39	6	2	0	0	0	159
1926	0	1	2	3	39	5	14	1	0	0	0	0	65
1927	0	18	4	13	81	17	41	5	2	0	0	0	181
1928	0	3	8	5	21	68	21	3	1	0	0	0	130
1929	0	1	3	5	12	9	8	2	1	0	0	0	41
1930	0	0	0	12	12	37	3	2	0	0	0	0	66
1931	0	0	0	4	5	3	1	0	0	0	0	0	13
1932	0	0	38	21	63	8	4	4	1	0	0	0	139
1933	0	0	0	10	7	8	3	3	1	0	0	0	32
1934	0	0	13	14	23	6	1	0	1	0	0	0	58
1935	0	1	4	34	8	32	58	9	2	2	0	0	150
1936	0	0	1	31	197	21	26	5	4	1	0	0	286
1937	0	0	2	13	99	82	24	8	3	1	0	0	232
1938	0	1	19	13	161	126	30	15	5	2	0	0	372
1939	1	2	3	4	10	8	4	2	0	0	0	0	34
1940	0	0	1	46	54	59	40	5	2	1	0	0	208
1941	0	2	18	24	47	50	49	8	3	1	0	0	202
1942	0	1	15	68	40	20	28	20	6	2	0	0	200
1943	0	10	19	63	43	110	19	8	3	1	0	0	276
1944	1	1	2	6	21	36	6	4	1	0	0	0	78
1945	0	11	9	5	67	41	15	5	2	0	0	0	155
1946	0	4	45	18	9	19	16	4	2	0	0	0	117
1947	0	6	6	3	10	16	6	1	1	0	0	0	49
1948	0	1	2	2	4	24	37	9	3	0	0	0	82
1949	0	0	3	4	11	50	9	2	1	0	0	0	80
1950	0	1	1	33	41	18	22	6	1	0	0	0	123
1951	1	64	84	61	31	46	9	9	2	1	0	0	308
1952	0	3	39	110	45	96	26	12	4	3	0	1	339
1953	1	2	13	34	5	13	9	6	3	0	1	0	87
1954	0	2	3	8	17	29	12	3	2	0	1	0	77
1955	0	1	16	37	14	10	9	6	1	0	0	0	94
1956	0	0	133	114	28	16	9	14	3	1	0	0	318
1957	1	1	2	4	12	34	5	11	2	0	0	0	72
1958	0	1	4	22	75	89	146	11	5	1	0	0	354
1959	0	1	2	7	39	6	3	1	0	0	0	0	59
1960	0	0	1	3	24	7	5	3	0	0	0	0	43
1961	0	0	2	1	2	5	3	1	0	0	0	0	14
1962	0	0	1	2	76	34	6	2	0	0	0	0	121
1963	1	1	3	14	37	22	60	14	4	2	1	1	160
1964	1	9	4	20	6	7	7	4	2	1	0	0	61
1965	0	6	104	81	14	12	49	8	3	2	1	0	280
1966	1	7	15	16	17	7	4	1	0	0	0	0	68
1967	0	2	28	62	18	49	112	26	7	2	1	0	307
1968	1	2	3	8	22	16	5	2	1	0	0	0	60
1969	0	2	16	159	113	52	34	10	4	2	1	1	394
1970	1	3	13	98	25	45	9	5	3	2	1	1	206
1971	1	12	52	24	7	19	8	4	3	2	1	1	134
1972	0	2	25	7	19	5	5	3	1	0	0	1	68
1973	0	2	7	75	91	56	16	5	3	3	2	1	261
1974	1	8	37	40	9	69	41	7	3	3	1	1	220
1975	1	1	3	6	36	73	24	9	1	1	0	1	156
1976	1	2	1	2	2	4	2	1	1	0	1	0	17
1977	0	0	0	1	1	1	1	1	1	1	1	0	8
1978	0	0	4	65	49	56	51	12	3	1	0	1	242
1979	0	1	3	31	66	64	17	7	2	1	0	0	192
1980	0	2	8	92	82	35	12	5	3	3	1	2	245
1981	0	1	2	20	6	27	7	1	1	1	1	0	67
1982	0	11	28	98	82	103	113	13	5	3	1	2	459
1983	5	38	66	100	106	186	49	33	8	5	2	2	600
1984	3	53	84	20	25	23	10	6	3	1	0	0	228
1985	2	9	8	5	18	24	8	2	1	1	1	1	80
1986	1	5	6	13	188	83	13	6	2	0	0	1	318
1987	1	1	2	3	8	18	3	0	0	0	0	0	36
1988	0	0	1	5	1	3	3	1	0	1	1	0	16
1989	0	0	2	3	3	19	3	1	0	0	0	0	31
1990	1	1	1	4	11	11	3	1	1	0	0	0	34
1991	0	0	0	0	1	40	5	1	0	0	0	0	47
1992	1	0	1	4	38	15	3	1	0	0	1	0	64
1993	0	0	9	93	46	40	19	5	3	0	0	1	216
1994	1	1	3	3	13	4	3	2	0	1	0	1	32
1995	0	0	6	110	13	145	28	42	11	3	0	0	358
1996	2	3	8	43	75	39	17	10	4	3	1	1	206
1997	1	7	108	192	24	10	6	3	1	0	0	0	352
1998	1	4	5	75	179	58	60	32	12	5	3	2	436
1999	2	4	5	43	89	25	21	8	4	1	1	1	204
2000	1	2	2	34	101	35	10	9	3	1	2	1	201
2001	3	2	2	7	19	18	9	3	1	0	1	1	66
2002	0	2	19	18	13	25	6	3	1	0	0	0	87
2003	0	1	16	7	5	7	18	9	2	1	0	0	66
Average	**0**	**4**	**16**	**33**	**41**	**35**	**20**	**7**	**2**	**1**	**0**	**0**	**159**

UF 16 – Stanislaus River at Melones Reservoir estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	13	28	50	117	96	157	189	309	239	53	9	4	1264
1922	4	6	25	35	107	103	170	495	378	87	17	4	1431
1923	6	16	79	78	55	77	207	356	161	73	12	10	1130
1924	12	9	10	12	27	24	70	85	11	1	0	0	261
1925	6	27	32	31	153	120	261	356	172	51	11	5	1225
1926	8	10	14	13	74	79	216	139	41	7	3	3	607
1927	5	23	61	52	162	134	267	332	245	63	14	7	1365
1928	10	41	26	31	48	253	214	240	67	13	5	3	951
1929	2	8	10	13	23	44	100	196	98	18	4	1	517
1930	1	4	20	31	48	104	184	169	133	27	5	6	732
1931	8	10	8	14	21	39	93	92	25	6	0	0	316
1932	3	5	58	43	132	117	204	385	299	85	19	5	1355
1933	6	4	8	12	14	38	106	178	206	28	6	4	610
1934	3	7	20	29	45	101	100	69	42	9	1	1	427
1935	4	16	20	43	47	70	315	379	249	53	13	4	1213
1936	8	8	8	54	206	154	288	332	193	51	12	8	1322
1937	7	6	12	23	110	124	192	411	167	39	11	5	1107
1938	7	9	179	51	176	240	304	556	400	113	28	13	2076
1939	18	21	16	22	22	74	179	110	44	13	2	5	526
1940	15	9	11	128	173	264	257	346	155	30	8	4	1400
1941	8	7	45	55	108	161	184	433	233	81	17	4	1336
1942	11	12	76	115	103	105	249	354	323	112	18	7	1485
1943	7	43	58	165	118	303	306	278	191	65	16	3	1553
1944	8	7	11	19	31	69	100	259	123	38	8	2	675
1945	7	48	44	37	183	97	208	333	230	70	14	7	1278
1946	22	50	126	86	49	115	238	306	135	36	10	5	1178
1947	10	30	32	22	45	94	136	182	62	14	5	2	634
1948	17	9	10	24	18	38	156	316	247	51	10	2	898
1949	5	13	17	15	19	61	194	277	115	20	7	2	745
1950	4	7	8	42	73	95	255	339	194	45	9	5	1076
1951	10	366	412	120	113	127	175	209	114	32	9	5	1692
1952	10	17	58	106	106	142	334	590	370	144	34	9	1920
1953	6	11	24	77	41	73	209	192	231	89	16	7	976
1954	7	10	12	21	44	145	264	261	90	25	6	4	889
1955	5	9	25	37	37	54	102	229	148	27	7	1	681
1956	4	9	365	274	102	121	204	396	283	93	20	10	1881
1957	11	16	14	15	61	116	136	281	189	38	11	7	895
1958	13	15	19	35	117	172	282	568	325	100	27	5	1678
1959	12	11	8	37	66	87	148	115	68	17	4	13	586
1960	6	5	5	14	61	102	161	157	71	10	1	1	594
1961	0	11	12	10	24	46	108	120	57	7	5	4	404
1962	3	6	9	11	95	76	271	251	206	56	7	3	994
1963	14	8	19	67	216	67	156	417	219	63	13	8	1267
1964	10	48	28	36	31	50	122	183	106	21	5	4	644
1965	6	22	363	217	103	100	238	306	245	98	40	12	1750
1966	8	46	38	42	39	101	205	167	41	12	4	1	704
1967	3	25	114	90	81	196	176	493	491	212	37	14	1932
1968	9	10	13	24	95	90	144	161	70	13	7	4	640
1969	8	39	49	355	181	154	346	595	336	116	24	9	2212
1970	17	20	74	355	118	143	123	255	172	30	11	4	1322
1971	5	39	72	79	71	109	172	239	209	65	11	3	1074
1972	6	21	50	45	43	151	124	235	76	20	2	2	775
1973	12	17	45	117	128	126	211	417	168	29	6	5	1281
1974	11	103	106	159	64	200	247	372	209	62	20	7	1560
1975	8	15	23	28	71	143	123	401	332	76	19	10	1249
1976	32	26	21	18	19	43	75	99	17	5	8	10	373
1977	2	5	4	6	8	13	35	44	36	0	0	2	155
1978	0	5	37	109	108	223	261	393	302	98	26	27	1589
1979	16	7	16	79	108	160	206	385	142	28	9	7	1163
1980	11	23	32	383	257	136	202	321	268	134	26	13	1806
1981	9	7	12	40	40	82	164	165	57	6	3	5	590
1982	10	100	187	169	329	253	433	441	251	109	26	38	2346
1983	88	122	160	183	245	411	213	504	632	286	77	29	2950
1984	24	225	153	144	98	137	157	297	148	41	10	0	1434
1985	11	48	31	26	48	79	206	171	53	3	0	2	678
1986	0	40	43	99	532	353	253	300	215	57	19	25	1936
1987	13	3	9	13	29	59	104	94	27	11	6	4	372
1988	3	10	14	27	35	59	86	83	40	12	6	3	378
1989	9	6	14	18	30	181	234	162	94	24	7	1	780
1990	22	17	13	25	24	83	134	87	51	12	1	0	469
1991	3	2	3	3	1	81	97	183	106	21	4	6	510
1992	12	14	13	18	72	78	136	95	17	19	6	6	486
1993	6	8	27	182	108	234	249	407	241	76	17	3	1558
1994	10	10	13	15	29	61	106	159	41	4	0	6	454
1995	5	24	26	230	100	415	276	484	460	261	50	18	2349
1996	11	10	42	86	276	215	255	377	175	38	4	0	1489
1997	7	50	265	659	90	129	180	231	110	22	11	4	1758
1998	12	17	20	152	250	231	245	341	511	245	40	28	2092
1999	15	31	39	101	197	124	173	370	215	49	16	17	1347
2000	9	18	12	91	189	160	222	292	128	24	7	10	1162
2001	13	13	12	23	36	96	134	200	28	5	2	4	566
2002	6	20	57	62	55	102	213	216	97	15	5	1	849
2003	3	31	48	58	55	96	155	325	181	22	13	7	994
Average	**10**	**28**	**53**	**82**	**96**	**128**	**192**	**283**	**176**	**53**	**13**	**7**	**1121**

UF 17 – San Joaquin Valley Floor estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	0	14	20	63	51	40	18	8	2	0	0	0	216
1922	0	0	31	26	107	66	33	13	5	0	0	0	281
1923	0	3	36	41	28	13	43	10	5	0	0	0	179
1924	0	0	2	3	5	8	0	0	0	0	0	0	18
1925	0	2	3	3	38	15	26	8	2	0	0	0	97
1926	0	0	3	3	15	8	33	2	0	0	0	0	64
1927	0	18	13	10	84	33	38	8	3	0	0	0	207
1928	0	13	10	15	21	38	20	3	0	0	0	0	120
1929	0	0	3	3	8	10	2	2	0	0	0	0	28
1930	0	0	0	8	10	15	3	0	0	0	0	0	36
1931	0	0	0	3	3	2	0	0	0	0	0	0	8
1932	0	0	61	43	138	25	10	8	3	0	0	0	288
1933	0	0	0	10	10	16	5	5	0	0	0	0	46
1934	0	0	3	5	15	5	3	0	0	0	0	0	31
1935	0	2	5	59	28	51	87	23	5	0	0	0	260
1936	0	0	3	15	194	44	38	10	5	0	0	0	309
1937	0	0	5	13	174	94	48	15	5	0	0	0	354
1938	0	0	25	38	181	324	64	31	10	3	0	0	676
1939	2	3	3	5	15	20	10	3	0	0	0	0	61
1940	2	0	3	84	82	56	26	10	2	0	0	0	265
1941	0	0	38	41	125	99	79	20	8	3	0	0	413
1942	0	3	43	36	41	43	36	23	8	2	0	0	235
1943	0	5	5	56	38	112	31	13	5	0	0	0	265
1944	0	3	3	5	23	36	10	5	2	0	0	0	87
1945	0	8	5	5	87	74	30	10	5	0	0	0	224
1946	0	2	26	10	10	23	23	5	3	0	0	0	102
1947	0	8	13	5	13	8	5	2	0	0	0	0	54
1948	0	0	0	3	13	38	8	2	0	0	0	0	64
1949	0	0	0	3	8	36	10	2	0	0	0	0	59
1950	0	0	0	13	33	10	13	2	0	0	0	0	71
1951	0	69	76	41	31	25	10	8	0	0	0	0	260
1952	0	0	33	110	38	125	51	19	5	2	0	0	383
1953	0	2	13	31	8	8	8	5	2	0	0	0	77
1954	0	0	3	5	15	26	15	5	0	0	0	0	69
1955	0	0	2	13	5	7	6	9	1	0	0	0	43
1956	0	0	208	101	42	19	20	18	4	1	0	0	413
1957	0	1	2	3	9	14	6	13	2	0	0	0	50
1958	0	0	3	11	43	108	167	20	6	1	0	0	359
1959	0	1	1	4	24	6	3	2	0	0	0	0	41
1960	0	0	1	2	21	9	8	4	0	0	0	0	45
1961	0	1	2	2	3	4	2	1	0	0	0	0	15
1962	0	1	2	119	41	11	4	1	0	0	0	0	179
1963	0	0	1	21	44	19	67	25	6	1	0	0	184
1964	1	9	3	7	5	8	8	4	1	0	0	0	46
1965	0	7	64	76	18	16	59	14	5	1	0	0	260
1966	0	17	21	22	16	9	5	2	0	0	0	0	92
1967	0	0	41	31	23	64	166	54	15	3	0	0	397
1968	0	0	5	5	10	10	5	3	0	0	0	0	38
1969	0	0	13	191	196	125	71	20	8	3	0	0	627
1970	3	3	5	54	18	48	10	2	0	0	0	0	143
1971	0	3	20	15	8	8	5	5	3	0	0	0	67
1972	0	1	7	3	8	3	3	1	0	0	0	0	26
1973	0	1	3	22	99	85	30	9	2	0	0	0	251
1974	0	4	12	37	12	60	63	9	2	0	0	0	199
1975	0	1	4	6	55	66	45	18	4	1	0	0	200
1976	0	2	2	2	5	6	3	1	0	0	0	0	21
1977	0	0	0	0	0	1	1	1	0	0	0	0	3
1978	0	0	8	82	140	116	118	37	7	2	0	0	510
1979	0	4	4	42	60	76	32	13	4	3	0	0	238
1980	0	3	3	73	92	76	23	12	4	0	0	0	286
1981	1	1	2	14	7	18	9	3	0	0	0	1	56
1982	0	4	8	87	76	113	155	23	7	3	0	1	477
1983	4	32	90	139	183	274	88	55	15	6	2	2	890
1984	2	23	76	26	23	19	10	5	2	0	1	1	188
1985	1	5	4	4	12	17	8	2	3	1	0	0	57
1986	0	2	5	5	179	102	22	9	3	1	1	0	329
1987	0	1	1	2	7	13	3	1	0	0	1	0	29
1988	1	0	1	4	2	3	4	1	1	0	1	0	18
1989	0	0	2	2	4	13	3	1	0	1	0	1	27
1990	0	0	0	3	4	4	1	1	0	1	0	0	14
1991	0	0	0	0	1	41	8	2	4	2	0	0	58
1992	1	0	0	2	32	10	1	5	0	6	0	0	57
1993	0	0	4	121	52	50	24	8	5	0	1	1	266
1994	0	0	2	2	6	3	3	6	5	4	1	0	32
1995	1	0	1	89	21	199	44	39	12	2	1	4	413
1996	0	1	5	20	69	56	26	9	2	8	5	0	201
1997	1	18	160	328	61	25	11	4	2	2	2	0	614
1998	4	2	3	54	183	92	97	42	25	8	4	2	516
1999	1	2	4	13	31	13	20	6	4	2	1	0	97
2000	1	0	0	16	106	60	17	8	2	1	2	0	213
2001	1	1	1	5	13	24	12	3	1	2	2	1	66
2002	0	1	15	14	6	9	4	2	1	1	1	0	54
2003	0	2	15	8	5	8	11	10	1	1	0	0	61
Average	**0**	**4**	**16**	**33**	**45**	**44**	**28**	**10**	**3**	**1**	**0**	**0**	**184**

UF 18 – Tuolumne River at Don Pedro Reservoir estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	41	53	70	196	156	232	254	442	458	95	14	7	2018
1922	6	6	55	72	189	181	260	718	752	195	27	10	2471
1923	11	32	124	114	79	113	266	521	319	158	27	22	1786
1924	29	14	14	25	41	38	139	209	17	17	0	0	543
1925	15	48	51	44	227	166	350	538	352	112	23	6	1932
1926	15	16	33	19	101	128	382	304	89	19	3	1	1110
1927	5	74	60	63	223	160	352	454	476	146	25	13	2051
1928	15	87	44	51	82	343	264	448	153	28	7	3	1525
1929	0	6	18	19	40	99	148	378	225	41	5	0	979
1930	2	1	23	39	70	147	246	275	286	49	10	0	1148
1931	9	20	11	26	45	66	154	209	49	10	1	2	602
1932	2	6	94	79	240	172	245	524	533	176	32	12	2115
1933	6	3	11	27	31	82	171	251	426	75	16	5	1104
1934	0	8	41	65	90	150	186	149	95	12	6	5	807
1935	11	48	52	106	107	137	465	531	511	110	21	4	2103
1936	12	20	18	105	352	207	393	520	390	122	18	3	2160
1937	4	9	27	31	274	210	296	634	399	91	17	5	1997
1938	9	19	312	102	323	425	422	720	712	305	55	20	3424
1939	40	44	37	43	60	144	282	216	74	17	7	17	981
1940	45	17	20	226	250	344	325	571	348	54	11	2	2213
1941	11	15	129	115	219	260	280	663	535	224	30	8	2489
1942	7	38	162	165	142	149	337	472	598	253	30	3	2356
1943	5	86	93	246	164	372	385	495	353	141	25	5	2370
1944	12	16	21	43	80	135	164	456	267	88	11	2	1295
1945	9	89	81	56	305	165	284	455	462	163	17	0	2086
1946	60	98	208	119	70	156	348	488	265	56	8	3	1879
1947	16	64	77	42	80	136	192	352	111	21	0	3	1094
1948	38	28	17	40	26	73	221	436	434	88	5	3	1409
1949	5	8	18	20	39	123	318	437	240	29	5	4	1246
1950	4	14	13	78	124	128	329	468	319	62	7	0	1546
1951	23	522	509	159	139	169	254	373	257	60	10	0	2475
1952	9	31	121	219	148	240	466	791	594	292	54	17	2982
1953	9	12	53	145	63	107	270	259	414	170	18	5	1525
1954	7	17	24	42	102	213	349	448	185	38	3	1	1429
1955	4	15	50	67	61	83	144	367	292	39	1	1	1124
1956	4	13	650	431	156	178	282	560	582	244	41	12	3153
1957	21	24	24	35	124	154	173	380	405	67	9	2	1418
1958	11	18	48	58	177	257	425	761	579	232	55	17	2638
1959	6	6	5	79	116	119	224	232	139	18	1	45	990
1960	5	10	12	25	119	149	238	304	163	16	6	5	1052
1961	5	16	33	19	46	71	165	220	122	19	12	4	732
1962	5	8	24	24	233	139	389	362	446	117	14	5	1766
1963	17	9	29	93	309	112	248	534	463	179	32	16	2041
1964	18	105	48	54	52	75	169	323	225	41	12	8	1130
1965	9	52	517	289	141	141	326	449	476	228	87	23	2738
1966	7	130	89	78	75	146	299	355	86	22	9	10	1306
1967	7	67	222	135	115	306	289	649	744	473	78	20	3105
1968	10	11	32	47	134	123	187	288	141	19	10	5	1007
1969	13	81	81	578	286	263	490	960	716	316	55	13	3852
1970	39	39	112	408	134	192	161	411	336	95	23	12	1962
1971	11	87	123	121	94	146	194	349	418	110	20	10	1683
1972	6	35	76	59	78	182	156	344	220	28	11	11	1206
1973	11	36	86	140	186	173	259	655	400	57	20	6	2029
1974	17	171	136	180	69	229	274	561	442	122	28	10	2239
1975	15	12	35	54	144	224	176	582	596	151	28	15	2032
1976	70	56	32	8	38	71	100	209	40	14	21	14	673
1977	12	9	4	11	17	23	79	106	105	12	3	3	384
1978	2	12	96	190	196	331	354	602	663	316	61	82	2905
1979	12	29	33	154	151	239	260	626	315	67	17	10	1913
1980	29	42	49	532	394	221	313	497	539	347	59	22	3044
1981	11	8	26	48	63	126	243	328	151	22	19	9	1054
1982	29	174	220	228	388	340	660	693	567	323	80	104	3806
1983	153	176	245	261	328	560	304	696	1016	630	205	58	4632
1984	44	310	402	175	151	200	203	536	330	93	21	7	2472
1985	26	85	48	41	69	126	302	341	135	23	15	18	1229
1986	31	49	94	129	616	493	320	540	507	144	30	18	2971
1987	18	8	13	6	37	99	194	203	65	10	8	3	664
1988	11	26	50	70	57	105	159	213	98	24	6	1	820
1989	4	21	27	37	61	285	309	321	207	28	2	10	1312
1990	49	25	22	38	53	130	220	182	100	20	4	1	844
1991	1	8	5	5	8	168	180	336	295	67	19	7	1099
1992	16	25	18	25	93	115	230	189	46	59	14	4	834
1993	10	14	46	278	161	319	335	631	524	226	54	25	2623
1994	19	7	18	22	53	108	195	275	119	33	25	10	884
1995	10	64	58	348	160	579	385	659	811	652	162	35	3923
1996	12	7	72	129	348	290	323	576	389	133	26	11	2316
1997	8	112	387	1033	170	232	277	542	336	57	49	21	3224
1998	10	18	35	202	358	354	351	477	855	559	84	35	3338
1999	21	48	68	136	252	171	262	569	436	109	35	20	2127
2000	11	17	10	132	277	253	334	539	322	70	35	18	2018
2001	17	17	22	32	60	179	227	408	55	12	2	2	1033
2002	4	40	93	109	79	141	301	372	223	24	8	6	1400
2003	0	69	69	89	65	124	218	520	372	55	30	15	1626
Average	**17**	**48**	**88**	**125**	**147**	**191**	**274**	**446**	**353**	**123**	**26**	**12**	**1850**

UF 19 – Merced River at Exchequer Reservoir estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	14	20	32	99	79	107	142	246	216	46	9	4	1014
1922	3	4	44	40	163	117	124	417	400	86	16	6	1420
1923	6	16	58	66	50	56	158	288	155	67	13	9	942
1924	13	9	8	10	15	19	67	91	13	4	2	1	252
1925	5	21	23	21	106	77	180	261	147	49	15	5	910
1926	8	8	12	10	63	55	217	173	48	10	4	2	610
1927	2	31	27	33	137	87	179	296	226	53	10	3	1084
1928	9	44	22	22	48	159	142	206	68	15	2	0	737
1929	3	5	7	11	22	47	78	193	97	19	2	2	486
1930	3	2	4	13	26	73	118	137	112	18	3	4	513
1931	3	7	4	10	19	26	74	92	20	4	3	0	262
1932	1	4	85	52	152	79	131	278	251	64	12	4	1113
1933	5	3	5	14	15	43	88	133	179	25	3	3	516
1934	2	4	27	23	45	65	92	56	33	8	2	4	361
1935	5	17	23	79	50	86	275	322	258	41	13	2	1171
1936	2	8	8	37	254	100	219	299	163	52	10	0	1152
1937	4	5	19	22	226	131	163	400	192	45	8	0	1215
1938	1	6	143	67	240	326	229	442	442	140	32	12	2080
1939	22	20	17	19	28	71	151	101	32	10	1	5	477
1940	16	7	7	124	135	148	182	305	140	25	6	0	1095
1941	2	6	88	71	148	154	158	394	296	108	22	7	1454
1942	7	16	76	84	82	90	185	283	336	100	20	8	1287
1943	7	36	39	135	96	238	219	292	152	55	15	5	1289
1944	4	8	10	20	47	81	80	250	133	44	7	0	684
1945	1	36	33	26	184	113	156	264	206	60	15	3	1097
1946	20	42	103	55	33	82	193	262	114	32	6	0	942
1947	12	37	48	27	40	62	104	172	51	11	0	0	564
1948	9	11	7	13	11	34	107	236	217	38	5	0	688
1949	4	4	8	10	23	78	142	237	112	18	2	0	638
1950	2	6	7	37	61	53	172	233	125	21	2	0	719
1951	6	259	272	88	72	86	130	176	104	28	4	0	1225
1952	4	9	59	159	65	157	206	445	305	116	29	9	1563
1953	5	7	31	60	28	41	120	122	158	50	4	0	626
1954	3	6	8	20	48	99	170	223	74	17	0	0	668
1955	2	6	19	30	23	36	65	194	137	22	0	0	534
1956	2	4	373	224	82	88	154	319	287	109	24	9	1675
1957	8	13	10	14	41	63	88	200	176	30	5	0	648
1958	5	9	22	32	83	163	248	411	295	102	28	11	1409
1959	5	6	5	21	56	55	118	112	51	6	0	20	455
1960	6	3	4	10	55	61	125	147	64	8	0	0	483
1961	2	8	16	8	17	30	84	95	44	4	3	1	312
1962	1	3	10	10	159	74	198	206	205	52	10	0	928
1963	6	4	6	42	173	61	131	268	210	68	14	1	984
1964	6	38	22	22	19	28	76	140	81	14	0	1	447
1965	3	21	224	174	61	69	165	259	242	96	37	9	1360
1966	5	72	46	41	32	65	159	182	47	11	4	5	669
1967	12	14	112	60	51	168	213	363	428	237	43	15	1716
1968	7	8	14	17	48	48	94	121	50	10	4	5	426
1969	2	22	37	346	217	163	264	565	396	142	26	8	2188
1970	19	18	34	159	65	109	89	218	127	32	8	5	883
1971	2	19	54	48	39	59	98	183	180	42	7	2	733
1972	0	11	40	23	34	82	80	167	96	11	1	12	557
1973	6	14	30	66	125	115	131	381	201	32	13	4	1118
1974	6	56	59	88	37	132	161	326	203	45	16	5	1134
1975	4	5	16	24	108	130	98	312	330	64	13	8	1112
1976	25	21	14	10	19	33	49	93	19	7	6	3	299
1977	5	3	1	3	4	8	31	39	46	8	2	1	151
1978	1	1	35	113	148	188	234	378	407	163	39	47	1754
1979	16	16	13	97	107	137	132	344	155	37	17	4	1075
1980	10	9	21	266	258	156	172	286	289	137	31	12	1647
1981	10	6	10	21	27	52	122	159	69	16	5	5	502
1982	6	50	64	135	203	189	429	418	263	123	36	31	1947
1983	51	84	150	186	232	370	197	382	656	352	97	29	2786
1984	28	114	204	93	81	97	129	265	114	47	8	0	1180
1985	8	28	21	19	33	59	147	171	57	12	5	6	566
1986	12	16	34	45	362	287	191	316	228	51	12	5	1559
1987	7	3	5	6	18	36	95	95	25	6	3	0	299
1988	4	15	13	28	24	48	93	107	55	19	6	3	415
1989	1	5	10	12	23	96	160	132	73	13	5	5	535
1990	15	11	9	15	21	56	114	87	48	23	6	2	407
1991	2	1	1	5	3	96	81	184	145	36	4	2	560
1992	5	11	8	13	54	51	131	105	31	33	6	2	450
1993	2	7	22	190	100	157	181	384	280	95	21	8	1447
1994	7	5	8	9	28	40	87	117	43	9	9	0	362
1995	16	22	25	200	70	364	206	388	471	340	59	13	2174
1996	11	7	30	66	191	161	197	317	157	51	14	6	1208
1997	2	57	230	634	102	116	169	278	114	29	13	6	1750
1998	1	7	17	103	253	168	201	251	478	286	51	29	1845
1999	15	19	28	49	111	67	128	282	154	35	11	7	906
2000	4	10	2	57	171	116	166	276	130	26	11	7	976
2001	4	6	10	13	31	86	108	215	33	10	3	1	520
2002	2	13	47	44	35	59	151	178	85	14	4	2	634
2003	0	31	34	41	34	62	112	270	170	32	15	6	807
Average	**7**	**20**	**43**	**66**	**85**	**101**	**147**	**241**	**171**	**56**	**13**	**6**	**956**

UF 20 – Chowchilla River at Buchanan Reservoir estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	1	1	3	22	13	15	6	2	1	0	0	0	64
1922	0	0	12	10	42	26	13	5	2	0	0	0	110
1923	0	1	14	16	11	5	17	4	2	0	0	0	70
1924	0	0	1	1	2	3	0	0	0	0	0	0	7
1925	0	1	1	1	15	6	10	3	1	0	0	0	38
1926	0	0	1	1	6	3	13	1	0	0	0	0	25
1927	0	7	5	4	33	13	15	3	1	0	0	0	81
1928	0	5	4	6	8	15	8	1	0	0	0	0	47
1929	0	0	1	1	3	4	1	1	0	0	0	0	11
1930	0	0	0	3	4	6	1	0	0	0	0	0	14
1931	0	0	0	1	1	1	0	0	0	0	0	0	3
1932	0	0	24	17	54	10	4	3	1	0	0	0	113
1933	0	0	0	4	4	6	2	2	0	0	0	0	18
1934	0	0	1	2	6	2	1	0	0	0	0	0	12
1935	0	1	2	23	11	20	34	9	2	0	0	0	102
1936	0	0	1	6	76	17	15	4	2	0	0	0	121
1937	0	0	2	5	68	37	19	6	2	0	0	0	139
1938	0	0	10	15	71	127	25	12	4	1	0	0	265
1939	1	1	1	2	6	8	4	1	0	0	0	0	24
1940	1	0	1	33	32	22	10	4	1	0	0	0	104
1941	0	0	15	16	49	39	31	8	3	1	0	0	162
1942	0	1	17	14	16	17	14	9	3	1	0	0	92
1943	0	2	2	22	15	44	12	5	2	0	0	0	104
1944	0	1	1	2	9	14	4	2	1	0	0	0	34
1945	0	3	2	2	34	29	12	4	2	0	0	0	88
1946	0	1	10	4	4	9	9	2	1	0	0	0	40
1947	0	3	5	2	5	3	2	1	0	0	0	0	21
1948	0	0	0	0	1	5	15	3	1	0	0	0	25
1949	0	0	0	1	3	14	4	1	0	0	0	0	23
1950	0	0	0	5	13	4	5	1	0	0	0	0	28
1951	0	27	30	16	12	10	4	3	0	0	0	0	102
1952	0	0	13	43	15	49	20	7	2	1	0	0	150
1953	0	1	5	12	3	3	3	2	1	0	0	0	30
1954	0	0	1	2	6	10	6	2	0	0	0	0	27
1955	0	0	1	5	2	3	3	4	0	0	0	0	18
1956	0	0	82	40	16	7	8	7	2	0	0	0	162
1957	0	0	1	1	4	6	2	5	1	0	0	0	20
1958	0	0	1	5	17	42	65	8	2	1	0	0	141
1959	0	0	0	2	10	2	1	1	0	0	0	0	16
1960	0	0	0	1	8	4	3	2	0	0	0	0	18
1961	0	1	1	1	1	1	1	0	0	0	0	0	6
1962	0	0	0	1	47	16	4	2	0	0	0	0	70
1963	0	0	0	8	18	8	26	10	2	1	0	0	73
1964	0	4	1	3	2	3	3	2	0	0	0	0	18
1965	0	3	25	30	7	6	23	6	2	0	0	0	102
1966	0	7	8	8	6	4	2	1	0	0	0	0	36
1967	0	0	16	12	9	25	65	21	6	1	0	0	155
1968	0	0	2	2	4	4	2	1	0	0	0	0	15
1969	0	0	5	75	77	49	28	8	3	1	0	0	246
1970	0	1	2	21	7	19	4	2	1	0	0	0	57
1971	0	1	8	6	3	3	2	2	1	0	0	0	26
1972	0	0	3	1	3	1	1	0	0	0	0	0	9
1973	0	1	1	9	39	33	12	4	1	0	0	0	100
1974	0	2	5	14	5	24	25	4	1	0	0	0	80
1975	0	0	2	2	22	26	18	7	2	0	0	0	79
1976	0	1	1	1	2	3	1	0	0	0	0	0	9
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	3	32	55	45	46	15	3	1	0	0	200
1979	0	1	1	16	24	30	13	5	2	1	0	0	93
1980	0	1	1	28	36	30	9	5	2	0	0	0	112
1981	0	0	1	6	3	7	4	1	0	0	0	0	22
1982	0	1	3	34	30	44	61	9	2	1	0	1	186
1983	1	13	35	55	72	108	35	22	6	2	1	1	351
1984	1	9	30	10	9	7	4	2	1	0	0	0	73
1985	0	2	2	2	5	7	3	1	1	0	0	0	23
1986	0	1	2	2	70	40	9	4	1	0	0	0	129
1987	0	0	0	1	3	5	1	0	0	0	0	0	10
1988	0	0	0	2	1	1	1	1	0	0	0	0	6
1989	0	0	1	1	1	5	1	0	0	0	0	0	9
1990	0	0	0	1	1	2	1	0	0	0	0	0	5
1991	0	0	0	0	0	16	3	1	1	1	0	0	22
1992	0	0	0	1	12	4	0	2	0	2	0	0	21
1993	0	0	2	48	20	20	10	3	2	0	0	1	106
1994	0	0	1	1	3	1	1	2	2	2	0	0	13
1995	0	0	1	35	8	78	17	15	5	1	0	2	162
1996	0	0	2	8	27	22	10	4	1	3	2	0	79
1997	0	7	63	128	24	10	4	2	1	1	1	0	241
1998	1	1	1	21	72	36	38	16	10	3	2	1	202
1999	0	1	2	5	12	5	8	2	2	1	0	0	38
2000	0	0	0	6	41	24	7	3	1	0	1	0	83
2001	0	0	0	2	5	10	5	1	0	1	1	0	25
2002	0	0	6	5	2	4	2	1	0	1	0	0	21
2003	0	1	6	3	2	3	4	4	0	0	0	0	23
Average	**0**	**1**	**6**	**12**	**18**	**17**	**11**	**4**	**1**	**0**	**0**	**0**	**70**

UF 21 – Fresno River near Daulton estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	1	2	3	16	14	15	11	9	5	1	0	0	77
1922	0	0	11	9	37	30	21	20	5	2	0	0	135
1923	0	2	18	17	12	9	31	16	8	3	0	0	116
1924	1	1	1	1	1	3	5	1	0	0	0	0	14
1925	0	1	1	1	18	7	16	9	6	1	0	0	60
1926	0	1	1	2	7	4	18	6	1	0	0	0	40
1927	0	7	5	4	32	15	20	10	6	1	0	0	100
1928	1	5	4	6	9	16	14	5	1	0	0	0	61
1929	0	1	1	1	3	4	6	6	3	0	0	0	25
1930	0	0	0	3	4	8	3	3	2	0	0	0	23
1931	0	1	0	1	1	1	1	0	0	0	0	0	5
1932	0	0	15	11	27	11	14	14	8	2	0	0	102
1933	0	0	1	2	3	6	7	6	6	0	0	0	31
1934	0	0	2	2	4	4	2	1	1	0	0	0	16
1935	0	1	3	5	11	17	35	17	10	3	0	0	102
1936	1	1	1	4	47	14	20	16	7	1	0	0	112
1937	0	1	2	4	55	34	20	16	10	3	0	0	145
1938	1	1	10	10	66	108	41	25	18	11	3	1	295
1939	2	3	3	4	6	10	13	5	2	0	0	0	48
1940	1	1	1	27	29	26	19	12	4	1	0	0	121
1941	0	1	15	15	42	47	29	15	14	6	1	1	186
1942	1	1	14	17	19	21	19	16	11	5	1	0	125
1943	0	3	4	20	15	44	20	13	5	2	0	0	126
1944	1	0	1	2	12	15	10	10	6	1	0	0	58
1945	0	6	3	3	34	35	18	12	8	2	0	0	121
1946	1	1	8	4	3	9	12	11	4	1	0	0	54
1947	0	3	7	3	5	5	5	4	1	0	0	0	33
1948	0	0	0	0	1	4	14	9	6	2	0	0	36
1949	0	0	1	1	2	12	6	10	5	1	0	0	38
1950	0	0	1	3	9	4	7	8	4	1	0	0	37
1951	0	16	25	14	12	11	8	8	3	1	0	0	98
1952	0	1	8	33	14	53	26	13	9	5	1	0	163
1953	1	1	6	14	5	6	7	7	6	2	0	0	55
1954	0	1	1	3	5	11	10	9	4	1	0	0	45
1955	0	1	2	5	4	5	6	9	4	1	0	0	37
1956	0	1	65	48	22	10	11	13	5	1	0	0	176
1957	0	1	1	2	4	8	6	10	5	1	0	0	38
1958	0	1	2	3	16	45	72	13	8	4	2	1	167
1959	1	1	1	3	8	6	5	4	1	0	0	0	30
1960	0	0	1	1	6	5	6	5	2	0	0	0	26
1961	0	1	2	2	2	3	3	2	1	0	0	0	16
1962	0	0	1	2	49	22	9	8	7	1	0	0	99
1963	0	0	1	5	21	11	21	14	7	3	0	0	83
1964	1	4	3	3	3	4	6	6	3	1	0	0	34
1965	0	3	18	30	10	10	30	9	6	2	1	0	119
1966	1	6	6	8	7	7	6	6	1	0	0	0	48
1967	0	2	20	11	11	25	80	30	14	6	2	0	201
1968	1	0	2	3	5	6	5	4	2	0	0	0	28
1969	0	1	5	75	84	52	36	17	11	6	2	1	290
1970	2	2	3	20	8	20	7	7	4	1	0	0	74
1971	0	2	8	8	5	7	7	8	5	1	0	0	51
1972	0	1	4	3	4	5	4	4	1	0	0	0	26
1973	0	1	3	9	36	32	17	10	4	1	0	0	113
1974	1	2	5	13	5	18	22	8	4	1	0	0	79
1975	0	1	2	3	11	21	17	14	8	2	0	0	79
1976	1	1	2	1	3	4	3	2	1	1	0	0	19
1977	0	0	1	1	1	1	1	1	1	0	0	0	7
1978	0	0	4	28	52	57	48	21	10	3	1	1	225
1979	0	2	1	12	20	29	14	10	5	2	0	0	95
1980	0	1	2	26	36	37	17	12	6	3	0	0	140
1981	0	1	2	3	4	8	6	3	1	1	0	0	29
1982	0	2	3	20	24	46	63	13	7	4	2	1	185
1983	3	11	34	54	73	115	41	27	9	5	3	2	377
1984	5	10	27	14	12	12	8	6	3	2	1	0	100
1985	1	2	2	2	5	8	6	3	2	1	1	0	33
1986	1	2	3	5	69	53	13	8	5	2	1	1	163
1987	1	1	1	2	4	9	0	2	4	0	1	0	25
1988	0	1	1	3	2	3	3	2	1	1	0	0	17
1989	0	0	1	1	2	6	3	2	0	1	1	0	17
1990	0	1	1	1	1	3	2	1	1	2	0	0	13
1991	0	0	0	0	0	18	6	4	2	2	2	0	34
1992	0	0	1	1	8	6	4	1	0	1	1	0	23
1993	0	0	2	44	28	26	15	12	8	6	2	19	162
1994	2	2	2	1	3	3	3	3	2	1	1	0	23
1995	0	1	1	37	16	84	21	21	7	3	2	1	194
1996	2	1	3	6	28	25	14	8	5	3	2	2	99
1997	1	9	51	123	27	12	9	4	2	1	2	1	242
1998	1	1	2	16	61	36	41	25	17	6	2	2	210
1999	2	3	4	7	12	8	11	7	3	1	1	2	61
2000	2	1	1	6	35	25	11	7	4	1	1	1	95
2001	2	1	1	2	6	10	7	4	2	1	1	0	37
2002	0	1	5	6	4	8	3	3	1	1	1	0	33
2003	0	2	3	3	3	4	5	6	3	3	1	0	33
Average	**1**	**2**	**6**	**11**	**17**	**19**	**15**	**9**	**5**	**2**	**1**	**0**	**88**

UF 22 – San Joaquin River at Millerton Reservoir estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	26	35	34	64	78	168	204	368	434	145	32	16	1604
1922	11	10	59	66	98	104	205	685	758	266	69	24	2355
1923	13	28	84	63	66	97	221	506	304	194	50	28	1654
1924	28	16	14	14	21	26	95	164	35	16	9	6	444
1925	10	26	27	27	85	101	219	419	313	146	53	13	1439
1926	20	16	21	17	57	96	347	379	146	43	12	7	1161
1927	6	56	49	47	154	151	275	508	495	197	48	15	2001
1928	20	69	33	33	48	150	189	373	175	44	14	6	1154
1929	8	10	15	16	23	65	107	309	210	75	19	5	862
1930	5	6	8	18	36	80	165	213	244	61	17	6	859
1931	11	13	10	16	23	39	100	174	60	16	11	7	480
1932	6	8	72	59	168	157	238	491	543	239	51	15	2047
1933	13	9	15	26	30	73	159	213	410	119	29	15	1111
1934	7	10	38	47	50	110	166	146	69	27	13	8	691
1935	13	27	36	72	85	111	356	497	519	144	44	19	1923
1936	14	16	16	38	196	163	349	510	348	150	42	11	1853
1937	11	12	36	35	253	190	304	705	457	160	34	11	2208
1938	10	12	211	71	207	434	434	795	913	431	128	42	3688
1939	39	33	29	33	43	103	240	209	110	43	25	14	921
1940	35	14	11	134	140	210	290	559	363	97	21	7	1881
1941	10	12	98	106	183	209	242	711	642	331	86	23	2653
1942	21	30	96	113	103	129	298	465	633	284	65	17	2254
1943	10	43	43	170	113	268	335	502	325	179	50	16	2054
1944	10	15	20	31	55	112	141	408	279	143	35	16	1265
1945	13	58	56	44	238	148	276	477	487	240	74	27	2138
1946	59	66	118	79	54	126	310	464	280	118	37	19	1730
1947	28	65	84	48	64	100	171	348	146	43	17	12	1126
1948	23	18	15	19	20	43	165	390	373	108	26	15	1215
1949	11	8	15	16	26	73	234	409	268	63	26	15	1164
1950	10	16	17	43	90	90	280	379	263	87	22	14	1311
1951	17	247	300	111	104	119	202	322	278	115	32	12	1859
1952	12	20	84	133	99	177	385	820	641	335	101	33	2840
1953	17	19	43	85	48	72	197	211	320	172	30	13	1227
1954	9	17	17	33	65	127	279	440	218	80	20	9	1314
1955	6	18	31	42	49	74	126	338	348	88	30	11	1161
1956	6	13	461	271	141	170	278	568	614	318	86	34	2960
1957	26	22	21	29	67	90	142	327	440	115	32	16	1327
1958	16	19	43	43	112	181	363	795	622	288	108	41	2631
1959	16	15	15	37	89	113	203	208	153	41	17	42	949
1960	18	9	10	18	55	86	178	240	147	43	17	8	829
1961	8	22	31	19	31	49	125	172	128	27	25	10	647
1962	10	15	23	23	185	110	381	397	505	203	52	20	1924
1963	17	11	11	82	208	101	192	464	492	265	71	31	1945
1964	26	64	36	31	30	52	126	257	200	60	29	11	922
1965	10	34	204	188	114	128	250	432	472	267	138	35	2272
1966	18	101	66	62	56	126	276	362	148	50	25	9	1299
1967	6	29	213	92	101	243	249	660	823	595	154	67	3232
1968	27	23	34	37	75	83	146	231	131	44	22	9	862
1969	15	40	52	396	234	227	464	1096	875	463	137	41	4040
1970	33	32	47	159	83	137	146	376	278	107	37	11	1446
1971	10	38	73	75	71	111	172	293	364	140	48	22	1417
1972	13	26	58	41	50	138	124	268	213	47	16	45	1039
1973	20	34	47	82	128	131	248	708	463	127	44	15	2047
1974	21	87	82	137	66	208	267	597	482	162	60	20	2189
1975	19	17	32	36	76	136	131	546	575	161	41	26	1796
1976	48	33	24	18	38	59	82	173	60	35	24	35	629
1977	20	10	7	12	15	19	57	75	111	20	11	4	361
1978	6	9	80	159	196	326	346	697	826	462	149	146	3402
1979	34	30	33	96	101	182	243	599	339	114	42	17	1830
1980	24	29	34	327	282	216	315	528	642	426	113	37	2973
1981	24	19	29	36	57	87	206	318	208	51	19	13	1067
1982	19	70	65	119	199	231	613	725	585	371	148	170	3315
1983	126	146	212	227	271	428	280	728	1166	686	280	92	4642
1984	53	149	227	126	107	162	203	489	266	162	67	36	2047
1985	31	50	41	40	56	84	254	308	169	55	22	19	1129
1986	24	38	68	93	472	426	361	624	593	222	76	32	3029
1987	24	14	15	21	39	66	172	229	121	33	15	10	759
1988	16	24	25	59	48	91	153	220	142	49	23	12	862
1989	7	14	20	22	37	133	237	240	149	41	19	19	938
1990	23	22	17	25	34	85	173	165	122	54	14	8	742
1991	8	6	9	10	11	118	135	277	321	102	24	13	1034
1992	12	19	18	21	68	77	209	238	76	46	17	9	810
1993	13	17	32	189	124	243	330	701	599	316	82	26	2672
1994	19	17	21	23	42	75	150	258	159	36	14	12	826
1995	43	45	48	213	122	485	350	634	881	752	239	66	3878
1996	24	15	50	70	229	222	333	589	412	184	55	18	2201
1997	18	99	213	735	181	219	302	539	280	130	44	21	2781
1998	18	24	36	102	210	232	288	446	886	686	159	72	3159
1999	36	39	50	69	111	102	182	446	337	105	32	17	1526
2000	12	12	16	80	155	164	280	530	351	91	37	15	1743
2001	20	17	16	26	42	126	188	445	115	47	13	10	1065
2002	10	22	58	64	57	94	247	323	223	53	13	8	1172
2003	7	62	45	62	60	109	158	436	375	89	34	12	1449
Average	**19**	**33**	**59**	**83**	**103**	**144**	**236**	**432**	**374**	**168**	**52**	**24**	**1727**

UF 23 – Tulare Lake Basin Outflow estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	0	0	0	0	0	0	0	15	58	0	0	0	73
1922	0	0	10	23	34	29	7	138	235	16	0	0	492
1923	0	0	32	16	3	0	9	95	16	0	0	0	171
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	0	0	0	0	0	8	0	0	0	0	8
1926	0	0	0	0	0	0	3	8	0	0	0	0	11
1927	0	5	1	0	13	1	1	54	54	0	0	0	129
1928	0	3	0	0	0	0	0	0	0	0	0	0	3
1929	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	0	0	0	0	0	0	0	0	0	0	0	0
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	0	0	0	0	0	12	6	0	0	0	18
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	0	3	14	0	0	0	17
1936	0	0	0	0	7	0	2	39	2	0	0	0	50
1937	0	0	0	0	73	27	31	121	104	0	0	0	356
1938	0	0	46	19	90	167	109	186	218	27	0	0	862
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	5	25	36	2	93	18	0	0	0	179
1941	0	0	15	44	80	96	71	151	159	19	0	0	635
1942	0	0	18	50	43	0	4	52	132	9	0	0	308
1943	0	0	4	37	48	101	83	89	35	0	0	0	397
1944	0	0	0	0	0	5	0	14	9	0	0	0	28
1945	0	1	0	0	67	13	12	80	86	6	0	0	265
1946	0	14	31	18	0	0	5	18	2	0	0	0	88
1947	8	12	6	0	0	0	1	0	0	0	0	0	27
1948	0	0	0	0	0	0	0	2	0	0	0	0	2
1949	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	2	0	0	0	0	2
1951	0	29	44	0	0	0	0	1	0	0	0	0	74
1952	0	0	0	36	6	22	20	171	150	31	0	0	436
1953	0	0	0	4	0	0	0	0	0	0	0	0	4
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	4	0	58	29	0	0	0	0	0	0	91
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	1	27	93	91	1	0	0	213
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	3	0	0	0	49	194	150	89	0	0	485
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	38	184	286	279	302	318	133	11	0	1551
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	18	20	48	0	0	0	86
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	7	95	199	202	49	0	0	0	552
1979	0	0	0	0	0	0	1	9	1	0	0	0	11
1980	0	0	0	57	87	252	78	70	12	23	0	0	579
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	158	213	63	19	0	0	453
1983	0	92	224	218	261	319	302	303	292	184	66	48	2309
1984	106	141	135	185	1	1	0	0	0	0	0	0	569
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	11	212	215	140	91	1	0	0	670
1987	0	0	1	1	0	0	0	0	0	0	0	0	2
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	33	159	228	87	77	2	0	586
1996	0	0	5	0	0	7	0	67	0	0	0	0	79
1997	0	0	5	170	224	39	0	0	0	0	0	0	438
1998	0	0	0	0	0	0	212	278	266	158	158	0	1072
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	**1**	**4**	**7**	**11**	**16**	**21**	**25**	**42**	**33**	**10**	**3**	**1**	**174**

UF 24 – San Joaquin Valley West Side Minor Streams estimated unimpaired flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	0	0	1	5	1	1	0	0	0	0	0	0	8
1922	0	0	1	1	3	1	2	0	0	0	0	0	8
1923	0	0	3	1	1	0	1	0	0	0	0	0	6
1924	0	0	0	0	0	0	0	0	0	0	0	0	0
1925	0	0	1	0	2	0	2	0	0	0	0	0	5
1926	0	0	0	0	1	0	0	0	0	0	0	0	1
1927	0	0	0	1	3	0	2	0	0	0	0	0	6
1928	0	0	0	0	1	2	1	0	0	0	0	0	4
1929	0	0	0	0	0	0	1	0	0	0	0	0	1
1930	0	0	0	0	0	1	0	0	0	0	0	0	1
1931	0	0	0	0	0	0	0	0	0	0	0	0	0
1932	0	0	2	1	1	0	0	0	0	0	0	0	4
1933	0	0	0	0	0	0	0	0	0	0	0	0	0
1934	0	0	0	1	0	0	0	0	0	0	0	0	1
1935	0	0	0	1	0	1	2	0	0	0	0	0	4
1936	0	0	0	2	9	1	2	0	0	0	0	0	14
1937	0	0	0	1	4	2	2	0	0	0	0	0	9
1938	0	0	2	1	10	6	4	1	0	0	0	0	24
1939	0	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	2	2	2	2	0	0	0	0	0	8
1941	0	0	1	1	1	1	3	0	0	0	0	0	7
1942	0	0	1	3	1	0	2	0	0	0	0	0	7
1943	0	0	1	4	2	4	2	0	0	0	0	0	13
1944	0	0	0	0	1	1	0	0	0	0	0	0	2
1945	0	0	1	0	2	1	1	0	0	0	0	0	5
1946	0	0	1	1	0	0	1	0	0	0	0	0	3
1947	0	0	0	0	0	1	0	0	0	0	0	0	1
1948	0	0	0	0	0	1	1	0	0	0	0	0	2
1949	0	0	0	0	0	1	1	0	0	0	0	0	2
1950	0	0	0	1	1	0	1	0	0	0	0	0	3
1951	0	0	7	5	1	2	0	0	0	0	0	0	15
1952	0	0	3	9	2	3	1	0	0	0	0	0	18
1953	0	0	1	1	0	0	0	0	0	0	0	0	2
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	1	0	0	0	0	0	0	0	0	1
1956	0	0	5	7	2	1	0	0	0	0	0	0	15
1957	0	0	0	0	0	1	0	0	0	0	0	0	1
1958	0	0	0	1	5	4	10	1	0	0	0	0	21
1959	0	0	0	0	1	0	0	0	0	0	0	0	1
1960	0	0	0	0	1	0	0	0	0	0	0	0	1
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	2	1	0	0	0	0	0	0	3
1963	0	0	0	2	5	1	3	1	0	0	0	0	12
1964	0	0	0	1	0	0	0	0	0	0	0	0	1
1965	0	0	4	4	1	1	1	0	0	0	0	0	11
1966	0	0	0	0	1	0	0	0	0	0	0	0	1
1967	0	0	0	5	1	2	4	1	0	0	0	0	13
1968	0	0	0	0	1	0	0	0	0	0	0	0	1
1969	0	0	0	5	6	3	0	0	0	0	0	0	14
1970	0	0	1	6	1	1	0	0	0	0	0	0	9
1971	0	0	3	1	0	1	0	0	0	0	0	0	5
1972	0	0	0	0	0	3	0	0	0	0	0	0	3
1973	0	1	0	4	5	3	1	0	0	0	0	0	14
1974	0	0	1	1	1	2	2	0	0	0	0	0	7
1975	0	0	0	0	1	2	1	0	0	0	0	0	4
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	1	5	3	3	1	0	0	0	0	0	13
1979	0	0	0	1	2	1	0	0	0	0	0	0	4
1980	0	0	0	5	8	2	1	0	0	0	0	0	16
1981	0	0	0	0	0	1	0	0	0	0	0	0	1
1982	0	0	1	14	5	4	6	1	0	0	0	0	31
1983	0	1	3	5	8	18	3	2	0	0	0	0	40
1984	0	2	2	0	1	0	0	0	0	0	0	0	5
1985	1	2	1	0	0	1	0	0	0	0	0	0	5
1986	0	2	2	2	4	3	0	0	0	0	0	1	14
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	1	1	0	0	0	0	0	0	0	0	2
1989	0	0	1	0	1	1	0	0	0	0	0	1	4
1990	0	0	0	1	0	0	0	1	0	0	0	0	2
1991	0	0	0	0	1	1	0	0	0	0	0	0	2
1992	1	0	1	1	3	1	0	0	0	0	0	0	7
1993	0	0	5	5	5	3	0	2	0	0	0	0	20
1994	0	1	1	1	2	0	1	2	0	0	0	0	8
1995	1	1	1	5	0	4	0	0	0	0	0	0	12
1996	0	0	3	0	3	1	0	1	0	0	0	0	8
1997	1	1	1	3	0	0	0	0	0	0	0	0	6
1998	0	4	2	5	9	2	2	4	0	0	0	0	28
1999	1	1	0	2	1	1	1	1	0	0	0	0	8
2000	0	0	0	2	3	0	1	0	0	0	0	0	6
2001	2	0	0	1	1	1	1	0	0	0	0	0	6
2002	0	1	3	1	0	1	0	0	0	0	0	0	6
2003	0	0	1	0	0	0	0	0	0	0	0	0	1
Average	**0**	**0**	**1**	**2**	**2**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**7**

Sacramento Valley Unimpaired Total Outflow estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	424	2877	3784	5599	3837	4500	2959	2968	1841	751	478	416	30434
1922	407	518	1381	1185	3228	2623	3546	4829	2764	812	476	392	22161
1923	448	717	2471	1908	1234	1388	2984	2153	1221	666	414	393	15997
1924	412	407	490	565	1250	605	757	582	398	343	294	285	6388
1925	372	783	1024	1032	5784	2073	3324	2479	1188	574	419	384	19436
1926	396	519	680	894	3777	1619	3238	1326	651	433	339	320	14192
1927	365	2228	2215	2661	7558	3793	4535	2999	1803	711	441	393	29702
1928	383	1418	1185	1574	2285	6081	3461	1949	806	532	385	358	20417
1929	360	555	705	643	1234	1185	1325	1506	875	428	290	315	9421
1930	303	324	2866	1725	2117	2978	2211	1654	878	467	340	342	16205
1931	342	458	402	870	766	1184	882	660	412	287	263	259	6785
1932	351	411	1914	1485	1540	2336	2167	2701	1444	517	349	302	15517
1933	302	332	434	756	594	1960	1634	1756	1318	430	302	285	10103
1934	329	356	1160	1558	1657	1677	1178	737	455	316	273	259	9955
1935	314	870	790	2159	1676	2353	5742	3364	1528	570	375	326	20067
1936	390	385	536	3850	5539	2615	3004	2237	1383	572	366	336	21213
1937	330	327	411	506	2134	3336	3393	3072	1286	528	341	315	15979
1938	413	2023	5107	2080	6335	8316	5611	5563	2917	1056	582	480	40483
1939	536	590	799	773	783	1777	1542	909	502	360	306	320	9197
1940	353	344	716	4203	6923	6647	4196	2227	1011	538	406	407	27971
1941	455	661	4106	5556	6394	5422	5012	4131	1865	942	586	516	35646
1942	511	660	4133	5060	6477	2302	4411	3702	2529	1003	591	502	31881
1943	508	1013	2009	5443	3037	5166	3431	2258	1403	722	511	449	25950
1944	476	504	556	814	1583	2000	1611	2161	1095	612	394	354	12160
1945	417	1118	1554	1095	4171	2022	2184	2487	1310	582	418	367	17725
1946	590	1295	5404	2917	1392	2181	2681	2345	1020	569	442	390	21226
1947	422	841	1001	554	1677	2578	1846	1072	888	430	365	340	12014
1948	681	590	511	2094	726	1751	4479	3548	2269	741	470	424	18284
1949	430	525	714	556	1014	4042	2722	2223	865	435	369	336	14231
1950	358	417	440	2094	2991	2511	3084	2523	1293	556	396	376	17039
1951	1041	3945	5723	4023	3837	2621	2315	2365	949	517	436	396	28168
1952	520	1039	4064	4658	4824	4069	5626	5362	2849	1301	641	531	35484
1953	495	523	2440	6633	1657	2284	2871	2950	2478	1030	575	520	24456
1954	510	907	846	2779	3384	3800	4230	2145	1006	597	496	466	21166
1955	462	859	1521	1311	940	1185	1777	2307	1041	511	398	389	12701
1956	390	653	9730	8627	4613	3093	2991	3828	1958	914	563	506	37866
1957	648	597	596	835	2967	3496	2095	3047	1385	610	463	510	17249
1958	983	918	1831	3032	10000	5448	6384	4756	2618	1064	663	569	38266
1959	544	564	615	2486	3011	1878	1764	1261	723	486	400	486	14218
1960	422	398	486	990	3815	3341	2017	1706	960	481	384	373	15373
1961	408	787	1534	1015	2500	2114	1779	1729	967	471	402	375	14081
1962	408	620	1359	864	4552	2587	2988	2110	1255	546	407	365	18061
1963	3185	819	2289	1893	4712	2282	6159	3763	1432	710	516	476	28236
1964	596	1704	843	1841	1056	1106	1586	1696	1042	488	371	338	12667
1965	407	995	9491	6488	2259	1828	4635	2658	1475	742	598	444	32020
1966	471	1366	1040	2327	1808	2475	2737	1633	668	453	388	379	15745
1967	367	1489	3053	4369	2705	3946	3761	4753	3278	1177	569	442	29909
1968	527	564	918	1985	4293	2684	1824	1495	773	516	522	424	16525
1969	530	825	2111	8642	5447	3519	4633	4636	2137	806	552	510	34348
1970	602	623	3860	12592	3432	3226	1525	1671	1104	611	481	438	30165
1971	526	2190	4071	3552	1895	4068	3188	3440	2344	946	552	512	27284
1972	573	668	1202	1474	1871	3147	2299	1771	969	510	409	446	15339
1973	628	1433	2024	5237	4472	3667	2695	2906	1139	583	472	474	25730
1974	681	5129	4305	8196	2419	7105	5104	3210	2052	1084	615	529	40429
1975	547	637	894	1048	3605	5437	2964	4028	2439	877	597	553	23626
1976	819	840	770	664	888	1296	1166	934	511	396	484	414	9182
1977	404	425	395	511	482	548	527	691	486	361	339	415	5584
1978	374	516	2020	7326	3876	5514	3895	2969	1748	786	458	540	30022
1979	390	503	496	1354	2281	2792	2139	2837	881	512	394	384	14963
1980	675	936	1533	6990	6548	3677	2493	2286	1292	750	419	509	28108
1981	473	451	1017	1940	1899	2584	1787	1250	588	420	361	347	13117
1982	627	4797	6392	3870	5551	4779	7687	3885	1848	850	567	577	41430
1983	1016	1795	3831	4705	7344	11922	4991	5541	4058	1701	794	670	48368
1984	709	3734	7742	2926	2334	2977	2111	2253	1258	625	458	481	27608
1985	647	2027	1303	870	1322	1555	2160	1265	661	414	374	484	13082
1986	516	711	1241	2771	13050	7096	2439	2022	1143	569	413	573	32544
1987	553	455	549	849	1700	2834	1332	950	447	383	323	332	10707
1988	350	429	1966	2239	1034	1120	1127	1072	661	379	298	279	10954
1989	331	1148	791	967	991	6689	2999	1535	744	469	342	434	17440
1990	729	565	449	1434	967	1719	1273	1359	1022	425	311	303	10556
1991	342	367	353	386	484	2993	1730	1581	830	397	287	285	10035
1992	432	404	473	594	2758	2079	1707	800	438	387	275	288	10635
1993	402	387	1442	4869	3890	5765	3759	3415	2301	757	470	408	27865
1994	497	445	930	844	1447	1491	1187	1117	520	299	244	316	9337
1995	343	539	1186	10213	3397	11134	5315	5762	3122	1502	696	576	43785
1996	486	497	1887	2920	6818	4356	3404	4141	1468	690	504	460	27631
1997	520	1098	7319	11903	2835	2015	1947	1508	884	508	465	462	31464
1998	573	1064	1442	6216	9499	5344	4360	4896	4257	1624	730	636	40641
1999	698	1480	2013	2710	5130	4121	3082	2977	1662	750	577	534	25734
2000	575	751	692	2597	6075	4180	2954	2273	1053	599	495	532	22776
2001	582	555	667	913	1734	2338	1585	1362	548	435	394	382	11495
2002	420	982	2938	3316	1904	2510	2314	1841	944	495	460	418	18542
2003	379	655	4109	4116	1777	2639	3332	3774	1469	650	498	450	23848
Average	**528**	**1003**	**2051**	**3000**	**3317**	**3352**	**2934**	**2511**	**1386**	**646**	**444**	**420**	**21592**

East Side Streams Unimpaired Total Outflow estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	12	48	154	566	253	324	199	271	201	23	1	1	2053
1922	2	3	75	94	543	273	290	463	319	44	4	1	2111
1923	5	43	378	248	148	128	317	299	138	36	3	5	1748
1924	11	8	11	16	32	26	67	74	2	0	0	0	247
1925	7	43	55	55	493	180	399	336	146	22	3	4	1743
1926	5	9	25	26	207	89	225	108	18	1	0	0	713
1927	3	76	63	131	488	216	418	266	208	35	4	2	1910
1928	6	37	44	48	120	537	310	201	35	6	0	0	1344
1929	3	5	14	33	68	77	119	171	72	6	1	0	569
1930	1	1	26	70	74	224	162	138	90	7	1	1	795
1931	3	7	5	16	35	45	81	68	12	0	0	1	273
1932	2	7	128	117	421	135	160	284	214	33	3	3	1507
1933	0	3	5	24	27	63	91	163	184	18	4	5	587
1934	6	8	63	111	129	117	89	45	25	1	0	0	594
1935	0	18	23	132	80	171	588	314	173	21	3	1	1524
1936	5	6	8	205	1066	247	349	298	174	27	5	2	2392
1937	4	4	12	53	510	542	292	362	136	19	3	2	1939
1938	4	10	182	78	777	781	389	470	309	61	10	5	3076
1939	11	18	20	27	55	109	157	87	19	2	1	2	508
1940	10	5	12	266	391	507	367	277	98	11	2	2	1948
1941	4	10	104	151	285	310	306	361	187	35	8	4	1765
1942	5	15	128	470	399	184	340	362	292	61	10	5	2271
1943	5	78	134	520	297	940	335	262	135	31	8	4	2749
1944	8	8	15	31	131	221	117	231	92	13	3	0	870
1945	2	94	80	60	553	245	227	261	174	26	6	2	1730
1946	8	61	410	180	97	198	265	252	93	13	3	1	1581
1947	6	35	43	25	73	139	141	142	33	1	0	0	638
1948	17	17	14	39	34	128	303	310	221	30	3	2	1118
1949	4	6	18	28	60	335	230	248	90	6	3	2	1030
1950	2	8	9	155	278	179	326	285	166	24	4	4	1440
1951	15	671	764	527	300	345	197	227	73	15	5	3	3142
1952	7	30	255	660	382	585	436	515	315	110	21	15	3331
1953	8	14	58	233	71	119	200	197	214	49	9	5	1177
1954	6	14	19	48	110	241	261	193	51	10	3	0	956
1955	2	9	78	208	89	94	120	222	101	10	2	0	935
1956	1	7	918	891	238	189	211	363	230	36	16	8	3108
1957	11	14	19	25	128	310	145	263	148	16	6	2	1087
1958	7	13	30	112	461	584	1025	465	268	64	15	7	3051
1959	7	10	12	68	205	99	129	99	35	9	1	7	681
1960	4	3	6	17	170	172	154	141	46	6	1	2	722
1961	1	7	14	11	28	51	89	116	37	5	1	1	361
1962	1	4	14	13	343	190	253	194	151	18	5	1	1187
1963	50	11	41	75	469	177	467	388	174	31	10	6	1899
1964	9	77	36	123	50	63	129	170	77	14	2	2	752
1965	4	28	917	643	167	127	378	273	192	54	31	5	2819
1966	11	46	79	97	110	115	186	141	19	6	3	2	815
1967	2	22	175	351	204	376	550	491	364	134	18	6	2693
1968	11	10	25	65	204	166	134	134	42	7	6	0	804
1969	5	43	74	884	612	349	428	489	262	68	9	6	3229
1970	20	20	136	744	229	316	131	226	138	27	6	6	1999
1971	17	70	274	202	101	198	189	228	213	45	3	3	1543
1972	8	19	109	53	115	167	127	185	78	13	4	5	883
1973	9	27	75	466	501	357	238	344	120	17	7	4	2165
1974	11	142	292	414	115	430	366	316	169	54	13	5	2327
1975	6	11	24	46	270	427	225	363	267	50	11	7	1707
1976	29	33	21	18	23	44	57	81	11	2	7	3	329
1977	4	3	3	7	10	13	38	47	27	1	2	1	156
1978	1	4	52	396	254	410	420	329	242	58	7	17	2190
1979	2	8	16	158	329	375	232	347	105	12	3	1	1588
1980	10	25	47	774	610	312	215	260	198	73	7	4	2535
1981	2	5	13	79	53	205	160	140	33	1	1	1	693
1982	8	147	305	606	677	705	994	433	209	71	13	22	4190
1983	82	235	609	699	737	1304	463	592	471	243	46	30	5511
1984	19	441	766	255	223	239	156	260	115	21	17	1	2513
1985	10	85	65	41	113	153	197	160	40	6	2	6	878
1986	4	30	73	174	1482	814	233	255	157	26	6	4	3258
1987	4	2	8	17	66	132	95	84	14	5	2	1	430
1988	14	41	77	78	35	61	114	85	31	6	3	1	546
1989	3	45	60	33	58	323	198	146	76	7	4	38	991
1990	26	29	16	45	56	109	124	99	43	7	1	0	555
1991	2	4	14	5	24	181	106	159	92	11	2	0	600
1992	63	17	43	56	254	161	146	59	14	10	2	0	825
1993	39	11	222	583	380	472	288	376	237	46	7	4	2665
1994	9	35	29	36	88	58	109	122	21	4	2	4	517
1995	4	24	58	643	209	984	478	686	433	226	36	15	3796
1996	16	10	53	194	470	386	298	395	149	37	16	11	2035
1997	47	71	597	1538	260	166	179	198	83	14	10	7	3170
1998	11	23	37	358	741	523	463	483	502	185	33	22	3381
1999	23	32	62	205	529	276	267	338	192	38	21	8	1991
2000	7	21	19	189	490	283	226	283	94	25	13	13	1663
2001	16	16	18	34	71	130	150	175	18	6	5	6	645
2002	2	23	85	122	108	192	207	204	78	13	6	3	1043
2003	3	27	65	83	69	108	233	353	171	26	5	3	1146
Average	**10**	**42**	**122**	**221**	**268**	**278**	**256**	**257**	**141**	**32**	**7**	**5**	**1639**

San Joaquin Valley Unimpaired Total Outflow estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	96	153	213	582	488	735	824	1399	1413	340	64	31	6338
1922	24	26	248	282	780	657	835	2491	2535	652	129	44	8703
1923	36	98	448	412	305	370	953	1796	970	495	102	69	6054
1924	83	49	50	66	112	121	376	550	76	38	11	7	1539
1925	36	126	139	128	644	492	1064	1602	993	359	102	29	5714
1926	51	51	85	65	324	373	1229	1012	325	79	22	13	3629
1927	18	221	221	214	841	594	1149	1665	1506	460	97	38	7024
1928	55	267	143	164	265	976	852	1276	464	100	28	12	4602
1929	13	30	55	64	122	273	443	1085	633	153	30	8	2909
1930	11	13	55	115	198	434	720	797	777	155	35	16	3326
1931	31	51	33	71	113	174	422	567	154	36	15	9	1676
1932	12	23	411	305	912	571	846	1715	1644	566	114	36	7155
1933	30	19	40	95	107	264	538	788	1227	247	54	27	3436
1934	12	29	132	174	255	437	550	421	240	56	22	18	2346
1935	33	112	141	388	339	493	1569	1781	1568	351	91	29	6895
1936	37	53	55	261	1341	700	1326	1730	1110	376	82	22	7093
1937	26	33	103	134	1237	849	1075	2308	1336	338	70	21	7530
1938	28	47	938	374	1364	2157	1632	2768	2717	1031	246	88	13390
1939	124	125	106	128	180	430	879	645	262	83	35	41	3038
1940	115	48	54	763	868	1108	1113	1900	1031	207	46	13	7266
1941	31	41	444	464	955	1066	1077	2395	1890	773	156	43	9335
1942	47	101	503	597	550	554	1144	1674	2044	766	134	35	8149
1943	29	218	249	855	609	1486	1393	1687	1068	442	106	29	8171
1944	35	50	67	122	258	468	509	1404	820	314	61	20	4128
1945	30	249	225	173	1134	675	997	1635	1486	541	120	37	7302
1946	162	274	631	376	223	520	1139	1556	804	243	61	27	6016
1947	74	222	272	149	252	409	616	1061	371	89	22	17	3554
1948	87	66	49	99	90	236	687	1394	1278	287	46	20	4339
1949	25	33	59	66	120	398	909	1373	740	131	40	21	3915
1950	20	43	46	222	404	384	1062	1432	905	216	40	19	4793
1951	56	1535	1675	554	484	549	783	1100	756	236	55	17	7800
1952	35	78	379	848	493	968	1509	2856	2076	926	219	68	10455
1953	38	53	176	429	196	310	814	798	1132	483	68	25	4522
1954	26	51	66	126	285	631	1093	1388	571	161	29	14	4441
1955	17	49	130	200	181	262	452	1150	930	177	38	13	3599
1956	16	40	2213	1396	621	623	957	1881	1777	766	171	65	10526
1957	66	77	73	99	310	452	553	1216	1218	251	57	25	4397
1958	45	62	138	188	570	973	1659	2670	1928	729	220	75	9257
1959	40	40	35	183	370	388	702	674	412	82	22	120	3068
1960	35	27	33	71	326	416	719	859	447	77	24	14	3048
1961	15	60	97	61	124	204	488	610	352	57	45	19	2132
1962	19	33	69	190	811	449	1256	1227	1369	429	83	28	5963
1963	54	32	67	320	994	380	844	1733	1399	580	130	56	6589
1964	62	272	141	157	142	220	510	915	616	137	46	24	3242
1965	28	142	1419	1008	455	471	1092	1475	1448	692	303	79	8612
1966	39	379	274	261	232	458	952	1075	323	95	42	25	4155
1967	28	137	741	436	392	1029	1291	2465	2671	1616	314	116	11236
1968	54	52	102	135	372	364	583	809	394	86	43	23	3017
1969	38	183	242	2059	1465	1322	1978	3563	2663	1180	255	72	15020
1970	113	115	278	1182	434	669	540	1271	918	265	79	32	5896
1971	28	189	361	353	291	444	650	1079	1180	358	86	37	5056
1972	25	95	238	175	220	565	492	1019	606	106	30	70	3641
1973	49	105	215	449	746	698	909	2184	1239	246	83	30	6953
1974	56	425	406	629	259	873	1079	1897	1391	392	124	42	7573
1975	46	51	114	153	488	748	609	1880	1847	455	101	59	6551
1976	176	140	96	58	124	219	313	577	137	62	59	62	2023
1977	39	27	17	33	45	65	204	266	299	40	16	10	1061
1978	9	27	264	718	905	1384	1607	2345	2267	1045	276	303	11150
1979	78	89	101	497	573	854	901	1991	963	252	85	38	6422
1980	74	108	142	1697	1450	1126	1130	1731	1762	1070	229	84	10603
1981	55	42	82	168	201	381	754	977	486	96	46	33	3321
1982	64	401	551	806	1254	1220	2578	2536	1745	953	292	346	12746
1983	426	677	1153	1328	1673	2603	1463	2719	3792	2151	731	261	18977
1984	263	983	1256	773	483	635	714	1600	864	345	108	44	8068
1985	79	222	150	134	228	381	926	997	420	95	43	45	3720
1986	68	150	251	380	2315	1968	1384	1941	1643	478	139	82	10799
1987	63	30	45	52	137	287	569	624	242	60	34	17	2160
1988	35	76	105	194	169	310	499	627	337	105	42	19	2518
1989	21	46	76	93	159	720	947	858	523	108	34	37	3622
1990	109	76	62	109	138	363	645	524	322	112	25	11	2496
1991	14	17	18	23	25	539	510	987	874	231	53	28	3319
1992	47	69	59	82	342	342	711	635	170	166	44	21	2688
1993	31	46	140	1057	598	1052	1144	2148	1659	719	177	83	8854
1994	57	42	66	74	166	291	546	822	371	89	50	28	2602
1995	76	157	161	1157	497	2241	1459	2468	2735	2088	515	139	13693
1996	60	41	212	385	1171	998	1158	1949	1141	420	107	38	7680
1997	39	354	1375	3813	879	782	952	1601	844	241	121	54	11055
1998	47	73	116	656	1396	1152	1475	1880	3048	1950	499	169	12461
1999	91	144	195	382	728	491	786	1683	1151	302	97	64	6114
2000	39	58	41	390	978	802	1037	1655	938	214	94	52	6298
2001	59	55	63	105	194	532	682	1276	234	78	23	19	3320
2002	23	98	284	305	239	418	921	1095	631	109	32	18	4173
2003	10	198	221	264	224	406	664	1571	1102	202	94	41	4997
Average	**55**	**140**	**280**	**425**	**529**	**668**	**929**	**1467**	**1117**	**413**	**107**	**50**	**6180**

Delta Unimpaired Total Inflow estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	532	3078	4151	6747	4578	5559	3982	4638	3455	1114	543	448	38825
1922	433	547	1704	1561	4551	3553	4671	7783	5618	1508	609	437	32975
1923	489	858	3297	2568	1687	1886	4254	4248	2329	1197	519	467	23799
1924	506	464	551	647	1394	752	1200	1206	476	381	305	292	8174
1925	415	952	1218	1215	6921	2745	4787	4417	2327	955	524	417	26893
1926	452	579	790	985	4308	2081	4692	2446	994	513	361	333	18534
1927	386	2525	2499	3006	8887	4603	6102	4930	3517	1206	542	433	38636
1928	444	1722	1372	1786	2670	7594	4623	3426	1305	638	413	370	26363
1929	376	590	774	740	1424	1535	1887	2762	1580	587	321	323	12899
1930	315	338	2947	1910	2389	3636	3093	2589	1745	629	376	359	20326
1931	376	516	440	957	914	1403	1385	1295	578	323	278	269	8734
1932	365	441	2453	1907	2873	3042	3173	4700	3302	1116	466	341	24179
1933	332	354	479	875	728	2287	2263	2707	2729	695	360	317	14126
1934	347	393	1355	1843	2041	2231	1817	1203	720	373	295	277	12895
1935	347	1000	954	2679	2095	3017	7899	5459	3269	942	469	356	28486
1936	432	444	599	4316	7946	3562	4679	4265	2667	975	453	360	30698
1937	360	364	526	693	3881	4727	4760	5742	2758	885	414	338	25448
1938	445	2080	6227	2532	8476	11254	7632	8801	5943	2148	838	573	56949
1939	671	733	925	928	1018	2316	2578	1641	783	445	342	363	12743
1940	478	397	782	5232	8182	8262	5676	4404	2140	756	454	422	37185
1941	490	712	4654	6171	7634	6798	6395	6887	3942	1750	750	563	46746
1942	563	776	4764	6127	7426	3040	5895	5738	4865	1830	735	542	42301
1943	542	1309	2392	6818	3943	7592	5159	4207	2606	1195	625	482	36870
1944	519	562	638	967	1972	2689	2237	3796	2007	939	458	374	17158
1945	449	1461	1859	1328	5858	2942	3408	4383	2970	1149	544	406	26757
1946	760	1630	6445	3473	1712	2899	4085	4153	1917	825	506	418	28823
1947	502	1098	1316	728	2002	3126	2603	2275	1292	520	387	357	16206
1948	785	673	574	2232	850	2115	5469	5252	3768	1058	519	446	23741
1949	459	564	791	650	1194	4775	3861	3844	1695	572	412	359	19176
1950	380	468	495	2471	3673	3074	4472	4240	2364	796	440	399	23272
1951	1112	6151	8162	5104	4621	3515	3295	3692	1778	768	496	416	39110
1952	562	1147	4698	6166	5699	5622	7571	8733	5240	2337	881	614	49270
1953	541	590	2674	7295	1924	2713	3885	3945	3824	1562	652	550	30155
1954	542	972	931	2953	3779	4672	5584	3726	1628	768	528	480	26563
1955	481	917	1729	1719	1210	1541	2349	3679	2072	698	438	402	17235
1956	407	700	12861	10914	5472	3905	4159	6072	3965	1716	750	579	51500
1957	725	688	688	959	3405	4258	2793	4526	2751	877	526	537	22733
1958	1035	993	1999	3332	11031	7005	9068	7891	4814	1857	898	651	50574
1959	591	614	662	2737	3586	2365	2595	2034	1170	577	423	613	17967
1960	461	428	525	1078	4311	3929	2890	2706	1453	564	409	389	19143
1961	424	854	1645	1087	2652	2369	2356	2455	1356	533	448	395	16574
1962	428	657	1442	1067	5706	3226	4497	3531	2775	993	495	394	25211
1963	3289	862	2397	2288	6175	2839	7470	5884	3005	1321	656	538	36724
1964	667	2053	1020	2121	1248	1389	2225	2781	1735	639	419	364	16661
1965	439	1165	11827	8139	2881	2426	6105	4406	3115	1488	932	528	43451
1966	521	1791	1393	2685	2150	3048	3875	2849	1010	554	433	406	20715
1967	397	1648	3969	5156	3301	5351	5602	7709	6313	2927	901	564	43838
1968	592	626	1045	2185	4869	3214	2541	2438	1209	609	571	447	20346
1969	573	1051	2427	11585	7524	5190	7039	8688	5062	2054	816	588	52597
1970	735	758	4274	14518	4095	4211	2196	3168	2160	903	566	476	38060
1971	571	2449	4706	4107	2287	4710	4027	4747	3737	1349	641	552	33883
1972	606	782	1549	1702	2206	3879	2918	2975	1653	629	443	521	19863
1973	686	1565	2314	6152	5719	4722	3842	5434	2498	846	562	508	34848
1974	748	5696	5003	9239	2793	8408	6549	5423	3612	1530	752	576	50329
1975	599	699	1032	1247	4363	6612	3798	6271	4553	1382	709	619	31884
1976	1024	1013	887	740	1035	1559	1536	1592	659	460	550	479	11534
1977	447	455	415	551	537	626	769	1004	812	402	357	426	6801
1978	384	547	2336	8440	5035	7308	5922	5643	4257	1889	741	860	43362
1979	470	600	613	2009	3183	4021	3272	5175	1949	776	482	423	22973
1980	759	1069	1722	9461	8608	5115	3838	4277	3252	1893	655	597	41246
1981	530	498	1112	2187	2153	3170	2701	2367	1107	517	408	381	17131
1982	699	5345	7248	5282	7482	6704	11259	6854	3802	1874	872	945	58366
1983	1524	2707	5593	6732	9754	15829	6917	8852	8321	4095	1571	961	72856
1984	990	5158	9764	3954	3039	3851	2982	4113	2237	991	582	527	38188
1985	735	2335	1518	1045	1663	2089	3284	2422	1121	515	419	536	17682
1986	588	891	1566	3324	16847	9878	4057	4218	2943	1073	558	659	46602
1987	621	487	602	918	1903	3253	1996	1657	704	448	359	350	13298
1988	400	546	2148	2511	1238	1491	1740	1784	1029	490	343	299	14019
1989	355	1239	927	1093	1208	7732	4144	2538	1344	584	380	509	22053
1990	864	669	527	1588	1161	2190	2042	1982	1386	543	337	314	13603
1991	358	388	386	414	534	3713	2346	2727	1796	638	341	313	13954
1992	542	491	574	732	3355	2582	2564	1495	622	562	321	309	14149
1993	472	445	1804	6509	4868	7288	5191	5939	4197	1522	654	494	39383
1994	563	522	1025	954	1701	1840	1842	2061	912	392	296	348	12456
1995	423	720	1405	12012	4103	14359	7253	8916	6290	3816	1246	729	61272
1996	562	548	2152	3499	8459	5740	4860	6485	2758	1147	628	509	37347
1997	605	1523	9291	17253	3973	2963	3078	3306	1811	764	596	522	45685
1998	631	1160	1594	7229	11637	7019	6298	7259	7807	3759	1262	827	56482
1999	812	1656	2269	3297	6387	4888	4135	4998	3005	1090	694	606	33837
2000	622	831	752	3177	7542	5266	4217	4211	2085	838	603	597	30741
2001	657	626	747	1052	1999	3001	2417	2813	801	518	422	407	15460
2002	444	1103	3308	3743	2251	3121	3442	3141	1653	617	498	439	23760
2003	549	1243	2394	3486	3809	4035	3854	4338	2629	881	545	465	28228
Average	**594**	**1184**	**2453**	**3648**	**4117**	**4299**	**4120**	**4233**	**2644**	**1092**	**558**	**474**	**29416**

Delta Unimpaired Net Use estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	103	83	68	75	64	95	106	118	124	132	126	113	1207
1922	103	83	68	75	64	95	106	118	124	132	126	113	1207
1923	99	75	57	78	83	102	93	120	123	132	126	110	1198
1924	102	89	84	81	76	96	108	120	124	132	126	113	1251
1925	95	83	70	83	63	95	96	110	123	132	126	113	1189
1926	103	86	81	75	62	101	89	120	124	132	126	113	1212
1927	97	69	85	78	60	95	99	120	122	132	126	113	1196
1928	93	79	77	82	79	83	104	119	124	132	126	113	1211
1929	103	76	74	85	80	95	107	120	119	132	126	113	1230
1930	103	91	77	68	74	89	104	120	124	132	126	112	1220
1931	99	85	88	71	78	96	109	115	122	132	126	113	1234
1932	102	82	52	82	70	98	106	118	124	132	126	113	1205
1933	104	90	78	67	82	91	109	117	124	132	126	113	1233
1934	99	91	69	83	68	102	107	119	122	132	126	112	1230
1935	101	77	76	70	82	85	91	120	124	132	126	113	1197
1936	98	87	78	69	52	96	103	116	121	131	126	112	1189
1937	101	91	72	74	62	47	106	120	123	132	126	113	1167
1938	101	80	68	78	22	61	104	120	124	132	126	112	1128
1939	99	88	84	80	78	90	108	118	124	132	126	112	1239
1940	100	90	84	50	19	79	105	119	124	132	126	113	1141
1941	100	88	50	49	17	88	93	117	124	132	126	113	1097
1942	99	85	65	66	75	93	90	116	124	132	126	113	1184
1943	101	76	78	66	77	86	102	120	123	132	126	113	1200
1944	102	88	81	77	62	99	102	117	122	132	126	113	1221
1945	98	75	75	86	69	86	109	118	124	132	126	113	1211
1946	93	85	64	86	81	94	108	117	124	132	126	113	1223
1947	102	77	79	87	77	91	109	120	122	132	126	113	1235
1948	93	87	85	87	81	86	97	111	123	132	126	113	1221
1949	100	89	72	82	78	83	109	120	124	131	126	113	1227
1950	103	87	80	69	76	95	105	120	124	132	126	111	1228
1951	95	71	65	76	77	95	105	117	124	132	126	113	1196
1952	99	78	62	33	80	84	101	120	123	132	126	113	1151
1953	104	81	60	80	86	97	100	118	122	132	126	113	1219
1954	103	86	84	79	77	90	102	119	123	132	126	113	1234
1955	104	81	71	73	80	99	99	117	124	132	126	112	1218
1956	103	85	44	-8	80	102	98	117	124	132	126	110	1113
1957	99	91	87	79	70	94	102	109	123	132	126	112	1224
1958	96	90	75	63	23	52	88	117	123	132	126	113	1098
1959	103	91	85	71	66	100	107	120	124	132	126	101	1226
1960	104	91	83	74	70	96	105	119	124	132	126	113	1237
1961	103	73	85	73	81	92	105	120	124	132	126	112	1226
1962	103	78	83	84	50	95	108	120	124	132	126	113	1216
1963	80	89	80	73	73	87	89	118	124	132	126	112	1183
1964	98	76	88	75	86	97	108	120	120	132	126	113	1239
1965	96	79	65	76	83	97	98	120	124	131	124	113	1206
1966	103	73	72	80	78	101	107	119	124	131	126	113	1227
1967	104	68	72	15	83	84	92	120	120	132	126	113	1129
1968	103	86	82	69	76	91	107	120	124	132	122	113	1225
1969	102	80	74	39	8	96	104	120	124	132	126	113	1118
1970	97	87	68	55	79	95	108	120	123	132	126	113	1203
1971	101	64	68	85	84	94	105	115	124	132	126	113	1211
1972	103	87	69	86	81	102	105	120	123	132	126	110	1244
1973	91	66	79	21	19	89	108	120	124	132	126	113	1088
1974	94	70	72	79	83	86	100	120	122	129	126	113	1194
1975	99	88	77	85	64	81	104	120	124	131	125	113	1211
1976	92	90	87	88	79	98	105	120	123	132	122	110	1246
1977	102	88	84	84	81	95	107	113	123	132	126	110	1245
1978	103	82	70	44	47	59	99	120	124	132	126	112	1118
1979	104	80	86	60	65	92	105	120	124	131	126	113	1206
1980	95	84	70	68	37	93	104	119	124	130	126	113	1163
1981	103	90	80	69	81	87	106	120	124	132	126	112	1230
1982	96	70	75	54	69	36	96	120	123	132	126	105	1102
1983	94	64	75	21	16	-8	94	119	124	132	126	109	966
1984	102	67	65	88	79	97	106	120	123	132	126	113	1218
1985	96	64	81	85	79	87	108	120	123	132	126	112	1213
1986	101	73	77	76	3	59	105	119	124	131	126	110	1104
1987	103	90	83	80	69	87	108	120	124	132	126	113	1235
1988	101	82	72	75	83	101	103	116	121	132	126	113	1225
1989	103	82	77	85	79	89	108	120	123	132	126	101	1225
1990	97	85	88	79	76	98	107	107	124	132	126	113	1232
1991	102	90	83	88	76	77	107	117	116	132	126	113	1227
1992	94	89	83	83	58	89	106	120	123	132	126	113	1216
1993	98	90	60	-9	1	88	106	114	119	132	126	113	1038
1994	101	80	80	80	70	102	104	112	124	132	126	113	1224
1995	100	74	78	0	85	32	106	115	121	129	125	113	1078
1996	104	93	58	72	24	94	106	114	129	135	128	112	1169
1997	96	81	61	14	85	106	112	126	125	132	123	113	1174
1998	101	68	77	62	-105	94	101	99	121	132	126	109	985
1999	97	79	84	71	67	94	104	120	125	129	122	112	1204
2000	103	84	89	66	35	98	108	120	129	130	126	111	1199
2001	88	86	87	75	67	96	105	133	129	127	126	111	1230
2002	105	77	56	79	84	95	112	82	128	133	124	114	1189
2003	103	79	56	83	80	94	94	120	129	135	121	114	1208
Average	**100**	**82**	**75**	**69**	**64**	**88**	**103**	**118**	**123**	**132**	**126**	**112**	**1192**

Delta Unimpaired Total Outflow estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	429	2995	4083	6672	4515	5464	3876	4520	3332	982	417	335	37620
1922	330	464	1636	1486	4487	3458	4565	7665	5494	1376	483	324	31768
1923	390	783	3240	2491	1604	1784	4161	4128	2206	1065	393	357	22602
1924	404	375	468	566	1318	656	1092	1085	352	249	179	179	6923
1925	320	869	1148	1132	6858	2650	4691	4307	2204	823	397	304	25703
1926	350	494	708	909	4246	1979	4603	2326	871	382	234	220	17322
1927	288	2456	2414	2928	8827	4508	6003	4810	3395	1074	416	320	37439
1928	351	1643	1295	1704	2591	7511	4519	3306	1181	507	287	257	25152
1929	273	514	700	655	1343	1440	1780	2642	1462	456	195	210	11670
1930	211	247	2870	1842	2315	3547	2989	2470	1621	497	250	247	19106
1931	277	430	353	886	837	1307	1277	1180	455	192	152	156	7502
1932	263	359	2401	1825	2804	2943	3066	4582	3179	985	339	228	22974
1933	228	264	401	808	645	2195	2154	2590	2605	564	234	204	12892
1934	248	302	1286	1760	1974	2129	1709	1084	598	242	169	165	11666
1935	245	923	879	2609	2013	2933	7808	5338	3145	811	343	242	27289
1936	334	357	521	4247	7894	3466	4576	4148	2546	844	327	248	29508
1937	260	273	454	620	3819	4680	4653	5622	2635	753	288	225	24282
1938	344	2000	6158	2454	8455	11193	7528	8681	5820	2016	712	461	55822
1939	573	645	841	849	940	2226	2470	1523	659	314	216	250	11506
1940	378	307	699	5181	8164	8184	5572	4285	2016	624	328	310	36048
1941	390	624	4603	6123	7616	6710	6302	6770	3819	1618	624	449	45648
1942	464	692	4698	6062	7351	2947	5806	5622	4742	1699	609	429	41121
1943	441	1232	2315	6752	3866	7506	5056	4087	2482	1063	498	369	35667
1944	417	474	558	890	1910	2591	2135	3680	1885	807	331	261	15939
1945	350	1386	1784	1243	5788	2856	3299	4264	2846	1017	418	293	25544
1946	667	1546	6381	3387	1631	2804	3977	4036	1793	693	379	305	27599
1947	400	1021	1236	641	1925	3035	2495	2155	1170	389	260	244	14971
1948	692	586	489	2145	769	2029	5372	5141	3645	926	393	333	22520
1949	359	475	719	567	1116	4693	3752	3724	1571	441	286	246	17949
1950	277	381	414	2402	3596	2980	4366	4120	2240	665	314	288	22043
1951	1017	6080	8097	5028	4545	3420	3190	3575	1654	637	370	303	37916
1952	463	1068	4636	6133	5619	5538	7470	8613	5117	2205	754	501	48117
1953	438	509	2614	7216	1839	2617	3785	3826	3702	1430	526	437	28939
1954	439	887	847	2875	3703	4583	5482	3606	1505	636	402	367	25332
1955	378	836	1658	1646	1130	1442	2250	3562	1948	566	312	290	16018
1956	304	616	12817	10923	5392	3803	4060	5955	3842	1584	624	469	50389
1957	627	598	600	880	3336	4164	2692	4417	2627	746	399	425	21511
1958	939	904	1924	3269	11008	6953	8980	7775	4691	1725	772	539	49479
1959	488	523	577	2666	3520	2265	2488	1914	1047	445	297	511	16741
1960	357	337	442	1004	4241	3833	2785	2587	1330	433	283	276	17908
1961	320	781	1560	1014	2571	2277	2251	2335	1232	402	322	283	15348
1962	324	580	1359	982	5656	3131	4388	3411	2651	861	368	281	23992
1963	3210	773	2317	2215	6102	2753	7381	5767	2882	1189	529	426	35544
1964	570	1977	932	2046	1162	1292	2117	2661	1615	508	294	251	15425
1965	343	1086	11762	8063	2798	2329	6007	4286	2991	1357	807	415	42244
1966	417	1719	1321	2606	2072	2947	3767	2729	886	423	307	293	19487
1967	293	1579	3898	5141	3218	5267	5510	7588	6193	2795	775	452	42709
1968	489	540	963	2115	4793	3123	2434	2318	1086	477	449	334	19121
1969	471	971	2354	11546	7516	5094	6935	8568	4938	1923	690	475	51481
1970	638	671	4206	14463	4016	4115	2089	3048	2038	771	440	364	36859
1971	470	2385	4639	4022	2202	4617	3921	4632	3614	1217	514	439	32672
1972	503	695	1481	1616	2125	3777	2813	2856	1531	497	316	411	18621
1973	595	1499	2235	6131	5700	4633	3733	5314	2374	715	436	395	33760
1974	654	5627	4932	9160	2710	8322	6449	5302	3490	1401	626	463	49136
1975	500	610	955	1161	4299	6531	3694	6151	4430	1251	584	506	30672
1976	932	924	800	652	956	1461	1431	1472	536	328	428	369	10289
1977	345	367	331	467	456	530	662	891	688	270	231	316	5554
1978	281	465	2266	8395	4988	7250	5823	5523	4134	1757	615	748	42245
1979	367	520	527	1948	3118	3928	3167	5055	1825	645	356	310	21766
1980	664	985	1653	9393	8571	5021	3734	4158	3128	1764	529	484	40084
1981	426	408	1032	2118	2072	3083	2595	2248	983	385	282	269	15901
1982	603	5275	7174	5228	7413	6668	11163	6733	3679	1743	745	840	57264
1983	1430	2643	5518	6711	9738	15837	6822	8733	8197	3963	1445	852	71889
1984	889	5092	9699	3866	2960	3754	2875	3992	2113	860	456	414	36970
1985	639	2271	1437	960	1584	2002	3176	2302	998	383	293	424	16469
1986	487	817	1489	3248	16845	9819	3952	4099	2819	942	432	549	45498
1987	517	397	518	838	1834	3166	1888	1537	580	317	232	237	12061
1988	299	464	2075	2437	1155	1389	1638	1667	908	358	217	186	12793
1989	252	1157	849	1007	1128	7643	4036	2418	1220	453	254	408	20825
1990	767	584	439	1509	1086	2092	1935	1875	1263	412	211	201	12374
1991	256	298	303	326	458	3636	2239	2610	1680	507	216	200	12729
1992	448	402	492	649	3297	2493	2458	1374	499	431	194	196	12933
1993	375	355	1744	6519	4868	7200	5084	5825	4079	1390	528	381	38348
1994	462	442	944	874	1631	1738	1738	1949	788	261	170	235	11232
1995	323	645	1327	12012	4019	14327	7147	8801	6169	3687	1121	617	60195
1996	457	456	2094	3427	8435	5647	4754	6372	2629	1013	500	397	36181
1997	510	1442	9230	17239	3889	2857	2965	3180	1686	631	473	409	44511
1998	530	1092	1517	7167	11742	6925	6197	7160	7686	3626	1136	718	55496
1999	715	1577	2185	3226	6320	4794	4031	4878	2880	961	572	494	32633
2000	519	747	663	3111	7508	5167	4109	4091	1956	708	477	485	29541
2001	569	540	661	977	1932	2905	2312	2680	671	392	296	296	14231
2002	339	1025	3252	3664	2167	3026	3330	3059	1525	484	373	325	22569
2003	446	1164	2338	3403	3729	3941	3760	4218	2500	746	424	351	27020
Average	**495**	**1103**	**2379**	**3580**	**4053**	**4211**	**4016**	**4116**	**2521**	**960**	**432**	**362**	**28228**

Delta Natural Net Use estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	77	-23	-106	-110	39	82	166	213	271	310	276	204	1399
1922	122	10	-102	-56	-96	75	156	222	271	310	276	204	1392
1923	101	-41	-179	-51	48	119	71	237	267	310	276	187	1345
1924	119	46	1	-17	6	78	170	237	272	310	276	204	1702
1925	73	11	-90	-5	-94	75	91	169	270	310	276	204	1290
1926	124	27	-13	-54	-95	115	47	235	272	310	276	204	1448
1927	88	-80	10	-35	-123	72	111	233	258	310	276	204	1324
1928	62	-18	-42	-10	24	-10	147	230	272	310	276	204	1445
1929	128	-34	-62	10	32	72	163	238	238	310	276	204	1575
1930	127	62	-43	-103	-17	31	145	234	272	310	275	199	1492
1931	98	23	27	-82	14	79	174	205	262	310	275	204	1589
1932	118	1	-214	-20	-51	97	159	224	272	309	276	204	1375
1933	130	51	-35	-106	44	49	177	213	271	310	276	204	1584
1934	99	61	-93	-1	-53	118	166	227	262	310	276	197	1569
1935	114	-33	-51	-96	39	-3	58	238	272	310	276	204	1328
1936	92	38	-34	-95	-182	77	140	211	254	309	276	195	1281
1937	109	60	-77	-66	-107	-121	159	238	269	310	276	204	1254
1938	110	-10	-100	-33	-241	-65	143	234	272	310	276	198	1094
1939	97	44	2	-26	13	41	170	222	272	310	276	199	1620
1940	107	58	2	-224	-205	-19	148	229	272	310	276	202	1156
1941	106	41	-217	-159	-136	24	71	217	271	310	276	204	1008
1942	98	20	-116	-129	-11	58	50	210	272	310	276	203	1241
1943	112	-37	-38	-120	8	9	135	235	270	310	276	204	1364
1944	122	40	-19	-40	-89	98	130	215	265	310	276	204	1512
1945	95	-43	-54	14	-45	12	175	226	271	310	276	204	1441
1946	59	20	-130	15	37	70	171	217	272	309	276	204	1520
1947	122	-28	-25	20	12	45	175	232	260	309	276	204	1602
1948	62	35	13	25	34	18	100	178	264	310	276	203	1518
1949	107	51	-73	-8	18	-6	177	234	272	307	274	201	1554
1950	126	33	-19	-97	6	70	153	233	271	310	276	193	1555
1951	75	-71	-122	-64	3	72	150	216	272	310	275	202	1318
1952	97	-22	-140	-217	24	-3	128	236	269	309	276	203	1160
1953	130	-3	-152	-33	67	85	117	225	258	310	274	204	1482
1954	126	26	6	-30	8	39	133	230	267	310	274	204	1593
1955	130	-3	-82	-68	28	99	113	218	272	310	276	198	1491
1956	125	22	-264	-230	30	117	108	213	272	310	276	183	1162
1957	97	60	25	-28	-37	67	129	161	270	310	276	197	1527
1958	83	52	-54	-140	-213	-67	34	213	268	310	273	201	960
1959	126	58	10	-82	-61	108	164	238	272	310	276	129	1548
1960	130	62	-3	-61	-34	77	149	227	272	309	276	204	1608
1961	128	-57	9	-66	38	54	152	234	272	310	274	199	1547
1962	128	-26	-1	4	-180	75	173	236	272	309	276	204	1470
1963	-27	50	-22	-69	-24	13	46	220	271	310	276	197	1241
1964	91	-41	27	-56	66	87	170	234	246	309	272	204	1609
1965	79	-15	-121	-56	48	84	103	238	272	308	264	204	1408
1966	128	-57	-74	-29	13	112	166	230	271	305	276	204	1545
1967	130	-86	-77	-254	50	-2	67	237	251	310	276	203	1105
1968	126	30	-9	-92	6	49	163	233	272	310	247	204	1539
1969	119	-9	-64	-225	-170	80	143	237	271	310	276	201	1169
1970	87	32	-102	-206	19	78	170	238	266	310	276	202	1370
1971	114	-116	-109	3	57	64	154	205	272	310	276	203	1433
1972	126	36	-97	14	36	118	149	235	266	310	276	184	1653
1973	45	-101	-26	-250	-141	33	174	237	272	310	276	201	1030
1974	68	-80	-76	-40	49	12	118	238	262	294	276	204	1325
1975	97	45	-44	10	-75	-22	145	238	271	304	267	204	1440
1976	53	54	26	29	23	95	151	238	267	310	250	187	1683
1977	119	41	2	1	38	75	161	190	269	309	276	184	1665
1978	126	0	-89	-236	-71	-59	111	237	272	310	276	198	1075
1979	130	-11	16	-153	-87	58	151	235	272	307	276	204	1398
1980	74	16	-91	-110	-146	63	145	226	272	297	276	204	1226
1981	128	58	-18	-92	36	20	158	235	272	310	276	194	1577
1982	77	-76	-57	-190	-11	-120	96	238	267	310	276	156	966
1983	71	-114	-54	-212	-163	-226	82	228	271	310	274	180	647
1984	117	-96	-123	26	20	84	159	238	270	310	275	204	1484
1985	81	-117	-13	11	20	17	167	237	266	310	276	195	1450
1986	110	-53	-42	-49	-267	-48	148	230	272	309	276	188	1074
1987	129	57	-1	-24	-44	22	171	238	272	310	276	204	1610
1988	110	1	-72	-57	50	113	137	212	254	310	276	204	1538
1989	124	2	-39	12	25	35	172	237	269	310	271	127	1545
1990	88	23	32	-28	2	94	166	154	272	310	276	203	1592
1991	119	54	-3	29	4	-40	167	212	219	309	271	204	1545
1992	69	47	-3	-3	-108	35	156	238	266	310	276	204	1487
1993	90	54	-154	-333	-192	27	159	197	237	310	276	204	875
1994	113	-10	-19	-24	-39	118	144	182	272	310	276	202	1525
1995	108	-47	-37	-369	59	-172	158	202	258	296	269	202	927
1996	135	73	-165	-87	-177	66	157	195	307	332	285	197	1318
1997	80	-4	-148	-283	61	143	200	273	283	316	256	205	1382
1998	113	-87	-39	-147	-474	70	125	100	254	316	277	179	687
1999	91	-14	4	-80	-63	70	143	239	282	296	252	198	1418
2000	128	17	34	-115	-215	96	174	239	310	300	272	193	1433
2001	30	29	22	-54	-58	79	154	318	310	280	273	193	1576
2002	140	-27	-182	-40	53	74	195	-13	300	320	264	210	1294
2003	126	-19	-186	-10	29	68	79	237	309	335	242	210	1420
Average	**103**	**0**	**-58**	**-78**	**-39**	**44**	**140**	**221**	**270**	**309**	**274**	**198**	**1384**

Sacramento River Index = UF 6 + UF 8 + UF 9 + UF 11 estimated flow in TAF

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1921	389	2222	2710	3861	2738	3551	2509	2646	1687	681	431	376	23801
1922	362	459	980	859	2067	1899	2901	4362	2559	746	432	356	17982
1923	397	581	1687	1427	948	1168	2531	1988	1132	620	376	354	13209
1924	372	374	443	495	1054	528	697	547	373	319	272	263	5737
1925	335	686	792	816	4423	1711	2812	2131	1058	510	375	345	15994
1926	354	460	591	705	2889	1376	2627	1180	591	393	307	293	11766
1927	330	1801	1809	2022	5379	2996	3750	2687	1670	643	393	355	23835
1928	343	1186	971	1238	1717	4782	2922	1754	707	477	344	322	16763
1929	321	495	585	554	1015	1034	1195	1415	825	401	268	295	8403
1930	279	301	2316	1311	1661	2373	1927	1493	806	426	309	314	13516
1931	313	416	356	736	667	1029	815	616	387	270	247	243	6095
1932	325	361	1376	1093	1146	1975	1912	2481	1362	483	325	279	13118
1933	277	304	381	620	490	1655	1443	1588	1232	402	281	266	8939
1934	304	329	915	1303	1363	1470	1070	672	417	293	255	240	8631
1935	288	748	665	1571	1270	1724	4765	3010	1406	511	338	294	16590
1936	347	349	460	2987	4026	2145	2579	2051	1263	514	327	302	17350
1937	298	296	356	430	1501	2623	2817	2769	1176	476	308	285	13335
1938	369	1663	3970	1567	4324	6072	4591	4842	2586	916	507	421	31828
1939	483	528	698	676	661	1514	1407	834	463	335	285	299	8183
1940	326	318	626	3264	4985	5258	3558	1993	900	476	363	367	22434
1941	411	585	3046	3933	4416	3934	3753	3549	1634	834	520	465	27080
1942	459	579	3167	3705	4666	1758	3571	3184	2278	898	524	448	25237
1943	459	867	1594	3951	2344	4149	2986	2001	1264	646	458	405	21124
1944	431	454	486	668	1228	1543	1394	1964	1008	568	363	326	10433
1945	383	971	1291	911	3222	1648	1892	2289	1207	531	383	335	15063
1946	524	1101	4048	2300	1107	1814	2360	2161	936	514	401	353	17619
1947	386	742	823	496	1339	2116	1602	996	831	398	338	316	10383
1948	612	519	454	1814	625	1368	3695	3132	2047	671	428	387	15752
1949	390	471	603	468	814	2986	2377	2027	789	394	339	311	11969
1950	329	381	390	1621	2196	2091	2699	2307	1203	511	366	348	14442
1951	952	3197	4455	2918	3088	2161	2046	2069	843	460	396	360	22945
1952	474	911	3041	2860	3609	2963	4960	4866	2648	1202	582	484	28600
1953	453	472	1768	5030	1337	1772	2451	2595	2275	939	520	474	20086
1954	463	803	738	2086	2577	3075	3498	1896	889	530	448	424	17427
1955	420	733	1230	986	791	1027	1536	2092	969	470	370	362	10986
1956	360	594	7297	6324	3232	2510	2591	3399	1782	832	510	459	29890
1957	590	540	538	701	2361	2986	1821	2663	1260	550	423	455	14888
1958	801	799	1492	2220	7123	3933	4723	4200	2365	953	592	510	29711
1959	495	505	549	2076	2172	1605	1582	1153	659	443	366	450	12055
1960	390	367	443	836	2856	2823	1796	1543	876	436	350	343	13059
1961	377	670	1268	804	2018	1737	1535	1555	874	424	369	345	11976
1962	380	555	1123	713	3410	1991	2648	1924	1165	497	373	337	15116
1963	2539	710	1831	1420	3750	1760	4878	3305	1278	630	461	431	22993
1964	530	1423	716	1405	880	941	1425	1534	968	447	339	309	10917
1965	359	778	7347	4740	1835	1533	3757	2363	1344	670	536	403	25665
1966	427	1115	805	1632	1361	2086	2389	1449	594	404	350	343	12955
1967	337	1170	2320	2967	2169	3178	2892	4093	2959	1072	507	396	24060
1968	464	498	758	1370	3357	2211	1597	1351	699	467	477	390	13639
1969	477	705	1546	6238	3814	2552	3875	4124	1956	727	500	467	26981
1970	531	549	3032	9600	2620	2539	1303	1507	998	548	435	400	24062
1971	452	1743	2936	2724	1558	3300	2767	3114	2161	856	495	467	22573
1972	530	601	967	1240	1516	2758	2026	1624	901	470	378	415	13426
1973	575	1110	1627	3672	3091	2727	2232	2599	1028	523	431	434	20049
1974	612	4137	3302	6369	1861	5404	4121	2832	1854	973	552	479	32496
1975	498	572	752	871	2525	4017	2363	3563	2242	789	536	507	19235
1976	740	722	672	594	763	1137	1045	861	472	368	453	388	8215
1977	377	392	363	442	432	482	488	643	458	339	319	391	5126
1978	348	445	1649	5336	2829	4289	3203	2632	1584	702	409	491	23917
1979	353	438	440	1021	1633	2178	1832	2550	796	463	352	353	12409
1980	595	763	1107	5377	4736	2890	2106	2041	1167	680	373	471	22306
1981	433	412	840	1425	1571	2129	1588	1144	523	379	331	322	11097
1982	553	3930	5045	2853	4449	3726	5912	3405	1668	748	506	523	33318
1983	883	1361	2926	3392	5383	8799	3874	4655	3630	1500	690	592	37685
1984	633	2975	5730	2311	1851	2486	1813	2015	1131	559	411	440	22355
1985	573	1647	1055	717	1004	1245	1878	1144	601	382	347	452	11045
1986	478	605	1015	2249	9566	5533	2066	1778	1031	500	371	526	25718
1987	508	415	487	733	1382	2295	1163	849	403	358	302	309	9204
1988	327	396	1597	1651	843	954	984	961	592	348	278	259	9190
1989	307	1002	649	763	833	5443	2644	1358	670	423	316	393	14801
1990	661	491	385	1169	753	1478	1161	1252	918	396	291	281	9236
1991	319	336	318	347	425	2175	1456	1421	757	363	264	266	8447
1992	412	367	411	501	2126	1669	1461	705	393	351	254	270	8920
1993	366	349	1120	3218	2631	4750	3229	3039	2039	658	409	369	22177
1994	454	386	717	705	1077	1200	1026	973	440	271	222	294	7765
1995	316	476	898	7120	2663	8352	4392	5012	2845	1350	612	509	34545
1996	440	408	1523	2113	5209	3360	2865	3644	1272	585	449	420	22288
1997	472	975	5741	9084	2205	1750	1770	1371	801	445	396	413	25423
1998	525	921	1077	4634	6370	4122	3442	4018	3681	1398	631	574	31393
1999	612	1299	1699	2242	3914	3208	2516	2604	1491	650	481	475	21191
2000	528	669	611	2169	4683	3354	2548	1996	914	521	413	469	18875
2001	524	496	609	770	1335	1901	1379	1218	483	382	355	358	9810
2002	374	842	2234	2438	1505	1907	1913	1499	750	401	368	358	14589
2003	353	589	3047	3149	1448	2118	2618	3208	1293	544	417	398	19182
Average	**472**	**842**	**1620**	**2262**	**2468**	**2636**	**2462**	**2242**	**1255**	**581**	**400**	**383**	**17623**