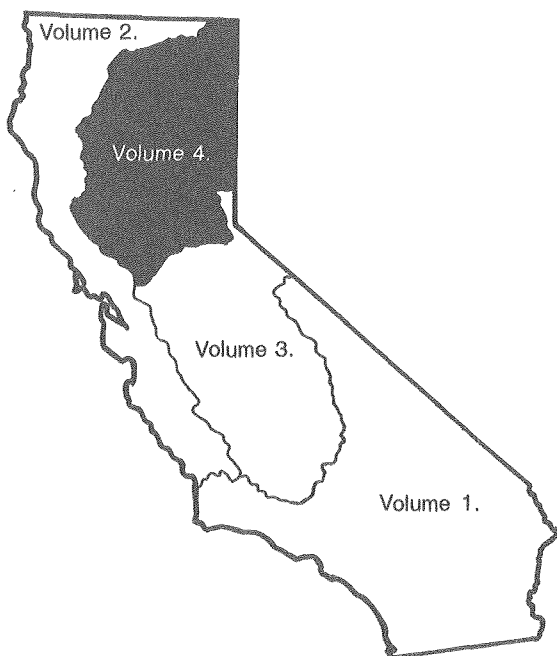


# **Water Resources Data California Water Year 1998**

**Volume 4. Northern Central Valley Basins and The Great  
Basin from Honey Lake Basin to Oregon State Line**

**Water-Data Report CA-98-4**



**Prepared in cooperation with the  
California Department of Water Resources  
and with other agencies**

## CALENDAR FOR WATER YEAR 1998

1997

OCTOBER							NOVEMBER							DECEMBER						
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1998

JANUARY							FEBRUARY							MARCH						
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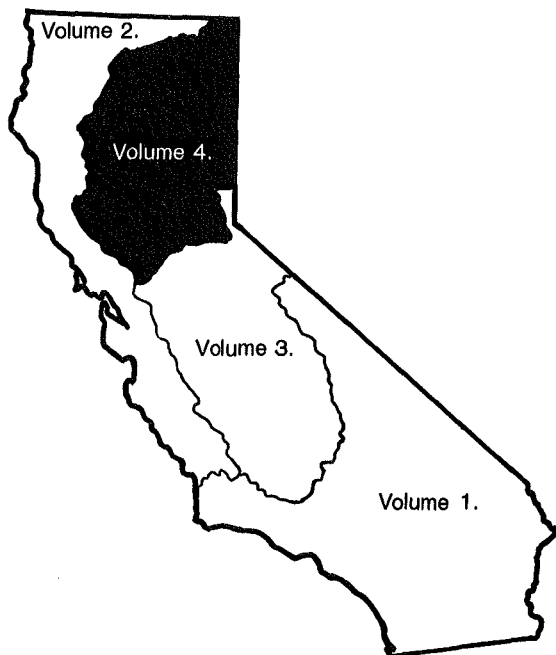
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# Water Resources Data California Water Year 1998

**Volume 4. Northern Central Valley Basins and The Great Basin  
from Honey Lake Basin to Oregon State Line**

**By M.F. Friebel, M.D. Webster, S.W. Anderson, G.L. Rockwell,  
and J.R. Smithson**

**Water-Data Report CA-98-4**



**U.S. DEPARTMENT OF THE INTERIOR**

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**U.S. GEOLOGICAL SURVEY**

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## PREFACE

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

Volume 1. Southern Great Basin from Mexican Border to Mono Lake Basin and Pacific Slope Basins from the Tijuana River to Santa Maria River

Volume 2. Pacific Slope Basins from Arroyo Grande to Oregon State Line except Central Valley

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

Volume 4. Northern Central Valley Basins and The Great Basin from Honey Lake Basin to Oregon State Line

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

This report was prepared in cooperation with the California Department of Water Resources and with other agencies, under the general supervision of Michael V. Shulters, District Chief, California.

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SURFACE-WATER AND WATER-QUALITY STATIONS  
IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THE VOLUME

ix

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

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## DISCONTINUED GAGING STATIONS

The following continuous record streamflow stations in California have been discontinued or converted to partial-record stations. Daily records were collected and are stored in NWIS for the period of record shown for each station.

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record
10354000	Long Valley Creek near Scotts	125	1917, 1919, 1989–94
10354700	Mill Creek at Milford	2.26	1963–69
10355000	Baxter Creek near Janesville	19.6	1913–16, 1918–19
10355500	Schloss Creek at Janesville	1.05	1915, 1918–19
10356500	Susan River at Susanville	184	1900–05, 1913, 1917–21, 1951–94
10357000	Gold Run Creek near Susanville	15.1	1915–16
10358470	Willow Creek Tributary near Susanville	3.08	1966–71
10358500	Willow Creek near Susanville	90.4	1951–94
10359100	Shaffer Creek near Litchfield	5.63	1970–73
10359250	Pine Creek near Westwood	24.8	1951–61
10359300	Pine Creek near Susanville	226	1961–66, 1968, 1970–82
10359350	Eagle Lake Tributary near Susanville	.91	1963–65
10360230	Eagle Creek at Eagleville	6.36	1962–64, 1966–68, 1970
10360900	Bidwell Creek below Mill Creek, near Fort Bidwell	25.6	1961–82
10361000	Bidwell Creek at Fort Bidwell	—	1912, 1918–19
11341400	Sacramento River near Mount Shasta	135	1960–87
11341500	Sacramento River at Castella	256	1911–17, 1920–23
11342500	Sacramento River at Antler	460	1911, 1920–41
11343000	Parker Creek near Alturas	80.9	1931
11343500	North Fork Pit River near Alturas	203	1930–32, 1958–67
11344000	North Fork Pit River at Alturas	212	1929–31, 1972–85
11344500	South Fork Pit River at Jess Valley	100	1929–31
11346000	Crooks Canyon Creek near Likely	33.8	1929–31
11346500	Fitzhugh Creek near Alturas	36.7	1930–31
11347500	Pine Creek near Alturas	23.5	1919–31
11348000	Pit River at Alturas	857	1929–31
11348200	Pit River near Alturas	1,080	1966–71
11349000	Pit River near Lookout	1,585	1929–31, 1958–71, 1978–80
11349500	Ash Creek at Ash Valley	136	1929–31
11350500	Ash Creek at Adin	258	1904–06, 1929–33, 1958–70, 1972–82
11351000	Willow Creek near Adin	—	1930–31
11351500	Widow Valley Creek near Lookout	27.7	1930–31
11352000	Pit River near Bieber	2,475	1904–08, 1922–26, 1929–31, 1952–70, 1972–75
11352500	Horse Creek at Little Valley, near Pittville	237	1929–31, 1960–67
11352900	Beaver Creek near Hat Creek	23.2	1970–73
11353500	Bear Creek near Dana	84	1921–26
11353600	Dry Creek near Dana	6.46	1967–70
11353700	Fall River near Dana	123	1959–67
11354500	Fall River at Fall River Mills	—	1912–13, 1922
11355000	Pit River at Fall River Mills	3,651	1921–51, 1981
11355500	Hat Creek near Hat Creek	162	1926–29, 1930–94
11356500	Hat Creek at Hawkins Ranch, near Hat Creek	190	1912–13
11357000	Hat Creek at Wilcox Ranch, near Cassel	193	1922
11358000	Lost Creek near Bald Mountain	7.51	1930
11358500	Rising River near Cassel	22.2	1912–13, 1921–22
11359500	Hat Creek at Carbon	364	1922
11360000	Burney Creek above Burney	60.1	1922
11360500	Burney Creek at Park Avenue, near Burney	94.6	1912–13, 1921–22, 1958–64, 1966–75, 1977–80
11363500	Kosk Creek near Henderson	54.8	1911–13, 1915–16
11364000	Pit River above Hatchet Creek	4,819	1926–37
11365500	Squaw Creek above Shasta Lake	64	1945–66
11366000	Squaw Creek at Ydalpom	99.5	1912–13
11366500	Pit River near Ydalpom	5,030	1911–43
11367000	Mud Creek near McCloud	—	1927–32

## DISCONTINUED GAGING STATIONS—Continued

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record
11367200	McCloud River below Big Springs, near McCloud	322	1956–59
11367300	Angel Creek near McCloud	17.1	1955–59
11367700	McCloud River above Panther Creek, near McCloud	401	1955–59
11368500	McCloud River near Gregory	633	1903–08
11369000	McCloud River at Baird	673	1911–43
11369500	Sacramento River at Kennett	6,355	1926–42
11371000	Clear Creek at French Gulch	115	1950–93
11371500	Clear Creek near Shasta	172	1912–13
11372050	Churn Creek near Redding	9.35	1961–66
11372060	Churn Creek below Newton Creek, near Redding	11.9	1966–72
11372200	South Cow Creek near Millville	77.3	1957–72
11372700	Clover Creek near Oak Run	19	1957–59
11373200	Oak Run Creek near Oak Run	11.0	1957–66
11373300	Little Cow Creek near Ingot	60.8	1958–65
11374060	Shingle Creek near Shingletown	3.25	1964–67
11374100	Bear Creek near Millville	75.7	1960–67
11374400	Middle Fork Cottonwood Creek near Ono	244	1957–75
11375500	North Fork Cottonwood Creek at Ono	58.8	1908–13
11375700	North Fork Cottonwood Creek near Igo	88.7	1957–80
11375810	Cottonwood Creek near Olinda	395	1971–86
11375815	Cottonwood Creek above South Fork, near Cottonwood	478	1982–85
11375820	South Fork Cottonwood Creek near Cottonwood	217	1963–78
11375870	South Fork Cottonwood Creek near Olinda	371	1977–86
11375900	South Fork Cottonwood Creek at Evergreen Road, near Cottonwood	397	1982–85
11376038	Manzanita Creek at park boundary, near Manzanita Lake	11.6	1979–81
11376450	Coleman Canal above Coleman Forebay, near Cottonwood	—	1979–85
11376490	Battle Creek above Coleman Powerhouse, near Cottonwood	355	1979
11376500	Battle Creek near Cottonwood	356	1941–61
11377200	Sacramento River at Bend Bridge	8,900	1968–70
11377500	Paynes Creek near Red Bluff	92.8	1950–66
11378500	Sacramento River at Red Bluff	9,077	1957–66
11378800	Red Bank Creek near Red Bluff	89.6	1960–82
11378860	Red Bank Creek at Rawson Road Bridge, near Red Bluff	109	1965–67
11379000	Antelope Creek near Red Bluff	123	1941–82
11380000	Elder Creek near Henleyville	130	1931–41
11380500	Elder Creek at Gerber	136	1941–69, 1977–79
11381000	Mill Creek near Mineral	21.2	1929–32
11381595	Mill Creek at Sherwood Bridge, near Los Molinos	13.3	1977–78
11381990	Thomes Creek tributary at Paskenta	.65	1968–70
11382000	Thomes Creek at Paskenta	203	1921–97
11382090	Thomes Creek at Rawson Road Bridge, near Richfield	28.4	1978–80
11382500	Deer Creek at Deer Creek Meadows	50.5	1929–32
11382550	Deer Creek below Slate Creek, near Deer Creek Meadows	69.4	1961–70
11383000	Deer Creek at Polk Springs	134	1929–31
11383600	Deer Creek at Red Bridge, near Vina	210	1977
11383730	Sacramento River at Vina Bridge, near Corning	—	1945–78, 1980
11383800	Sacramento River near Hamilton City	10,833	1945–80
11384000	Big Chico Creek near Chico	72.4	1931–86
11384340	Mud Creek at Cohasset Road, near Chico	21.9	1968–69
11384350	Mud Creek near Chico	48.9	1966–74
11384500	Stony Creek near Stonyford	102	1914–15, 1919–34
11384600	Little Stony Creek above East Park Reservoir, near Lodoga	45.6	1967–82
11385000	Little Stony Creek near Lodoga	98.2	1909–34
11385500	Stony Creek above Stony Gorge Reservoir	281	1934–41
11386500	Grindstone Creek near Elk Creek	157	1936–37, 1940, 1966–72
11387000	Stony Creek near Fruto	597	1901–12, 1961–78
11387200	Stony Creek above Black Butte Lake, near Orland	623	1909, 1981–83
11387500	Stony Creek near Orland	635	1920–34
11387800	North Fork Stony Creek near Newville	63.4	1963–73
11387990	South Diverson Canal near Orland	—	1955–90
11388000	Stony Creek below Black Butte Dam, near Orland	738	1955–90
11388500	Stony Creek near Hamilton City	773	1941–73
11389000	Sacramento River at Butte City	12,080	1921–97

## DISCONTINUED GAGING STATIONS—Continued

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record
11389700	Butte Creek at Butte Meadows	44.4	1960–74
11389950	Little Butte Creek at Magalia	11.4	1969–85
11390200	Gold Run Creek Tributary near Nelson	1.31	1961
11390210	Cherokee Canal near Nelson	—	1970–74
11390655	South Fork Willow Creek near Fruto	38.9	1963–78
11390660	Walker Creek at Artois	60.4	1965–81
11390672	Stone Corral Creek near Sites	38.2	1958–64, 1966–85
11390890	Colusa Basin Drain at Road 99E, near Knights Landing	—	1996
11391000	Sacramento River at Knights Landing	14,535	1941–80
11391100	Sacramento Slough near Knights Landing	—	1996
11391400	Little Last Chance Creek below Frenchman Dam, near Chilcoot	81.1	1959–80
11391460	Berry Creek near Sattley	7.54	1973–81
11391500	Big Grizzly Creek at Grizzly Valley Dam, near Portola	44	1926–32, 1951–53, 1955–67, 1969–80
11392100	Middle Fork Feather River near Portola	586	1969–76, 1978–80
11392500	Middle Fork Feather River near Clio	686	1926–79
11393000	Middle Fork Feather River at Sloat	775	1911–27
11393500	Middle Fork Feather River below Sloat	819	1941–62
11394000	Middle Fork Feather River near Nelson Point	883	1924–32
11394500	Middle Fork Feather River near Merrimac	1,062	1952–86
11394620	Fall River near Feather Falls	9.89	1963–79
11394800	South Fork Feather River above Little Grass Valley Reservoir	8.09	1961–79
11395300	Lost Creek above Sly Creek Reservoir, near Strawberry Valley	14.1	1961–70
11396300	South Fork Feather River near Forbestown	105	1958–61
11396350	South Fork Feather River at Ponderosa Dam	108	1962–87, 1990
11396400	Sucker Run near Forbestown	18.7	1965–87
11396500	Palmero Canal at Enterprise	—	1912–65
11397000	South Fork Feather River at Enterprise	132	1912–66
11397500	Feather River at Bidwell Bar	1,341	1912–64
11400000	Butt Creek above Almanor–Butt Creek Tunnel, near Prattville	69.0	1937–64
11401000	Butt Creek at Butt Valley	81.3	1905–21
11401100	Butt Creek near Caribou	85.5	1970, 1976–81
11401125	Indian Creek near Boulder Creek Guard Station, near Taylorsville	68.6	1966–80
11401150	Red Clover Creek near Genesee	122	1959–65
11401180	Little Grizzly Creek near Genesee	29.6	1964–79
11401200	Indian Creek near Taylorsville	526	1958–73, 1975–76, 1979–80
11401300	Lights Creek near Taylorsville	57.6	1958–62
11401500	Indian Creek near Crescent Mills	739	1906–09, 1911–18, 1930–93
11401900	Spanish Creek near Quincy	69.1	1959–63
11401940	Mill Creek near Quincy	6.72	1966–71
11402500	Spanish Creek at Keddie	194	1912–33
11403000	East Branch of North Fork Feather River near Rich Bar	1,025	1951–61, 1968–82
11403510	Bucks Creek Tunnel inlet near Storrie	—	1970, 1976
11404000	Grizzly Creek near Storrie	5.20	1930–44
11404100	Bucks Creek Tunnel Outlet near Storrie	—	1986–94
11405000	North Fork Feather River at Big Bend	1,965	1905–11
11405300	West Branch Feather River near Paradise	—	1958–86
11405500	Spring Valley Diversion near Yankee Hill	—	1926–52
11406000	Concow Creek near Yankee Hill	15.1	1928–30, 1932–52
11406500	West Branch Feather River near Yankee Hill	146	1931–63
11407150	Feather River near Gridley	3,676	1965–98
11407300	North Honcut Creek near Bangor	47.1	1961–81
11407500	South Honcut Creek near Bangor	30.6	1951–86
11407700	Feather River at Yuba City	3,974	1965–84
11407810	Middle Yuba River at Jackson Meadows Dam, near Sierra City	37.6	1989–94
11407900	Middle Yuba River below Jackson Meadows Dam, near Sierra City	38.3	1965–87
11408500	Middle Yuba River at Milton	39.8	1926–34, 1935–64
11408700	Middle Yuba River near Alleghany	96.6	1958–66
11408850	Middle Yuba River near Camptonville	136	1967–89
11409000	Middle Yuba River above Oregon Creek, near North San Juan	162	1941–69
11409500	Oregon Creek near North San Juan	34.4	1912–69
11410000	Middle Yuba River below Oregon Creek, near North San Juan	198	1912–41
11410400	Haypress Creek near Sierra City	18.2	1961–66
11410500	North Yuba River near Sierra City	94.7	1924–44

## DISCONTINUED GAGING STATIONS—Continued

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record
11411000	Downie River at Downieville	72.7	1911–26
11411500	North Yuba River at Goodyears Bar	221	1911–31
11412000	Rock Creek at Goodyears Bar	8.98	1911–33
11412500	Goodyears Creek at Goodyears Bar	12.9	1911–33
11413100	North Yuba River above Slate Creek, near Strawberry Valley	351	1968–87
11413500	North Yuba River below Bullards Bar Dam	487	1941–66
11413600	Sweetland Creek near North San Juan	2.68	1969–73
11413900	Upper Castle Creek at Soda Springs	3.96	1958–63
11413950	South Yuba River Tributary near Soda Springs	.92	1972–73
11414000	South Yuba River near Cisco	51.8	1942–94
11414190	Drum Canal above Drum Forebay, near Blue Canyon	—	1964–91
11414500	Canyon Creek above Jackson Creek	16.6	1926–30
11415000	Jackson Creek at Mouth	5.45	1926–30
11417000	South Yuba River near Washington	198	1942–53, 1957–72
11417100	Poorman Creek near Washington	23.1	1961–71
11419000	Yuba River at Smartville	1,200	1904–41
11420000	Dry Creek near Brownsville	20.4	1949–60
11420500	Dry Creek at Virginia Ranch	71.3	1949–61
11420700	Dry Creek near Browns Valley	87.1	1964–80
11421500	Yuba River at Marysville	1,344	1944–57
11421700	Feather River below Shanghai Bend, near Olivehurst	5,334	1970–80
11421720	Boardman Canal near Emigrant Gap	—	1965–86
11421730	Bear River below Boardman Diversion Dam, near Emigrant Gap	4.01	1979–85
11423000	Bear River near Auburn	140	1941–67
11423500	Bear River at Van Trent	265	1905–27
11424500	Dry Creek near Wheatland	99.9	1947–62
11424600	Wellman Creek near Smartville	.59	1968–73
11425000	Feather River at Nicolaus	5,921	1942, 1944–83, 1985
11426110	Onion Creek Tributary No. 3 near Soda Springs	.65	1959–64, 1966–67
11426120	Onion Creek Tributary No. 5A near Soda Springs	.39	1959–64, 1966
11426130	Onion Creek Tributary No. 2 near Soda Springs	.48	1958–64, 1966–67
11426140	Onion Creek Tributary No. 1 near Soda Springs	.19	1958–64, 1966–67
11426150	Onion Creek near Soda Springs	3.58	1960–79
11426160	Onion Creek Tributary No. 7 near Soda Springs	.80	1959–64
11426200	North Fork Forbes Creek near Dutch Flat	1.68	1956–85
11426400	North Shirltail Creek near Dutch Flat	9.10	1957–85
11426500	North Fork American River near Colfax	308	1912–41
11428000	Rubicon River at Rubicon Springs, near Meeks Bay	31.4	1910–13, 1957–86
11429000	South Fork Rubicon River at sawmill, near Quintette	16.1	1910–14
11429800	Robbs Peak Tunnel near Riverton	—	1963–67
11430500	South Fork Rubicon River at Mouth, near Georgetown	56.9	1956–62
11431000	Rubicon River near Georgetown	195	1910–14, 1944–65
11431500	Georgetown Divide Ditch above Pilot Creek, near Georgetown	—	1951–62
11432000	Georgetown Divide Ditch near Georgetown	—	1947–60
11432500	Pilot Creek near Georgetown	15.1	1946–60
11433100	Long Canyon Creek near French Meadows	18.0	1960–92
11433200	Rubicon River near Foresthill	315	1959–84
11433260	North Fork of Middle Fork American River near Foresthill	88.9	1965–85
11433400	Canyon Creek near Georgetown	12.7	1966–79
11433420	Maine Bar Canyon Creek near Greenwood	.75	1973–86
11433500	Middle Fork American River near Auburn	614	1912–86
11433800	North Fork American River below Auburn Damsite, near Auburn	973	1972–86
11434000	North Fork American River at Rattlesnake Bridge	996	1931–37, 1939–55
11435000	Pyramid Creek near Phillips	3.73	1961–64, 1966–70
11435500	South Fork American River at Kyburz	73.2	1924
11437000	Caples Lake Outlet near Kirkwood	13.5	1922–92
11438000	Silver Fork of South Fork American River near Kyburz	107	1925–44
11439950	Alder Creek Pipeline Diversion near Whitehall	—	1976–82
11440000	Alder Creek near Whitehall	22.1	1923–81
11440500	Plum Creek near Riverton	7.32	1923–39
11440850	Picket Pen Creek near Kyburz	.49	1964–68
11441000	Silver Creek at Union Valley	83.0	1925–60
11442000	Silver Creek near Placerville	177	1922–61
11442500	South Fork American River below Silver Creek, near Pollock Pines	449	1923, 1970–93
11443000	American River Flume near Camino	—	1923–57

## DISCONTINUED GAGING STATIONS—Continued

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record
11445000	South Fork American River at Coloma	631	1930–41
11445500	South Fork American River near Lotus	673	1951–95
11446000	Weber Creek near Salmon Falls	97.6	1943–59
11447000	American River at Sacramento	1,936	1944–59
11447030	Strong Ranch Slough at Sacramento	5.02	1972–75
11447300	Dry Creek Tributary near Roseville	.39	1964–67
11447330	Magpie Creek near Del Paso Heights	2.03	1996–97
11447500	Sacramento River at Sacramento	23,502	1904–05, 1921 1949–79, 1986–96
11448500	Adobe Creek near Kelseyville	6.36	1955–78
11448900	Highland Creek above Highland Creek Dam	11.9	1963–78
11449000	Highland Creek near Kelseyville	12.6	1955–62
11449010	Highland Creek below Highland Creek Dam, near Kelseyville	14.2	1966–77
11449100	Scotts Creek near Lakeport	55.2	1961–80
11449350	Burns Valley Creek near Clearlake Highlands	4.37	1963–69
11449450	Copsey Creek near Lower Lake	13.2	1961–68
11449460	Seigler Creek at Lower Lake	12.5	1966–73
11450500	Cache Creek at Lower Lake	488	1901–15
11451500	North Fork Cache Creek near Lower Lake	197	1931–81
11451700	Bear Creek Tributary near Wilbur Springs	4.49	1962–63
11451720	Bear Creek near Rumsey	100	1959–80
11451760	Cache Creek above Rumsey	955	1961–62, 1965–73, 1976–82, 1984–86
11451950	Cache Creek near Brooks	1,041	1983–86
11452000	Cache Creek near Capay	1,044	1943–77
11453170	Dry Creek above Appletree Creek, near Middletown	.83	1978
11453200	Dry Creek near Middletown	8.35	1960–72, 1979–80
11453500	Putah Creek near Guenoc	113	1905–06, 1931–76
11453550	Hunting Creek near Knoxville	37.8	1969–76
11453570	Adams Creek near Knoxville	7.42	1970–76
11453580	Nevada Creek near Knoxville	7.06	1969–76
11453600	Pope Creek near Pope Valley	78.3	1961–80
11453700	Capell Creek Tributary near Wooden Valley	.87	1962–65
11454100	Pleasants Creek near Winters	15.9	1960–68
11454500	Putah Creek at Winters	635	1906–31
11455000	Putah Creek near Davis	638	1949–63

## DISCONTINUED LAKES AND RESERVOIRS

The following continuous-record lake stations in California have been discontinued. Daily records were collected and are stored in NWIS for the period of record shown for each location.

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Period of record
11362650	Pit no. 5 Powerplant Forebay near Big Bend	—	1986–89
11387995	Black Butte Lake near Orland	738	1964–90
11403300	Three Lakes Reservoir near Bucks Lake	1.0	1984–87
11423700	New Camp Far West Reservoir near Wheatland	283	1967–76, 1977–83
11425300	Halsey Forebay near Auburn	—	1980–86
11425320	Lake Arthur near Auburn	.86	1982–83
11425330	Halsey Afterbay near Auburn	—	1980–85

## DISCONTINUED WATER-QUALITY STATIONS

The following continuous water-quality stations in California have been discontinued. Daily records were collected and are stored in NWIS for the period of record shown for each location.

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Type of record	Period of record
10356500	Susan River at Susanville	184	WQ,B,S	1952-93
11341400	Sacramento River near Mt. Shasta	135	T	1966-71, 1973-87
11342000	Sacramento River at Delta	425	WQ,T	1951-81
11345500	South Fork Pit River near Likely	247	WQ,T,S	1951-79
11348500	Pit River near Canby	1,431	WQ,T,S	1951-79
11365000	Pit River near Montgomery Creek	4,952	WQ,T	1951, 1953-81
11368000	McCloud River above Shasta Lake	604	T	1957-59
11370000	Shasta Lake near Redding	6,421	WQ	1978-80
11370500	Sacramento River at Keswick	6,648	B,WQ,C, T,S	1951-94
11371000	Clear Creek at French Gulch	115	S	1966-67
11372000	Clear Creek near Igo	228	WQ,T	1958-79
11372200	South Cow Creek near Millville	77.3	T	1966-71
11374000	Cow Creek near Millville	425	WQ,T,S	1959-71, 1973-76, 1978-79
11374400	Middle Fork Cottonwood Creek near Ono	244	T,S	1965, 1968-73 1977-79
11375700	North Fork Cottonwood Creek near Igo	88.7	T	1977-79
11375810	Cottonwood Creek near Olinda	395	T,S	1973-80
11375820	South Fork Cottonwood Creek near Cottonwood	217	T	1977-79
11375870	South Fork Cottonwood Creek near Olinda	371	T,S	1878, 1977-80
11376000	Cottonwood Creek near Cottonwood	927	WQ,T,S	1957-67, 1977-85
11376038	Manzanita Creek at park boundary, near Manzanita Lake	11.6	C,T	1980-81
11376550	Battle Creek below Colman Fish Hatchery, near Cottonwood	357	WQ,T,S	1962-79
11377100	Sacramento River above Bend Bridge, near Red Bluff	8,900	WQ,C,T,S	1955-83
11377200	Sacramento River at Bend Bridge	—	T,S	1959-63, 1967, 1969-70
11378000	Sacramento River near Red Bluff	9,020	T,S	1961-68
11378500	Sacramento River at Red Bluff	9,077	T,S	1958-66
11379500	Elder Creek near Paskenta	92.4	WQ,T,S	1959-70
11380500	Elder Creek at Gerber	136	T,S	1972-79
11381595	Mill Creek at Sherwood Bridge, near Los Molinos	133	T,S	1977-79
11382000	Thomes Creek at Paskenta	203	WQ,T,S	1959-83
11382090	Thomes Creek at Rawson Road Bridge, near Richfield	284	T,S	1978-80
11383600	Deer Creek at Red Bridge, near Vina	210	T,S	1977
11383800	Sacramento River near Hamilton City	10,833	T,S	1977
11384600	Little Stony Creek above East Park Reservoir, near Lodoga	45.6	T	1967-79
11387000	Stony Creek near Fruto	597	T	1971-78
11387200	Stony Creek above Black Butte Lake, near Orland	623	T,S	1981-83
11387900	Masterson Hollow Creek near Newville	.96	T	1982
11388000	Stony Creek below Black Butte Dam, near Orland	738	WQ,S,T	1958-94
11389000	Sacramento River at Butte City	12,080	WQ,T,S	1955-67, 1969-8
11389470	Colusa Weir Spill, Butte Basin, near Colusa	—	T,S	1975
11389500	Sacramento River at Colusa	12,090	C,T	1959-66, 1973-80, 1996-98
11390000	Butte Creek near Chico	147	WQ,T	1953-79
11390210	Cherokee Canal near Nelson	—	T,S	1970-74
11390425	Sutter Bypass at Long Bridge, near Meridian	—	T,S	1979
11390480	Tisdale Weir near Grimes	—	S	1978-80
11390600	Sacramento River at Boyers Bend, near Dunnig	—	T	1960-63
11391000	Sacramento River at Knights Landing	14,535	T,S	1959-60, 1978-80
11391050	Sutter Bypass near Nicolaus	—	T,S	1980-81
11391100	Sacramento Slough near Knights Landing	—	C,T	1996
11391500	Big Grizzly Creek at Grizzly Valley Dam, near Portola	44	T	1963-67
11392500	Middle Fork Feather River near Clio	686	T	1964-82
11394500	Middle Fork Feather River near Merrimac	1,062	T	1963-82
11396350	South Fork Feather River at Ponderosa Dam	108	T	1963-67
11401180	Little Grizzly Creek near Genesee	29.6	T	1964-79
11401500	Indian Creek near Crescent Mills	739	WQ,T,S	1951-79
11404500	North Fork Feather River at Pulga	1,953	WQ,T	1963-83
11405300	West Branch Feather River near Paradise	—	T	1963-80
11406870	Thermolito Afterbay at river outlet	—	T	1968
11406920	Thermolito Afterbay Release to Feather River near Oroville	—	T	1969-92



## DISCONTINUED WATER-QUALITY STATIONS—Continued

Station No.	Station name	Drainage area (mi <sup>2</sup> )	Type of record	Period of record
11407000	Feather River at Oroville	3,624	C,S,T	1906–07, 1951–92
11407150	Feather River near Gridley	3,676	WQ,T,S	1965–93
11407700	Feather River at Yuba City	3,974	T	1964–76
11409000	Middle Yuba River above Oregon Creek, near San Juan	162	T	1965–69
11409400	Oregon Creek below Log Cabin Dam, near Camptonville	29.1	T	1972–79
11409500	Oregon Creek near San Juan	34.4	T	1965–69
11410000	Middle Yuba River below Oregon Creek, near North San Juan	198	T	1974–77
11413100	North Yuba River above Slate Creek, near Strawberry Valley	351	T	1968–69, 1974–77
11413520	North Yuba River below New Bullards Bar Dam, near North San Juan	490	T	1971–74
11413700	Yuba River below Colgate Powerhouse, near French Corral	729	T	1975–78
11417500	South Yuba River at Jones Bar, near Grass Valley	308	T,S	1965–79
11418000	Yuba River below Englebright Dam, near Smartville	1,108	T	1973–78
11418500	Deer Creek near Smartville	84.6	T,S	1974–79
11420800	Yuba River at Daquerra Point Dam, near Browns Valley	1,330	T	1975–77
11421000	Yuba River near Marysville	1,339	WQ	1951–52, 1973–80
11421500	Yuba River at Marysville	1,344	WQ,T	1964, 1966, 1969–70, 1973–76
11425000	Feather River at Nicolaus	5,921	T,S	1960–68, 1973–84
11425100	Feather River near Nicolaus	—	T	1969–72, 1974
11425500	Sacramento River at Verona	21,251	C,T	1952, 1969–70, 1980, 1996–98
11427000	North Fork American River at North Fork Dam	342	T,WQ,S	1959–83
11429350	Loon Lake near Meeks Bay	—	WQ	1996
11433300	Middle Fork American River, near Foresthill	524	WQ,B	1979
11433400	Canyon Creek near Georgetown	12.7	T	1966–71, 1973–79
11433800	North Fork American River below Auburn dam site, near Auburn	973	T	1983–86
11439500	South Fork American River near Kyburz	193	WQ,T,B,S	1966–79, 1980
11441001	Union Valley Reservoir near Riverton	—	WQ	1996
11441100	Ice House Reservoir near Kyburz	27.2	WQ	1996
11445500	South Fork American River near Lotus	673	B,S,WQ,T	1957–68, 1970–94
11446500	American River at Fair Oaks	1,888	WQ,T	1960–65
11447030	Strong Ranch Slough at Sacramento	5.02	C	1973–75
11447500	Sacramento River at Sacramento	23,502	S	1957–79
11447650	Sacramento River at Freepoint	—	B,C	1974–81, 1985–94, 1996–98
11447810	Sacramento River at Greens Landing	—	C	1974–81
11449010	Highland Creek below Highland Creek Dam, near Kelseyville	14.2	T,S	1967–77
11451760	Cache Creek above Rumsey	955	T,S	1960–70, 1976, 1984–86
11451950	Cache Creek near Brooks	1,041	T,S	1984–86
11452500	Cache Creek at Yolo	1,139	T,S	1959–65, 1966–67, 1986
11453000	Yolo Bypass near Woodland	—	S	1957–61, 1980
11453170	Dry Creek above Appletree Creek, near Middletown	.83	C,T	1978
11453500	Putah Creek near Guenoc	113	T,S	1960–73
11453550	Hunting Creek near Knoxville	37.8	T,S	1973–74
11454000	Putah Creek near Winters	574	WQ,T	1951–81

Type of record: WQ (Water-quality); B (Biological); C (Conductivity); T (Temperature); S (Sediment).



WATER RESOURCES DATA—CALIFORNIA, WATER YEAR 1998  
VOLUME 4—NORTHERN CENTRAL VALLEY BASINS AND THE GREAT BASIN  
FROM HONEY LAKE BASIN TO OREGON STATE LINE

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By M.F. Friebe, M.D. Webster, S.W. Anderson, G.L. Rockwell, and J.R. Smithson

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## INTRODUCTION

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

This volume of the report includes records on surface water in the State. Specifically, it contains: (1) discharge records for 176 streamflow-gaging stations and 1 partial-record station; (2) stage and content records for 45 lakes and reservoirs; (3) gage-height records for 1 station; (4) precipitation records for 3 stations; and (5) water-quality records for 14 streamflow-gaging stations and 7 water-quality partial-record stations. Records included for stream stages are only a small fraction of those obtained during the water year.

The series of annual reports for California began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format changed to include data on quantities of surface water, quality of surface and ground water, and ground-water levels. From the 1985 through the 1993 water years, a separate volume for ground-water levels and quality was published for California.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for California were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 10 and 11." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in public libraries of principal cities of the United States, or if not out of print, they may be purchased from U.S. Geological Survey, Information Services, Box 25286, Denver Federal Center, Denver, CO 80225-0046.

Publications similar to this report are published annually by the U.S. Geological Survey for all States. Each report has an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report CA-98-4." For archiving and general distribution, the reports for 1971–74 water years also are identified as water-data reports. These water-data reports are for sale, in paper copy or on microfiche, by the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. For further ordering information, the Customer Inquiries telephone number is (703) 487-4650, between 8:30 a.m. and 5:30 p.m. Eastern Standard Time.

Additional information for ordering specific reports may be obtained from the District Office at the address given on the back of the title page or by telephone at (916) 278-3100.

## COOPERATION

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

California Department of Water Resources, David N. Kennedy, Director.

Georgetown Divide Public Utility District, Marie E. Davis, General Manager.

Hidden Valley Lake Community Services District, Mel Aust, General Manager

Yolo County Flood Control and Water Conservation District, James F. Eagan, General Manager.

Yuba County Water Agency, Donn Wilson, Engineer-Administrator.

Assistance in the form of funds or services was given by the Bureau of Reclamation, U.S. Department of Interior.

The following organizations aided in collecting records: Arbuckle Mountain Project; California Department of Water Resources; Energy Growth Partnership I; Five Bears Hydro, Inc.; Lassen Station Hydroelectric L.P.; Malacha Power Project, Inc.; Nelson Creek Power Co.; Nevada and Oroville–Wyandotte Irrigation Districts; Pacific Gas and Electric Co.; Placer and Yuba County Water Agencies; Sacramento Municipal Utility District; Shasta Hydroelectric; Sithe Energies, Inc.; Snow Mountain Hydroelectric; South Sutter Water District; STS Hydropower; and Synergics, Inc.

## SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins—the Mississippi, the Columbia, the Colorado, and the Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites; (2) provide the mechanism to evaluate the effectiveness of the significant reduction in SO<sub>2</sub> emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred; (3) provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO<sub>2</sub> and NO<sub>x</sub> scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

<http://nadp.nrel.colostate.edu/NADP>

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies.

Additional information about the NAWQA Program is available through the world wide web at:

[http://wwwrvares.er.usgs.gov/nawqa/nawqa\\_home.html](http://wwwrvares.er.usgs.gov/nawqa/nawqa_home.html)

## EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1998 water year that began October 1, 1997, and ended September 30, 1998. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and contents data for lakes and reservoirs, and water-quality data for surface water. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

### Station-Identification Numbers

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

### Downstream-Order System

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

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station such as 11396310, which appears just to the left of the station name, includes the two-digit part number "11" plus the six-digit downstream-order number "396310." The part number designates the major river basin; for example, part "11" is the Pacific Slope Basins in California.

### Latitude-Longitude System

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

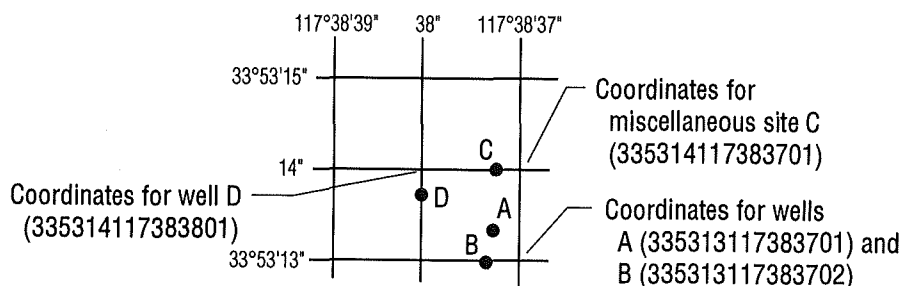


Figure 1. System for numbering miscellaneous sites (latitude and longitude).

## Records of Stage and Water Discharge

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

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records" or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record stations for which data are given in this report are shown, by county, in figures 2 through 23.

## Data Collection and Computation

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

Continuous records of stage are obtained with digital recorders, data collection platforms, or data loggers that sample stage values at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the U.S. Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in U.S. Geological Survey Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapters A1 through A19, and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

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

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

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

At some gaging stations, acoustic velocity meter (AVM) systems are used to compute discharge. The AVM system measures the stream's velocity at one or more paths in the cross section. Coefficients are developed to relate this path velocity to the mean velocity in the cross section. Because the AVM sensors are fixed in position, the adjustment coefficients generally vary with stage. Cross-sectional area curves are developed to relate stage, recorded as noted above, to cross-section area. Discharge is computed by multiplying path velocity by the appropriate stage-related coefficient and area.

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

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

### Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

#### Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

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

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

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

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

**GAGE.**—The type of gage currently in use, the datum of the current gage referred to sea level (see glossary), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

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

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

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

separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

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

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

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

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

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

#### Data table of daily mean values

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

#### Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEARS \_\_\_\_—\_\_\_\_, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

#### Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS \_\_\_\_—\_\_\_\_," will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (see line headings below), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes.



Selected streamflow duration curve statistics and runoff data also are given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

**ANNUAL TOTAL.**—The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

**ANNUAL MEAN.**—The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

**HIGHEST ANNUAL MEAN.**—The maximum annual mean discharge occurring for the designated period.

**LOWEST ANNUAL MEAN.**—The minimum annual mean discharge occurring for the designated period.

**HIGHEST DAILY MEAN.**—The maximum daily mean discharge for the year or for the designated period.

**LOWEST DAILY MEAN.**—The minimum daily mean discharge for the year or for the designated period.

**INSTANTANEOUS PEAK FLOW.**—The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

**INSTANTANEOUS PEAK STAGE.**—The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

**INSTANTANEOUS LOW FLOW.**—The minimum instantaneous discharge occurring for the water year or for the designated period.

**ANNUAL RUNOFF.**—Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

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

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Inches (IN.) indicates the depth to which the drainage area would be covered if all the runoff for a given period were distributed on it uniformly.

**10 PERCENT EXCEEDS.**—The discharge that is exceeded 10 percent of the time for the designated period.

**50 PERCENT EXCEEDS.**—The discharge that is exceeded 50 percent of the time for the designated period.

**90 PERCENT EXCEEDS.**—The discharge that is exceeded 90 percent of the time for the designated period.

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

### Identifying Estimated Daily Discharge

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

### Accuracy of the Records

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

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

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second (ft<sup>3</sup>/s) for values less than 1 ft<sup>3</sup>/s, to the nearest tenth between 1.0 and 10 ft<sup>3</sup>/s, to whole numbers between 10 and 1,000 ft<sup>3</sup>/s, and to three significant figures

for more than 1,000 ft<sup>3</sup>/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

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

### Other Records Available

The National Water Data Exchange (NAWDEX), U.S. Geological Survey, Reston, VA 20192, maintains an index of sites as well as an index of records of discharge collected by other agencies but not published by the U.S. Geological Survey. Information on records at specific sites can be obtained from that office upon request.

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

### Records of Surface-Water Quality

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

### Classification of Records

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

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape or stored electronically in a data logger. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figures 2 through 23.

### Arrangement of Records

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

### Onsite Measurements and Sample Collection

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

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

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

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

Historical and current (1998) dissolved trace-element concentrations are reported herein for water that was collected, processed, and analyzed by using either ultraclean or other than ultraclean techniques. If ultraclean techniques were used, then those concentrations are reported in nanograms per liter (ng/L). If other than ultraclean techniques were used, then those concentrations are reported in micrograms per liter ( $\mu\text{g/L}$ ) and could reflect contamination introduced during some phase of the procedure.

### Water Temperature

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

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

### Sediment

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

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations measured immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge. Methods used in the computation of sediment records are described in the TWRI Book 3, Chapters C1 and C3. These methods are consistent with the ASTM standards and generally follow ISO standards.

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

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

Estimates of bed load and total-sediment discharge are included for some stations. Computations of monthly bed load discharges are based on the relation between instantaneous water discharge and corresponding bed load discharge for the station. Values of bed load discharge used in defining this relation are based on samples obtained by use of the Helley-Smith or BL 84 bed load samplers or by modified-Einstein or Meyer-Peter Muller computation procedures. Application of the bed load-transport relation at a station was made on a daily basis or subdivided-day basis. The bed load samplers are designed to collect time-weighted samples for the sediment moving within 0.25 ft of the streambed. Sediment moving in this portion of the flow cannot be sampled with standard suspended-sediment samplers. Calibration of the bed load samplers has not been completed, and a trap efficiency of 1.0 has been assumed applicable to these devices. Error sources in the theoretical methods, based on analysis of bed-material

characteristics, channel geometry, and associated hydraulic factors, are also undefined. In consequence, figures of bed load discharge must be used with caution. They are estimates, at best, and are subject to revision.

### Cross-Sectional Data

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

### Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the U.S Geological Survey's National Water-Quality Laboratory in Arvada, Colorado. Methods used to analyze sediment samples and to compute sediment records are described in the Techniques of Water-Resources Investigations, Book 5, Chapter C1. Methods used by the U.S. Geological Survey laboratories are given in TWRI Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, A4, and A5. These methods are consistent with ASTM standards and generally follow ISO standards.

### Water Quality-Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be interpreted adequately because the errors associated with the sample data are unknown. The various types of QC samples collected by this District are described in the following section. Procedures have been established for the storage of water quality-control data within the U. S. Geological Survey. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

#### Blank Samples

Blank samples are collected and analyzed to ensure the environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. There are many types of blank samples possible, each designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this District are:

Field blank—a blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank—a blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank—a blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank—a blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank—a blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank—a blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank—a blank solution that is treated with the sampler preservatives used for an environmental sample.

#### Reference Samples

Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

#### Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and

analytical process. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this District are:

Sequential samples—a type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample—a type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

### Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

## Data Presentation

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

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

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

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

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

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

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

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

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

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

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

## ACCESS TO USGS WATER DATA

The U.S. Geological Survey provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the world wide web (WWW). These data may be accessed at

<http://water.usgs.gov>.

Some water-quality and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of additional data or products, and user charges, can be obtained locally from each of the Water Resources Division District Offices. (See address on the back of the title page.)

## DEFINITION OF TERMS

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

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point.

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

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

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

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

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid.

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

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

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

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestines of warm-blooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory, these bacteria are defined as the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.

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

Fecal-streptococcal bacteria are bacteria found in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milligrams per liter of sample.

Enterococcus bacteria are commonly found in the feces of humans and other warm-blooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria which produce pink to red colonies with black or reddish-brown precipitate after incubation at 41°C on mE agar and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis*, *Streptococcus feacium*, *Streptococcus avium*, and their variants.

Bed load is the sediment which moves along in essentially continuous contact with the streambed by rolling, sliding, and making brief excursions into the flow a few diameters above the bed.

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

Benthic organisms (invertebrates) are the group of animals inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

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

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

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

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

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

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

Bottom material: See Bed material.

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

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

From cell volume, total algal biomass expressed as biovolume ( $\mu\text{m}^3/\text{mL}$ ) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes over all species.

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

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

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

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

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

Continuing-record station is a specified site which meets one or all conditions listed:

1. When chemical samples are collected daily or monthly for 10 or more months during the water year.
2. When water temperature records include observations taken one or more times daily.
3. When sediment discharge records include periods for which sediment loads are computed and are considered to be representative of the runoff for the water year.

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

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

Cubic foot per second ( $\text{ft}^3/\text{s}$ ) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second, or 448.8 gallons per minute, or 0.02832 cubic meters per second.

Cubic foot per second per day (cfs/d or cfs-day) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons, or 2,447 cubic meters.

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

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

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

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1–March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

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

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

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

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

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

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

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

Extractable organic halides (EOX) are organic compounds which contain halogen atoms such as chlorine. These organic compounds are semi-volatile and extractable by ethyl acetate from air-dried stream-bottom sediments. The ethyl-acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the stream-bottom sediments.

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

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

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

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap that is required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate ( $\text{CaCO}_3$ ).

High tide is the maximum height reached by each rising tide.

Hydrologic Bench-Mark Network is a network of approximately 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

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

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

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

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

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

Low tide is the minimum height reached by each falling tide.

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



Mean high tide is the average of all high tides over a specified period.

Mean low tide is the average of all low tides over a specified period.

Mean water level is the average of all tides over a specified period.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

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

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

Micrograms per gram (UG/G,  $\mu\text{g/g}$ ) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

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

Microsiemens per centimeter ( $\mu\text{S/cm}$ , US/CM) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of units nomenclature. It is synonymous with mhos and is the reciprocal of resistance in ohms.

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

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. It is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic-invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L,  $\text{ng/L}$ ) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites; (2) provide the mechanism to evaluate the effectiveness of the significant reduction in  $\text{SO}_2$  emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred; (3) provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for  $\text{SO}_2$  and  $\text{NO}_x$  scheduled to begin in 2000.

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

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins—the Mississippi, the Columbia, the Colorado, and the Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

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

Organism is any living entity.

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

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

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

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

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

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

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

Classification	Size (mm)	Method of analysis
Clay .....	0.00024–0.004	Sedimentation
Silt .....	0.004–0.062	Sedimentation
Sand .....	0.062–2.0	Sedimentation or sieve
Gravel .....	2.0–64.0	Sieve

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

Runoff in inches (IN., in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sea level refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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

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

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

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

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

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

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

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

Suspended total residue at 105°C concentration is the concentration of suspended sediment in the sampled zone expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). A small aliquot of the sample is used for the analysis.

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

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

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

Solute is any substance that is dissolved in water.

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

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

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

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

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

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

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

**Synoptic Studies** are short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

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

Kingdom .....Animal  
Phylum ..... Arthropoda  
Class ..... Insecta  
Order ..... Ephemeroptera  
Family ..... Ephemeridae  
Genus ..... *Hexagenia*  
Species..... *Hexagenia limbata*

**Thermograph** is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that records water temperature in a digital format on punched paper tape.

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

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

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

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

**Total discharge** is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

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

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

**Tritium Network** is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

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

**Volatile Organic Compounds (VOCs)** are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOCs are man-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human health concern because many are toxic and are known or suspected human carcinogens (U.S. Environmental Protection Agency, 1996).

Water year in U.S. Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1998, is called the "1998 water year."

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

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

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

## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

Book 1. Collection of Water Data by Direct Measurement

## Section D. Water Quality

- 1-D1. *Water temperature—influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J.F. Ficke, and G. F. Smoot: USGS-TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS-TWRI Book 1, Chapter D2. 1976. 24 pages.

Book 2. Collection of Environmental Data

## Section D. Surface Geophysical Methods

- 2-D1. *Application of surface geophysics to ground-water investigations*, by A.A. R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS-TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F.P. Haeni: USGS-TWRI Book 2, Chapter D2. 1988. 86 pages.

## Section E. Subsurface Geophysical Methods

- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W.S. Keys and L.M. MacCary: USGS-TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W.S. Keys: USGS-TWRI Book 2, Chapter E2. 1990. 150 pages.

## Section F. Drilling and Sampling Methods

- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS-TWRI Book 2, Chapter F1. 1989. 97 pages.

Book 3. Applications of Hydraulics

## Section A. Surface-Water Techniques

- 3-A1. *General field and office procedures for indirect discharge measurements*, by M.A. Benson and Tate Dalrymple: USGS-TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M.A. Benson: USGS-TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G.L. Bodhaine: USGS-TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H.F. Matthai: USGS-TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS-TWRI Book 3. Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS-TWRI Book 3, Chapter A6. 1968. 13 pages.

- 3-A7. *Stage measurement at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS-TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by the moving-boat method*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing, Revised*, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS-TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F.A. Kilpatrick and V.R. Schneider: USGS-TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS-TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS-TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS-TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS-TWRI Book 3, Chapter A18. 1989. 52 pages.
- 3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A19. 1990. 31 pages.
- 3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS-TWRI Book 3, Chapter A20. 1993. 38 pages.
- 3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS-TWRI Book 3, Chapter A21. 1995. 56 pages.

#### Section B. Ground-Water Techniques

- 3-B1. *Aquifer-test design, observation, and data analysis*, by R.W. Stallman: USGS-TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G.D. Bennett: USGS-TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS-TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by R.L. Cooley and R.L. Naff: USGS-TWRI Book 3, Chapter B4. 1990. 232 pages.
- 3-B4. *Supplement 1. Regression modeling of ground-water flow --Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems*, by R.L. Cooley: USGS-TWRI Book 3, Chapter B4. 1993. 8 pages.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS-TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS-TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow*, by E.J. Wexler: USGS-TWRI Book 3, Chapter B7. 1992. 190 pages.

#### Section C. Sedimentation and Erosion Techniques

- 3-C1. *Fluvial sediment concepts*, by H.P. Guy: USGS-TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by Thomas K. Edwards and G. Douglas Glysson: USGS-TWRI Book 3, Chapter C2. 1988. 80 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS-TWRI Book 3, Chapter C3. 1972. 66 pages.



#### Book 4. Hydrologic Analysis and Interpretation

##### Section A. Statistical Analysis

- 4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS–TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H.C. Riggs: USGS–TWRI Book 4, Chapter A2. 1968. 15 pages.

##### Section B. Surface Water

- 4-B1. *Low-flow investigations*, by H.C. Riggs: USGS–TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS–TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H.C. Riggs: USGS–TWRI Book 4, Chapter B3. 1973. 15 pages.

##### Section D. Interrelated Phases of the Hydrologic Cycle

- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS–TWRI Book 4, Chapter D1. 1970. 17 pages.

#### Book 5. Laboratory Analysis

##### Section A. Water Analysis

- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M.J. Fishman and L.C. Friedman, editors: USGS–TWRI Book 5, Chapter A1. 1989. 545 pages.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P.R. Barnett and E.C. Mallory, Jr.: USGS–TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS–TWRI Book 5, Chapter A3. 1987. 80 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, by L.J. Britton and P.E. Greenson, editors: USGS–TWRI Book 5, Chapter A4. 1989. 363 pages.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS–TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L.C. Friedman and D.E. Erdmann: USGS–TWRI Book 5, Chapter A6. 1982. 181 pages.

##### Section C. Sediment Analysis

- 5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS–TWRI Book 5, Chapter C1. 1969. 58 pages.

#### Book 6. Modeling Techniques

##### Section A. Ground Water

- 6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS–TWRI Book 6, Chapter A1. 1988. 586 pages.
- 6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model*, by S.A. Leake and D.E. Prudic: USGS–TWRI Book 6, Chapter A2. 1991. 68 pages.
- 6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems*, Part 1: Model Description and User's Manual, by L.J. Torak: USGS–TWRI Book 6, Chapter A3. 1993. 136 pages.
- 6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems*, Part 2: Derivation of finite-element equations and comparisons with analytical solutions, by R.L. Cooley: USGS–TWRI Book 6, Chapter A4. 1992. 108 pages.
- 6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems*, Part 3: Design philosophy and programming details, by L.J. Torak: USGS–TWRI Book 6, Chapter A5, 1993. 243 pages.
- 6-A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler. 1996. 125 pages.

Book 7. Automated Data Processing and Computations

## Section C. Computer Programs

- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS-TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L.F. Konikow and J.D. Bredehoeft: USGS-TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels*, by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS-TWRI Book 7, Chapter C3. 1981. 110 pages.

Book 8. Instrumentation

## Section A. Instruments for Measurement of Water Level

- 8-A1. *Methods of measuring water levels in deep wells*, by M.S. Garber and F.C. Koopman: USGS-TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS-TWRI Book 8, Chapter A2. 1983. 57 pages.

## Section B. Instruments for Measurement of Discharge

- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 8, Chapter B2. 1968. 15 pages.

Book 9. Handbooks for Water-Resources Investigations

## Section A. National Field Manual for the Collection of Water-Quality Data

- 9-A6. *National Field Manual for the Collection of Water-Quality Data: Field Measurements*, edited by F.D. Wilde and D.B. Radtke: USGS-TWRI Book 9, Chapter A6. 1998. Variously paginated.
- 9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, by D.N. Myers and F.D. Wilde: USGS-TWRI Book 9, Chapter A7. 1997. 49 pages.
- 9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS-TWRI Book 9, Chapter A8. 1998. 48 pages.
- 9-A9. *National Field Manual for the Collection of Water-Quality Data: Safety in Field Activities*, by S.L. Lane and R.G. Fay: USGS-TWRI Book 9, Chapter A9. 1998. 60 pages.

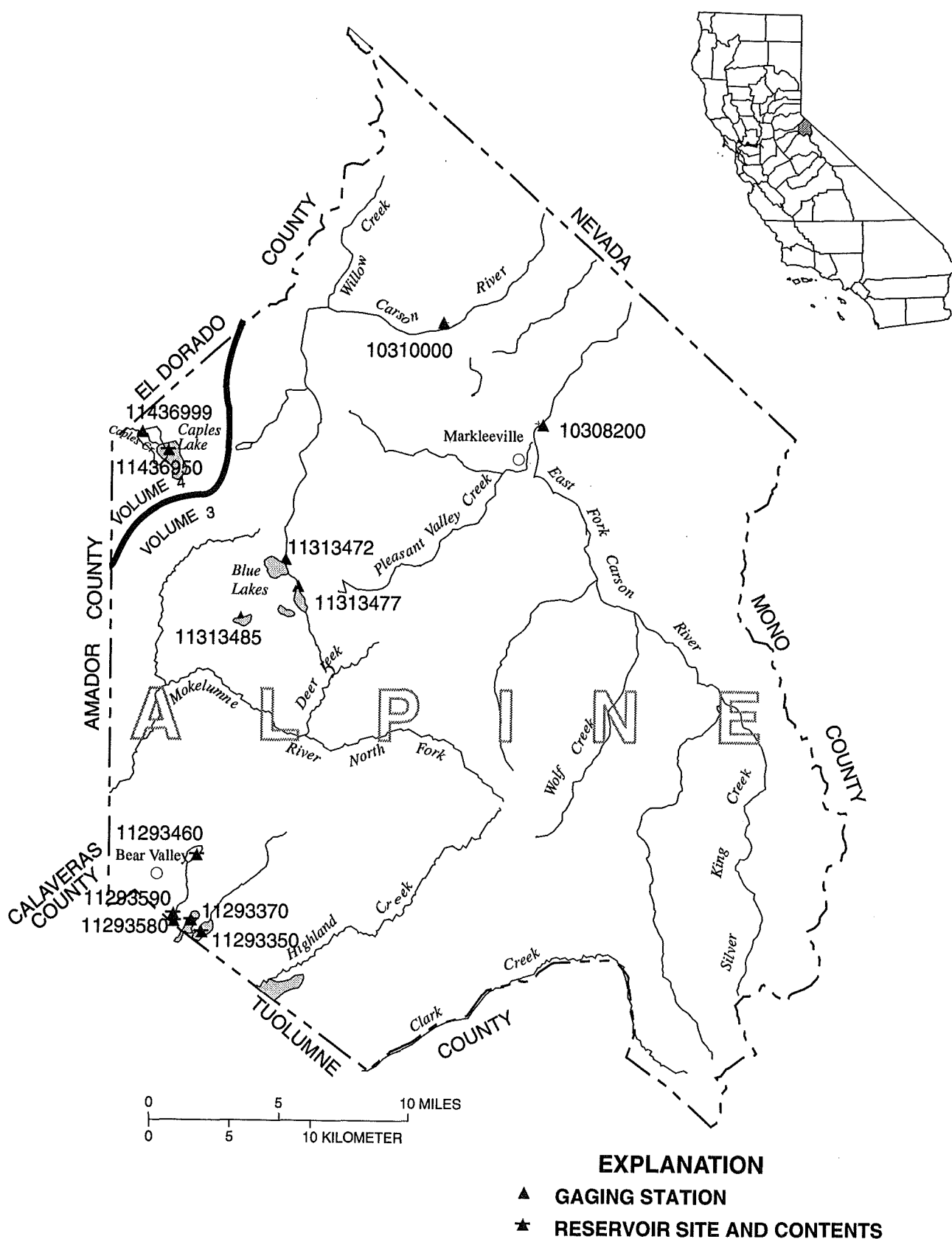
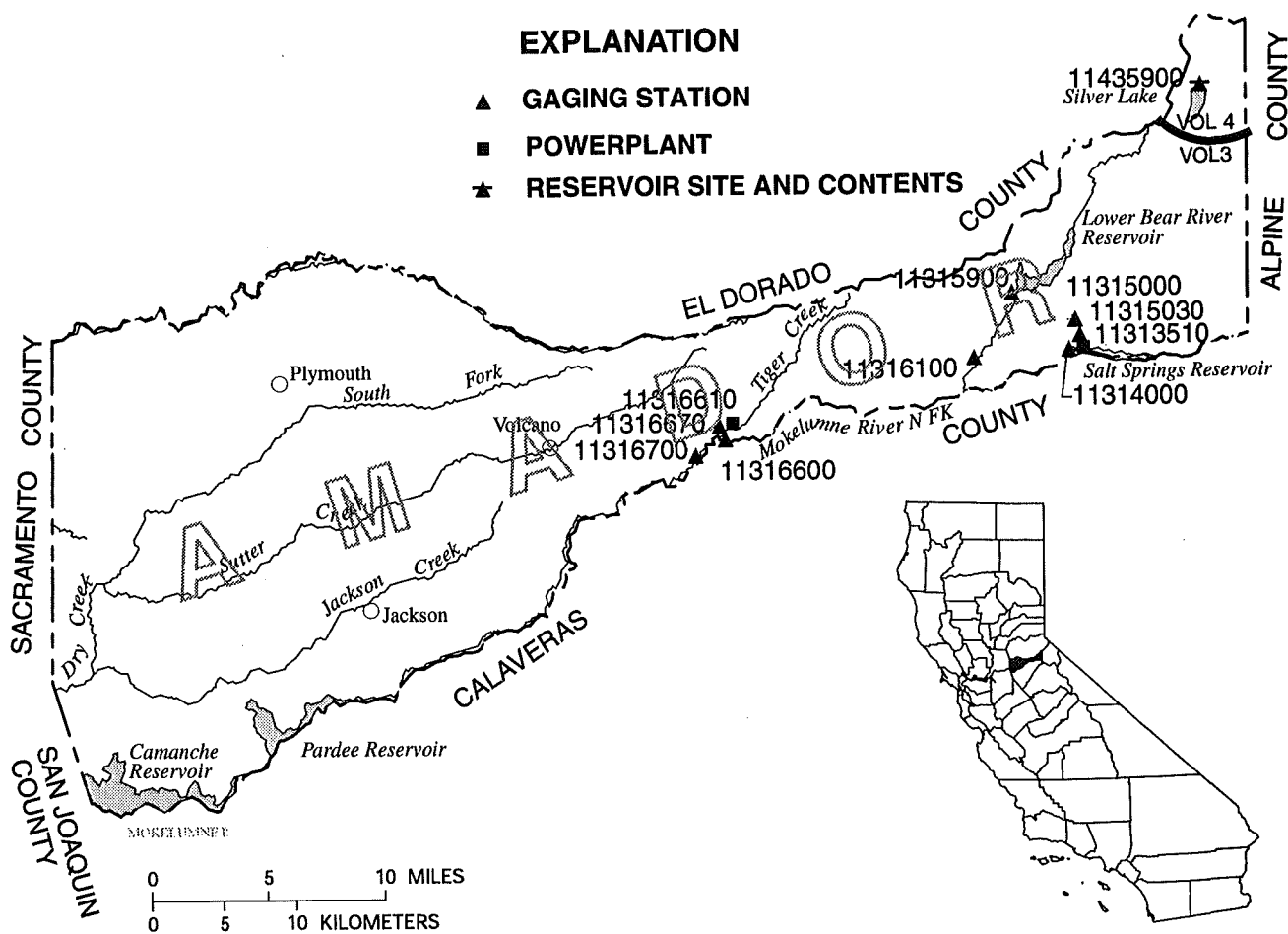


Figure 2. Location of discharge stations in Alpine County.

(NOTE: Records for stations 10308200 through 10310000 and 11293350 through 11313485 published in volume 3.)



**Figure 3.** Location of discharge stations in Amador County.  
 (NOTE: Records for stations 11313510 through 11316700 published in volume 3.)

## EXPLANATION

- ▲ GAGING STATION
- ▲ GAGING STATION WITH TELEMETRY
- POWERPLANT
- ★ RESERVOIR SITE AND CONTENTS

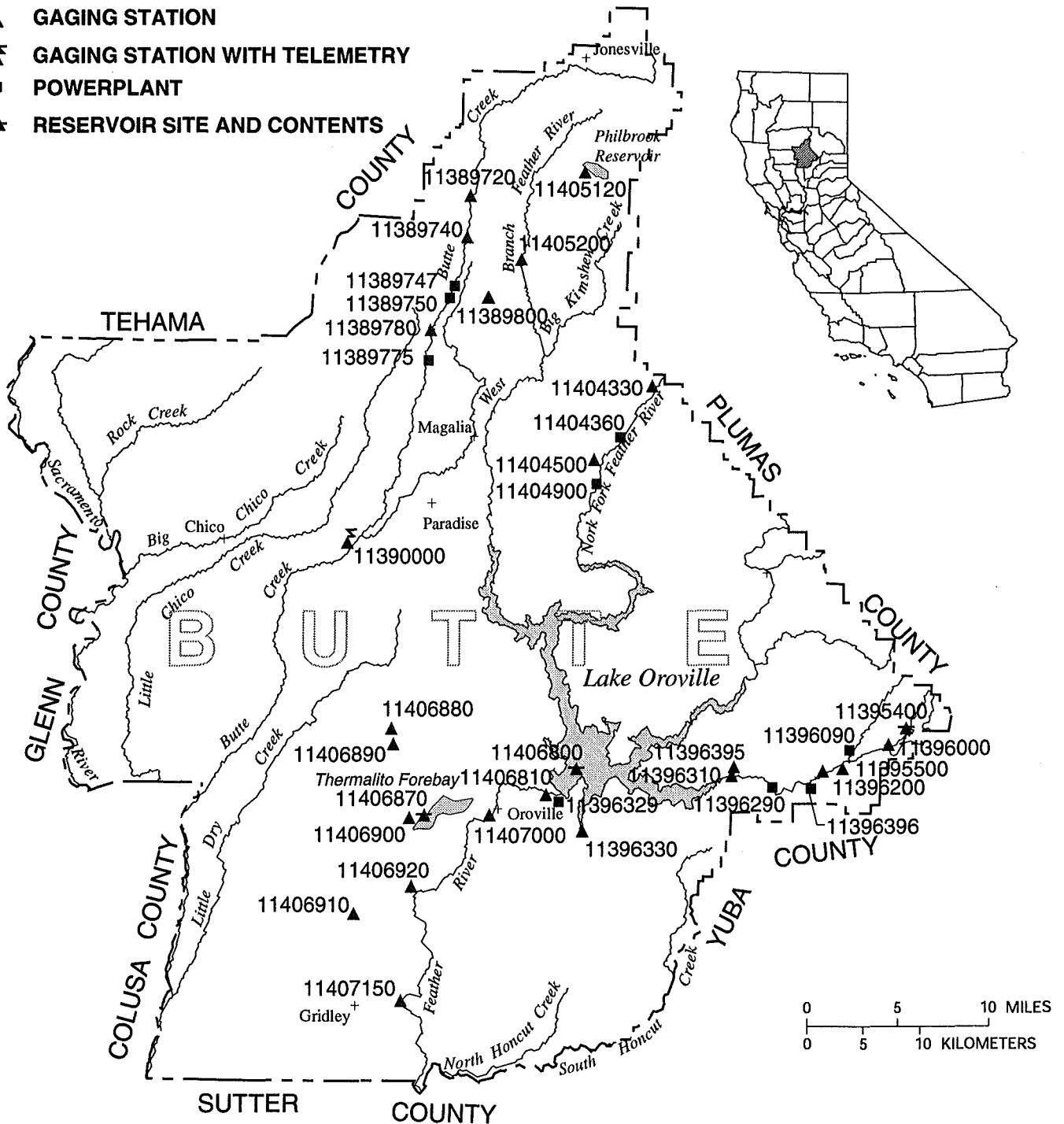






Figure 4. Location of discharge stations in Butte County.

## EXPLANATION

-  GAGING STATION WITH TELEMETRY
-  GAGING AND WATER-QUALITY (TEMPERATURE) STATION WITH DATA COLLECTION PLATFORM
-  GAGING AND WATER-QUALITY (CHEMICAL AND TEMPERATURE) STATION WITH DATA COLLECTION PLATFORM
-  RESERVOIR SITE AND CONTENTS

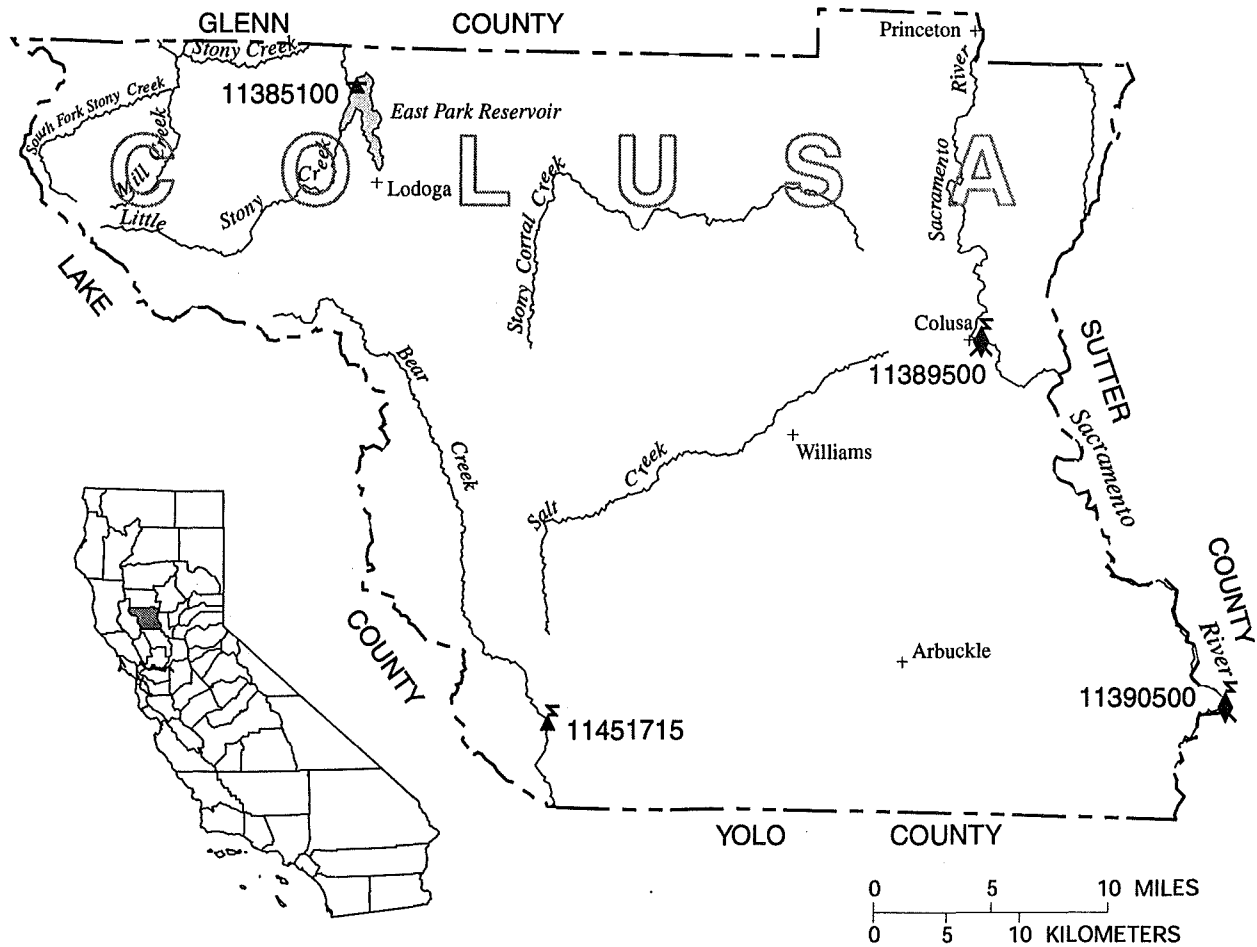
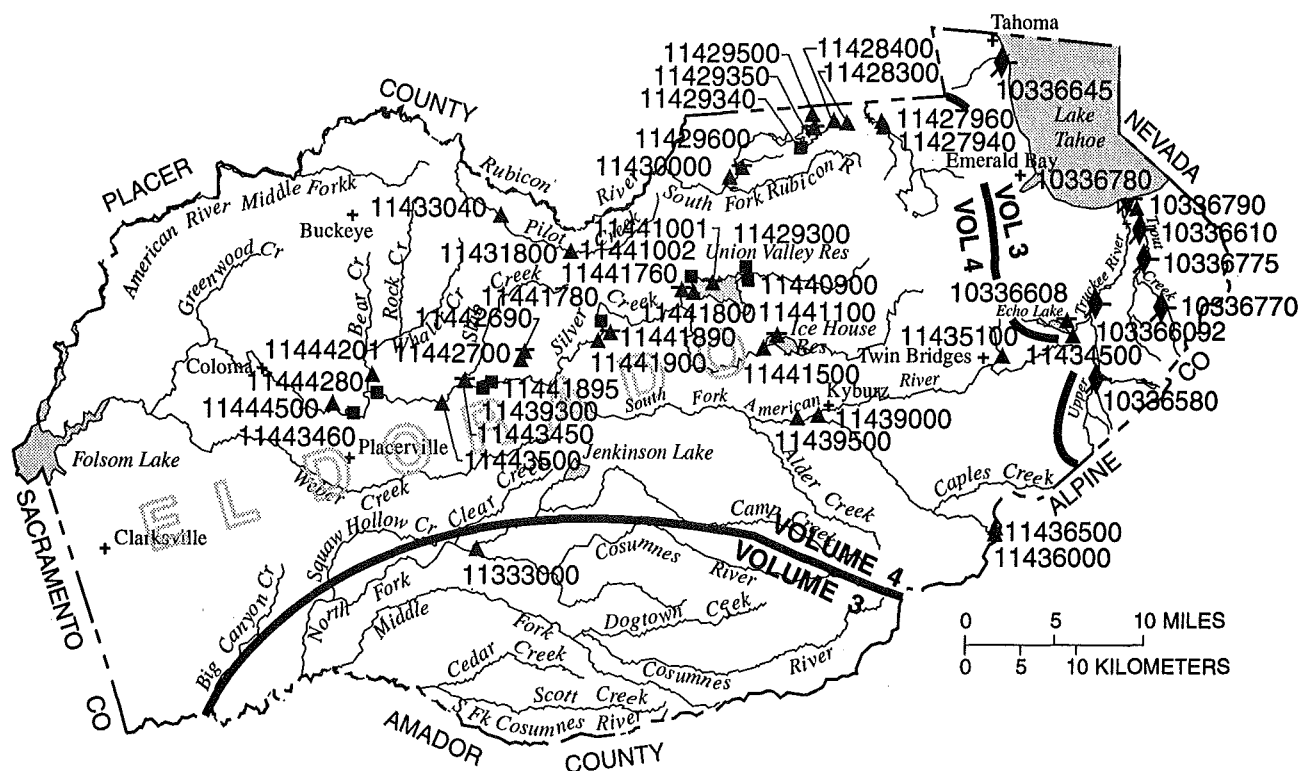


Figure 5. Location of discharge and water-quality stations in Colusa County.



### EXPLANATION

- ▲ GAGING STATION
- ◆ GAGING AND WATER-QUALITY (SEDIMENT, CHEMICAL) STATION
- ✈ WATER-QUALITY (CHEMICAL, SEDIMENT) STATION
- POWERPLANT
- ★ RESERVOIR SITE AND CONTENTS

**Figure 6.** Location of discharge and water-quality stations in El Dorado County.  
(NOTE: Records for stations 10336580 through 10336790 and 11333000 published in volume 3.)

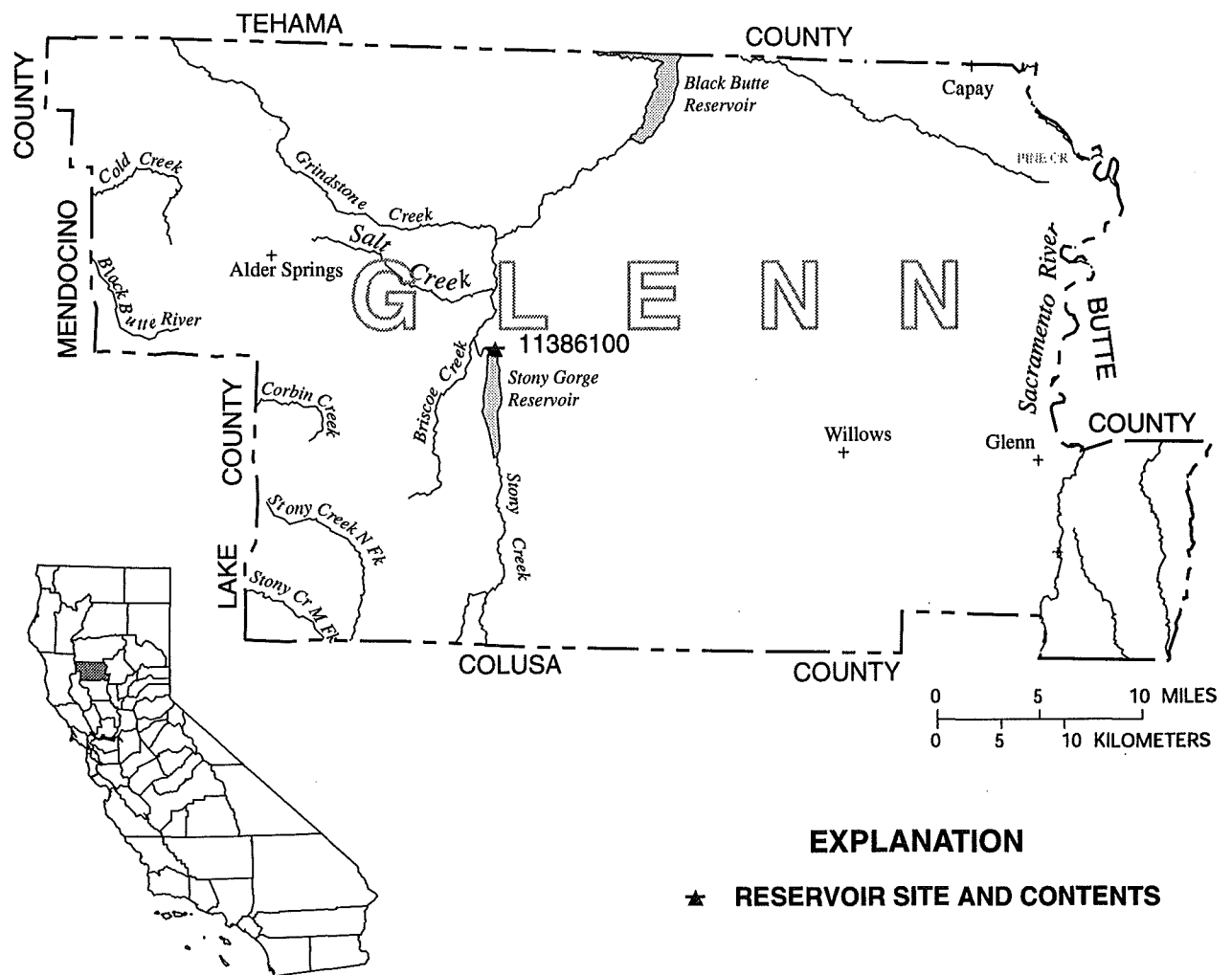
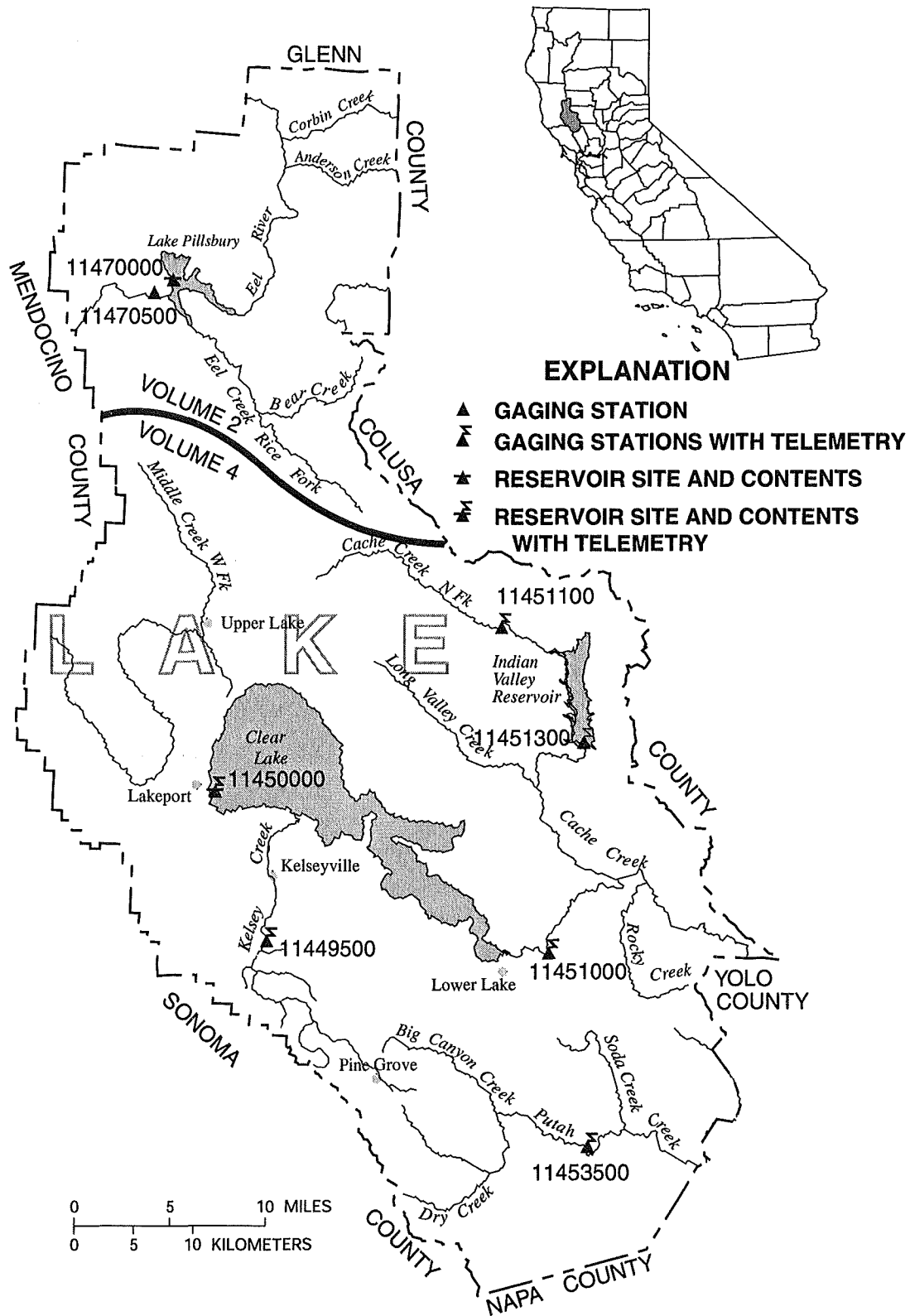


Figure 7. Location of discharge stations in Glenn County.





**Figure 8.** Location of discharge stations in Lake County.  
(NOTE: Records for stations 11470000 and 11470500 published in volume 2.)

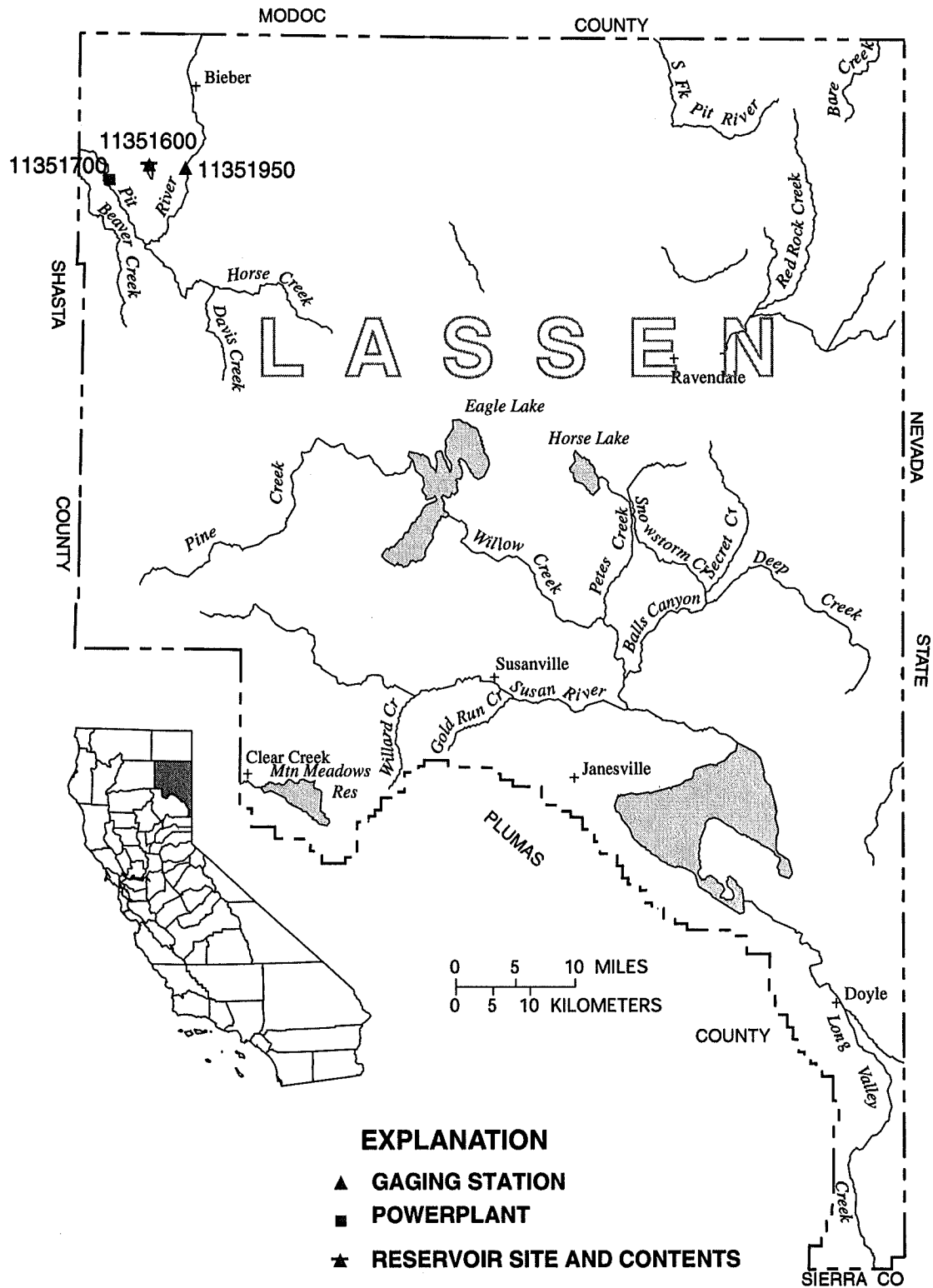


Figure 9. Location of discharge stations in Lassen County.



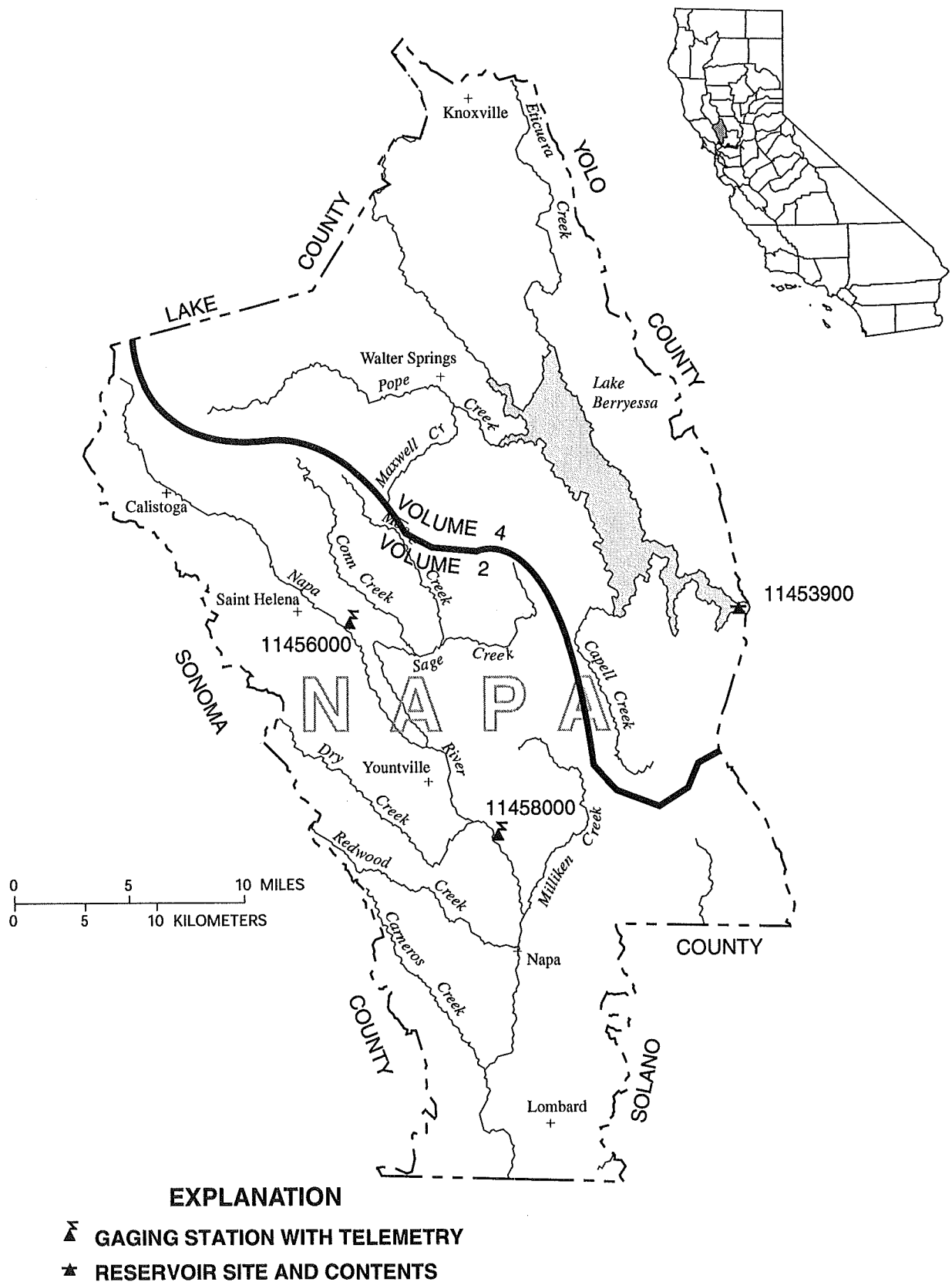
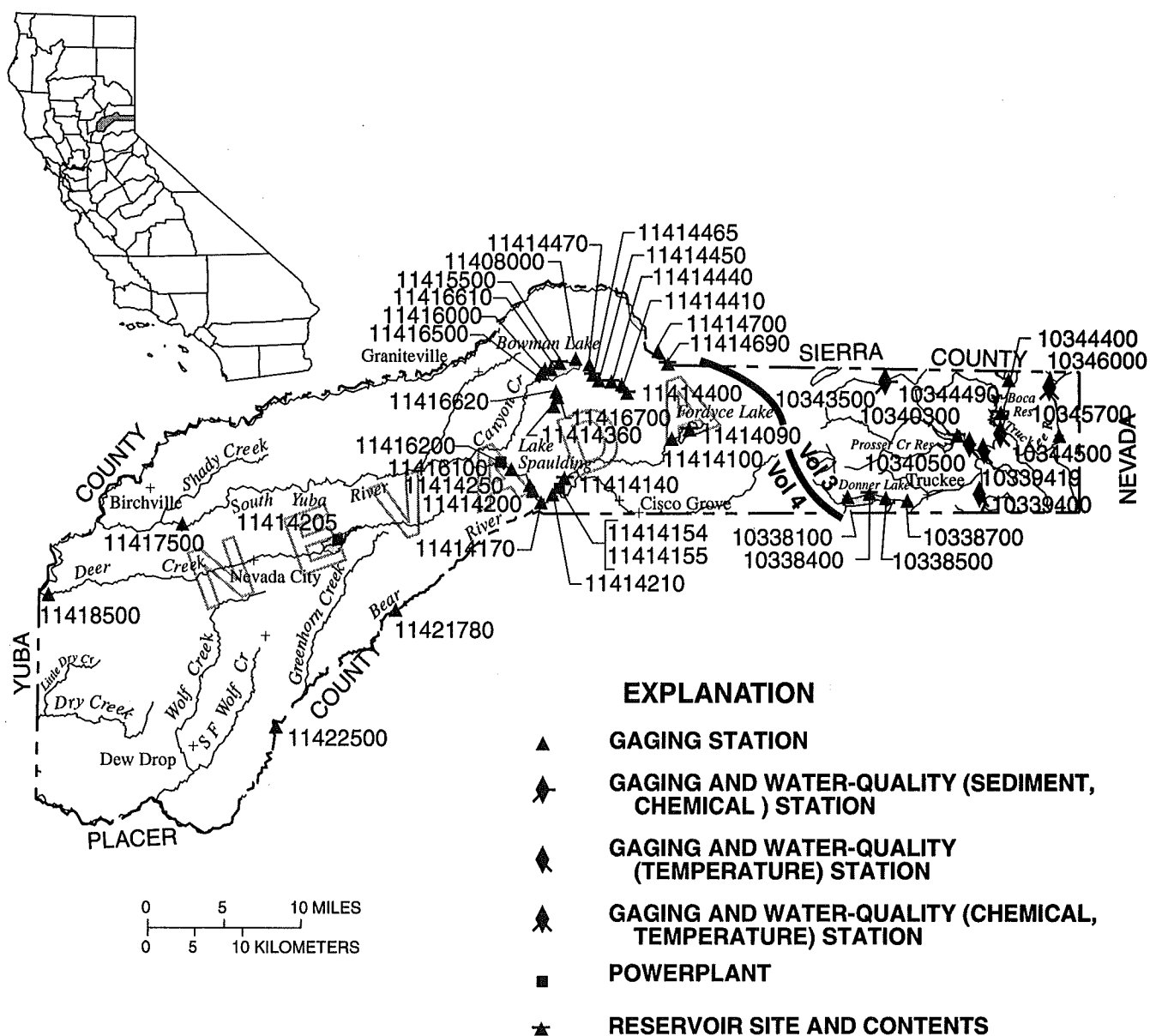
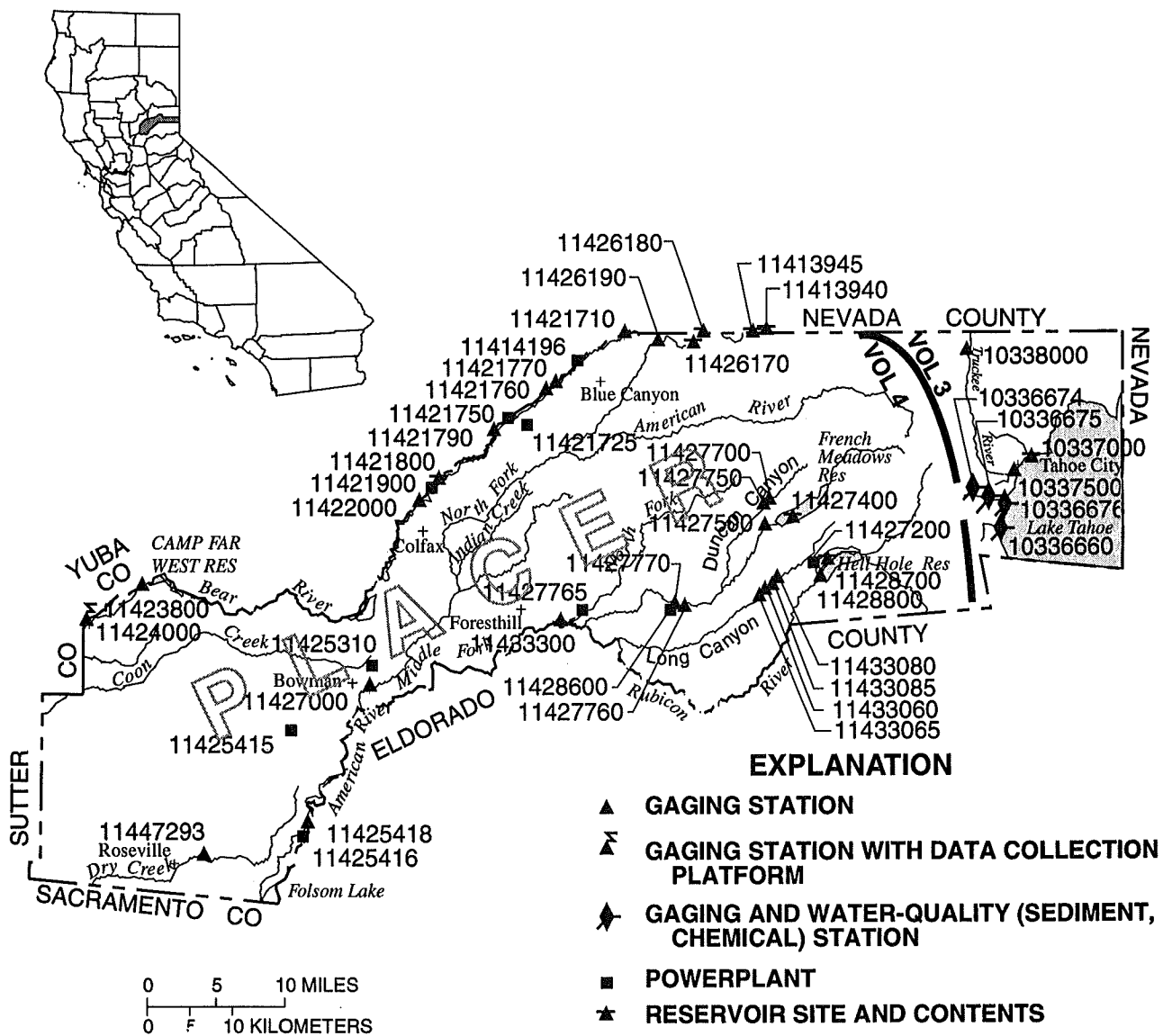


Figure 11. Location of discharge stations in Napa County.  
 (NOTE: Records for stations 11456000 and 11458000 published in volume 2.)





**Figure 13.** Location of discharge and water-quality stations in Placer County.  
(NOTE: Records for stations 10336660 through 10338000 published in volume 3.)

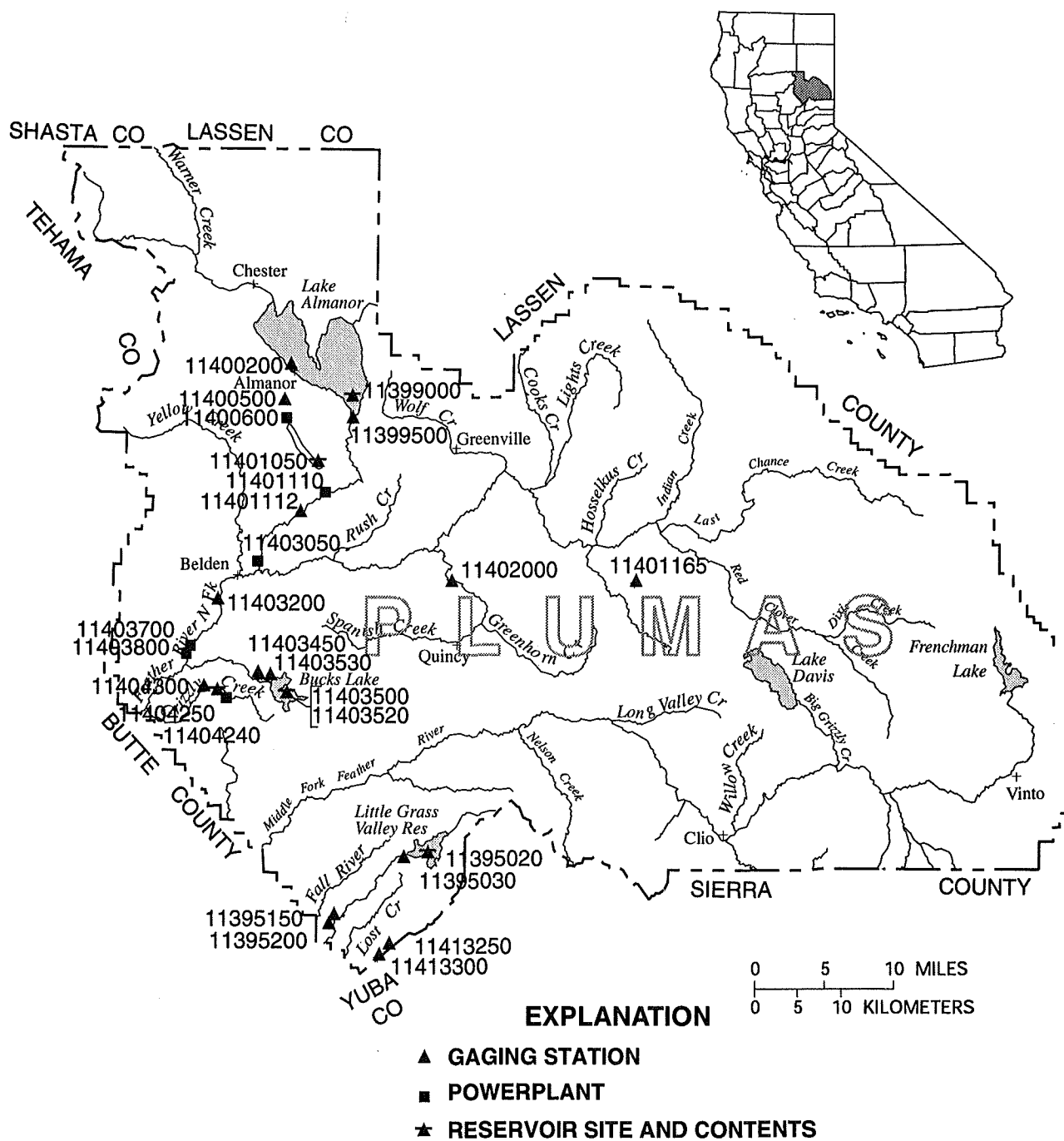
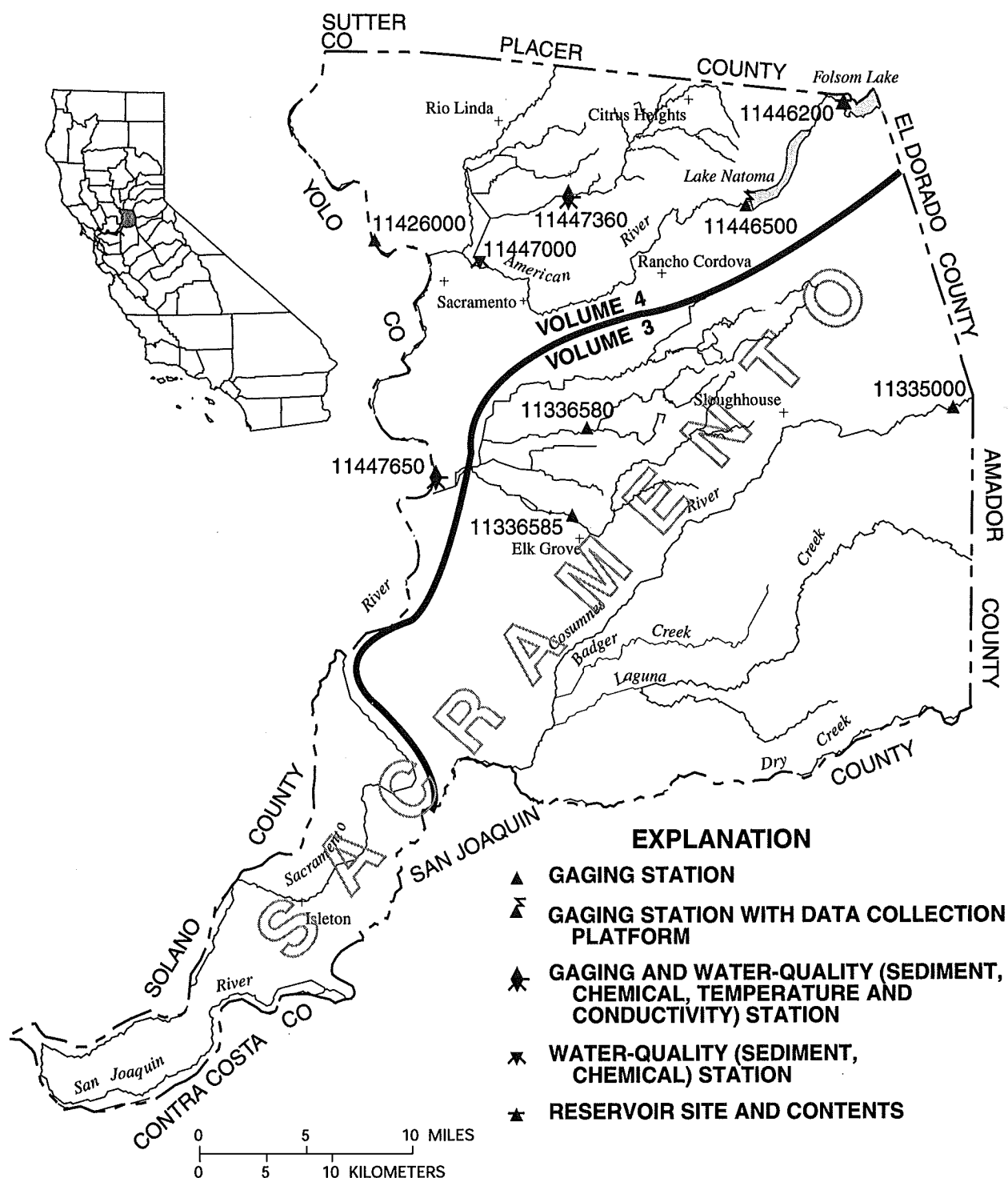


Figure 14. Location of discharge stations in Plumas County.



**Figure 15.** Location of discharge and water-quality stations in Sacramento County.  
(NOTE: Records for stations 11335000 through 11336585 published in volume 3.)



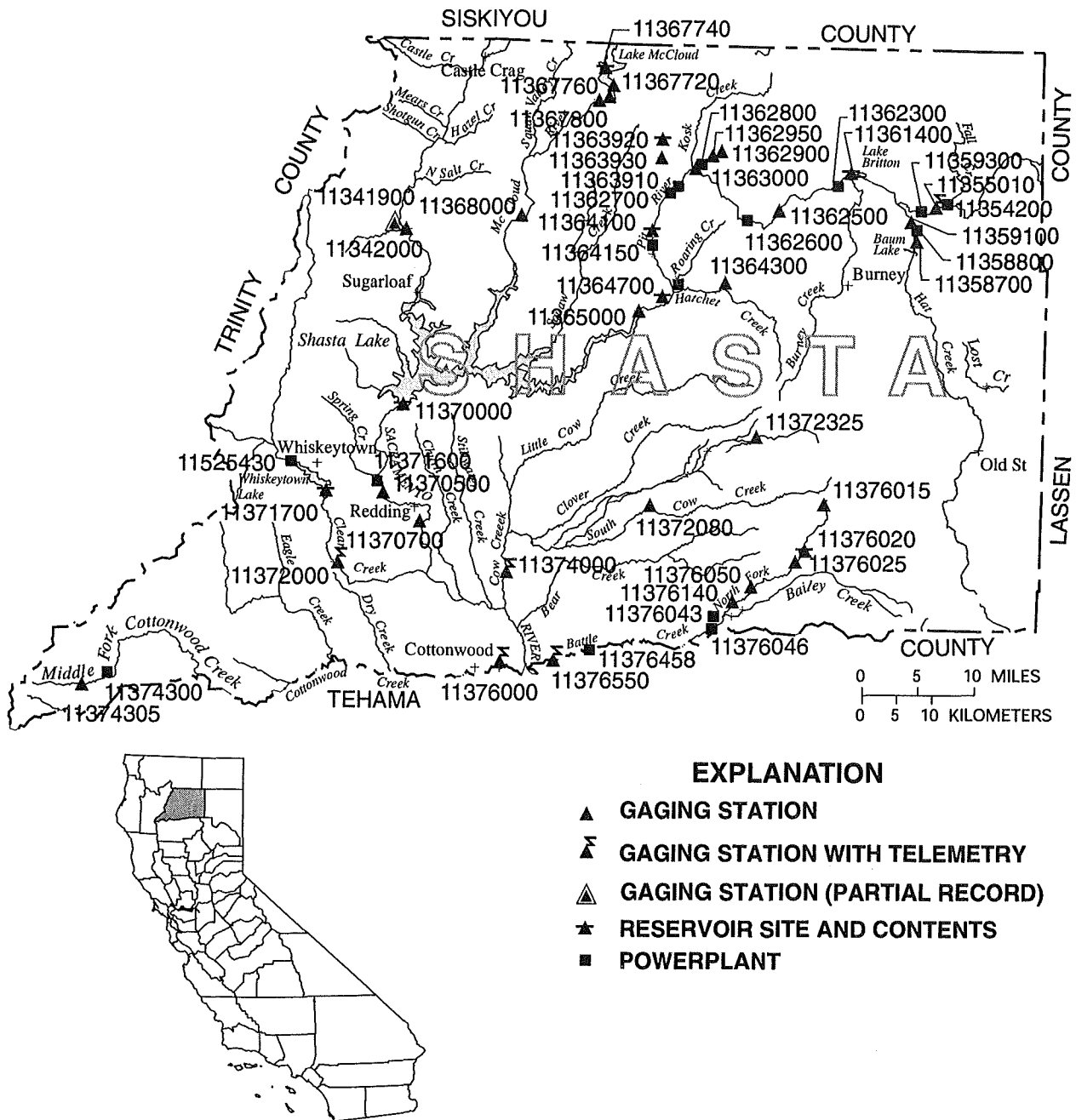
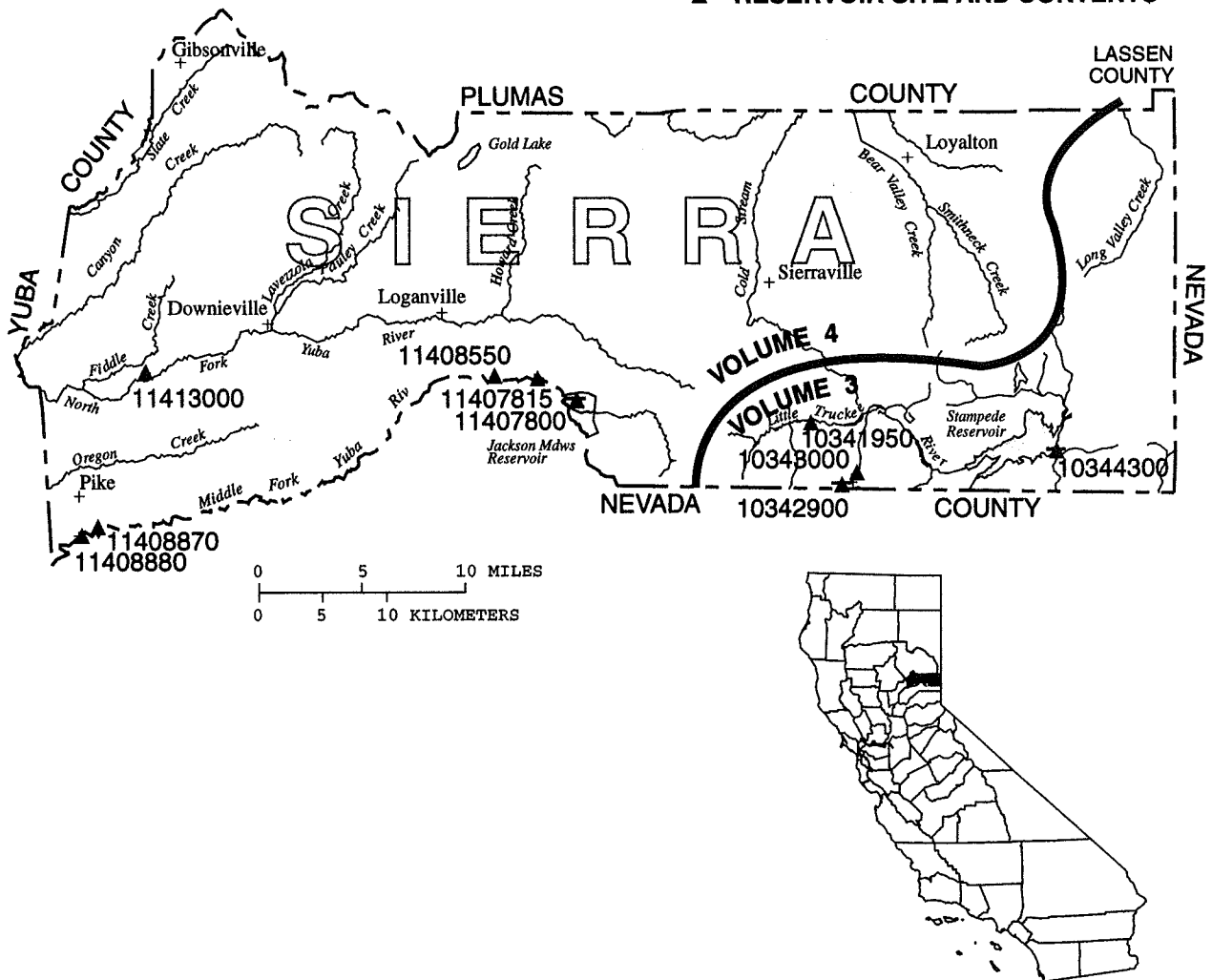
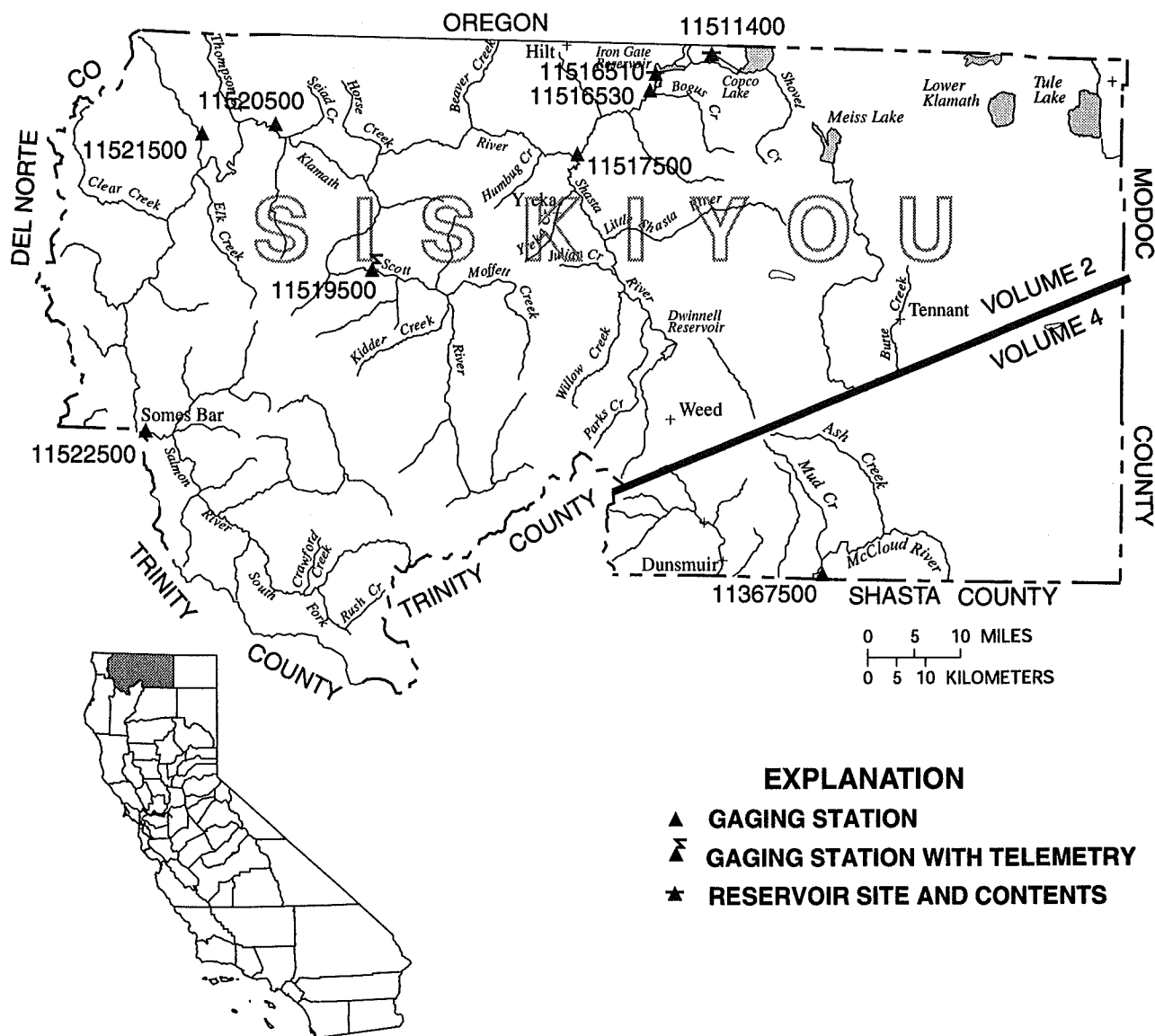


Figure 16. Location of discharge stations in Shasta County.

**EXPLANATION**▲ **GAGING STATION**★ **RESERVOIR SITE AND CONTENTS**

**Figure 17.** Location of discharge stations in Sierra County.  
 (NOTE: Records for stations 10341950 through 10344300 published in volume 3.)



**Figure 18.** Location of discharge stations in Siskiyou County.  
 (NOTE: Records for stations 11511400 through 11522500 published in volume 2.)

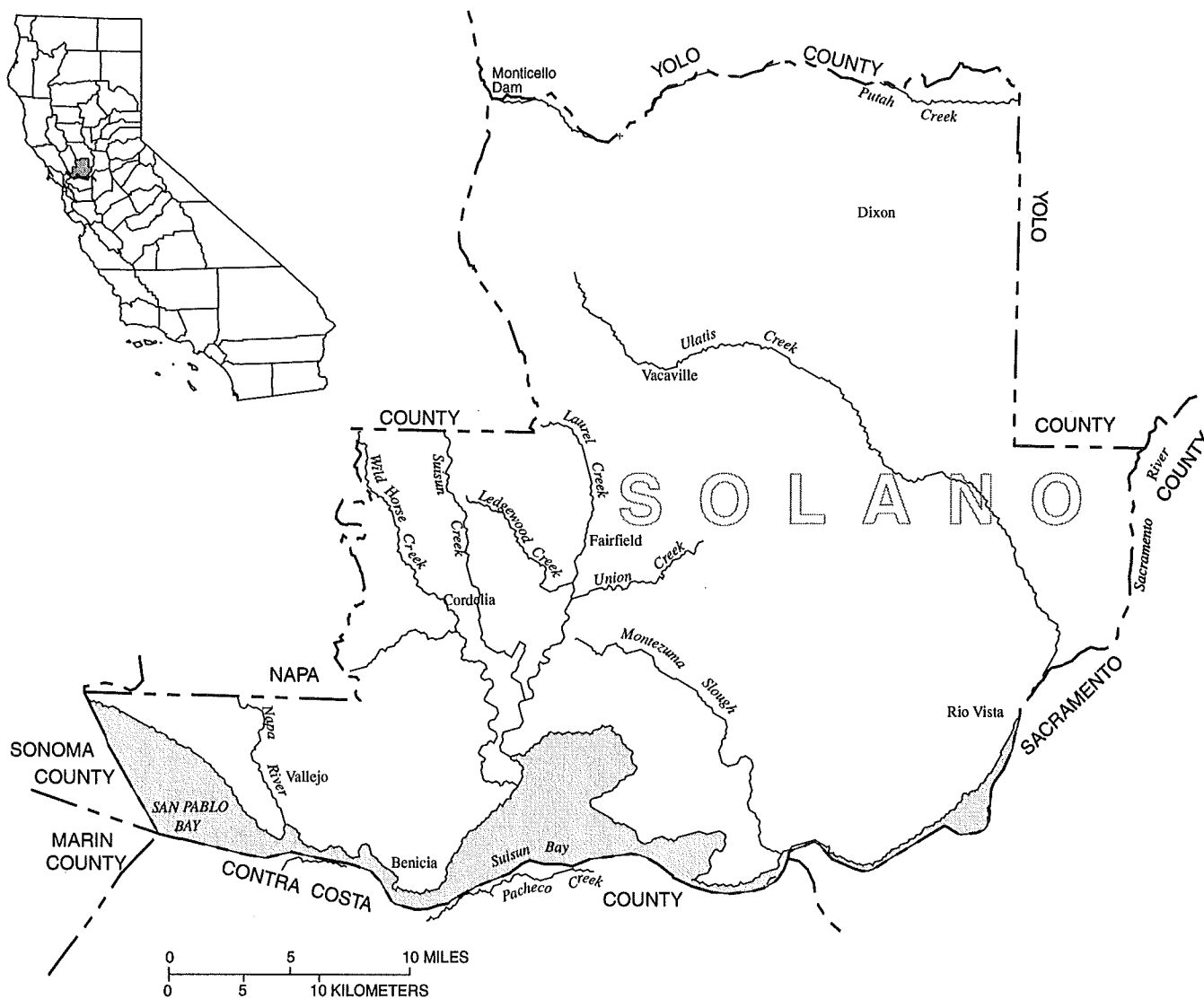


Figure 19. No discharge stations published for 1998 in Solano County.

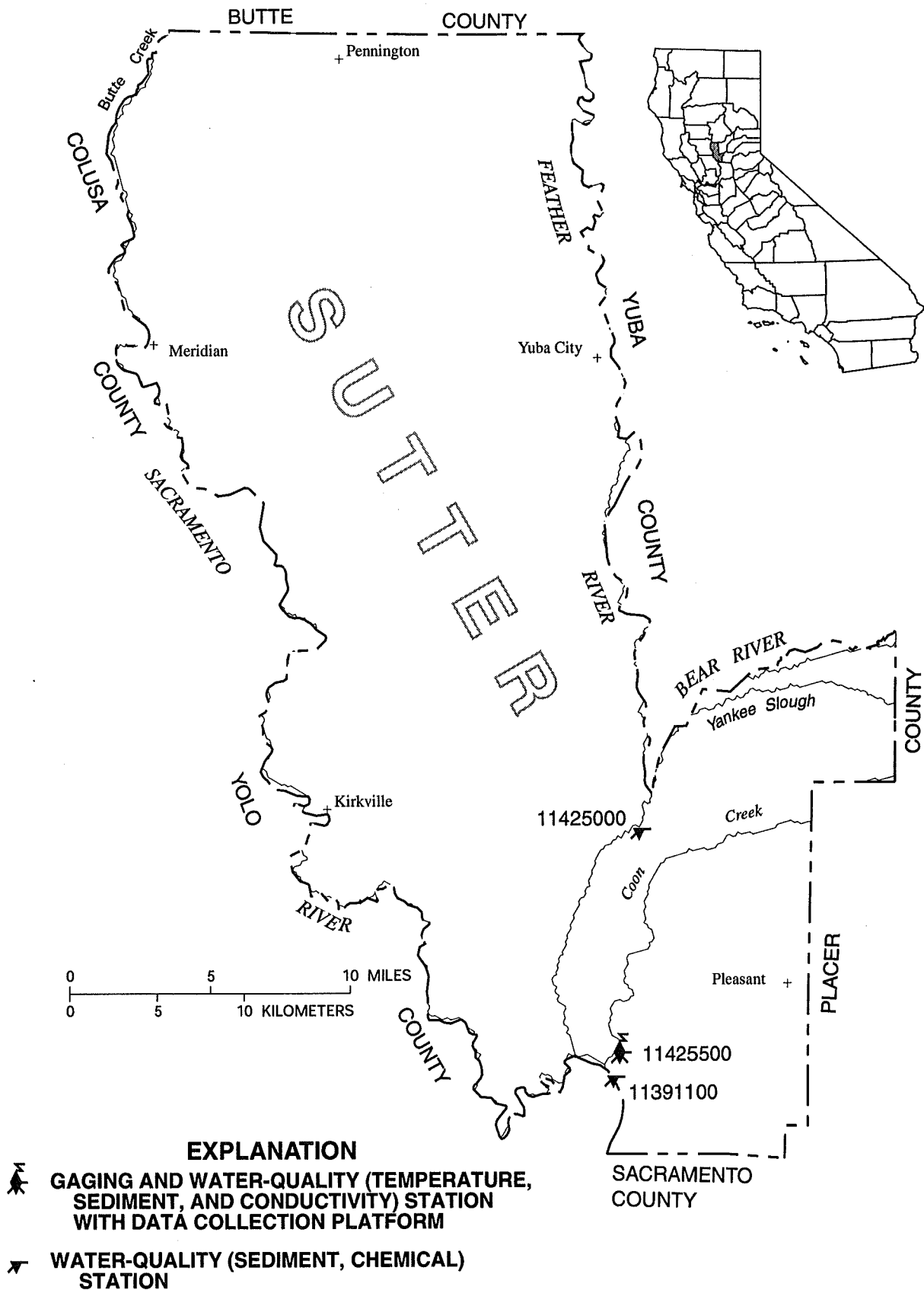
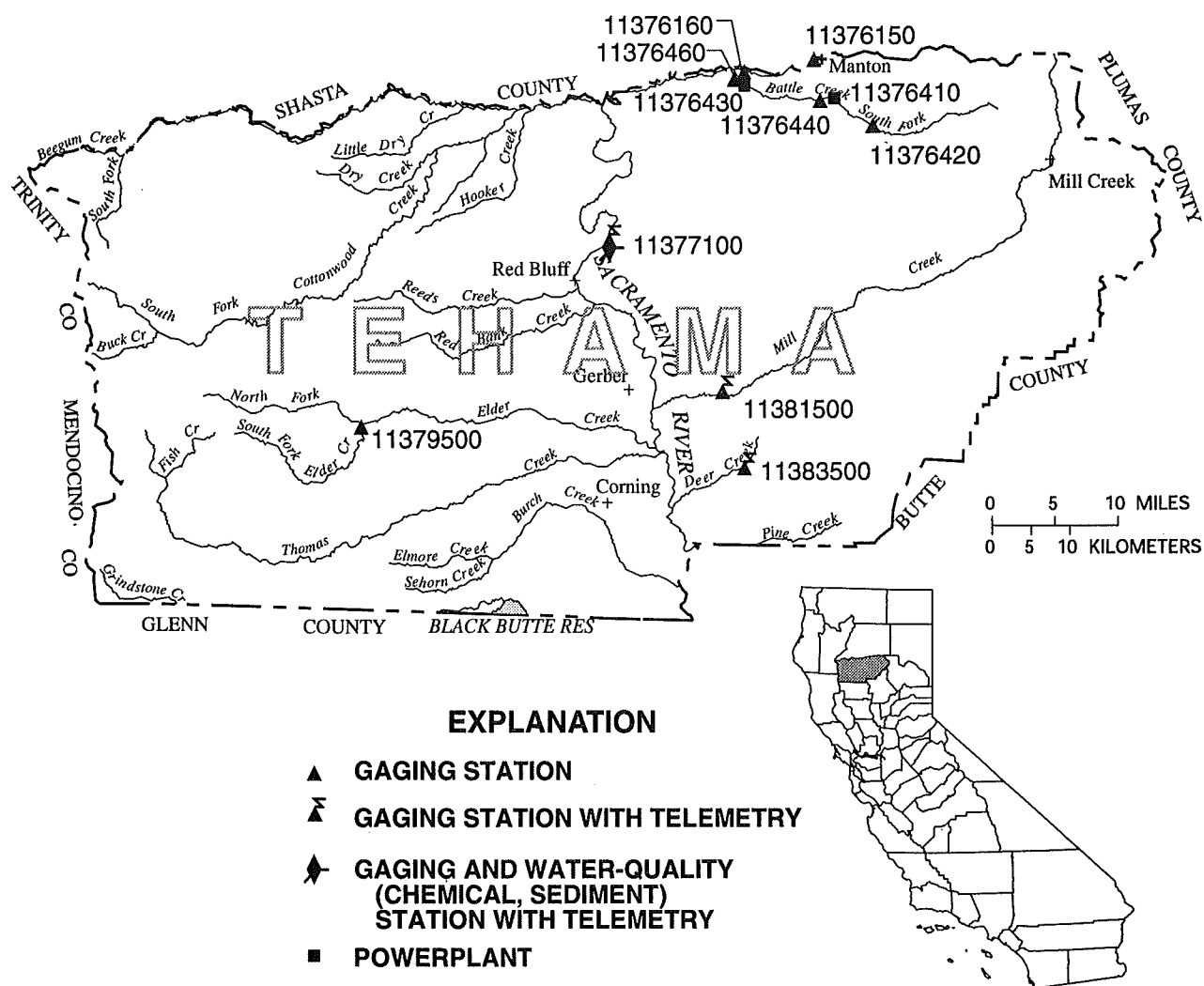


Figure 20. Location of discharge and water-quality stations in Sutter County.



**Figure 21. Location of discharge and water-quality stations in Tehama County.**

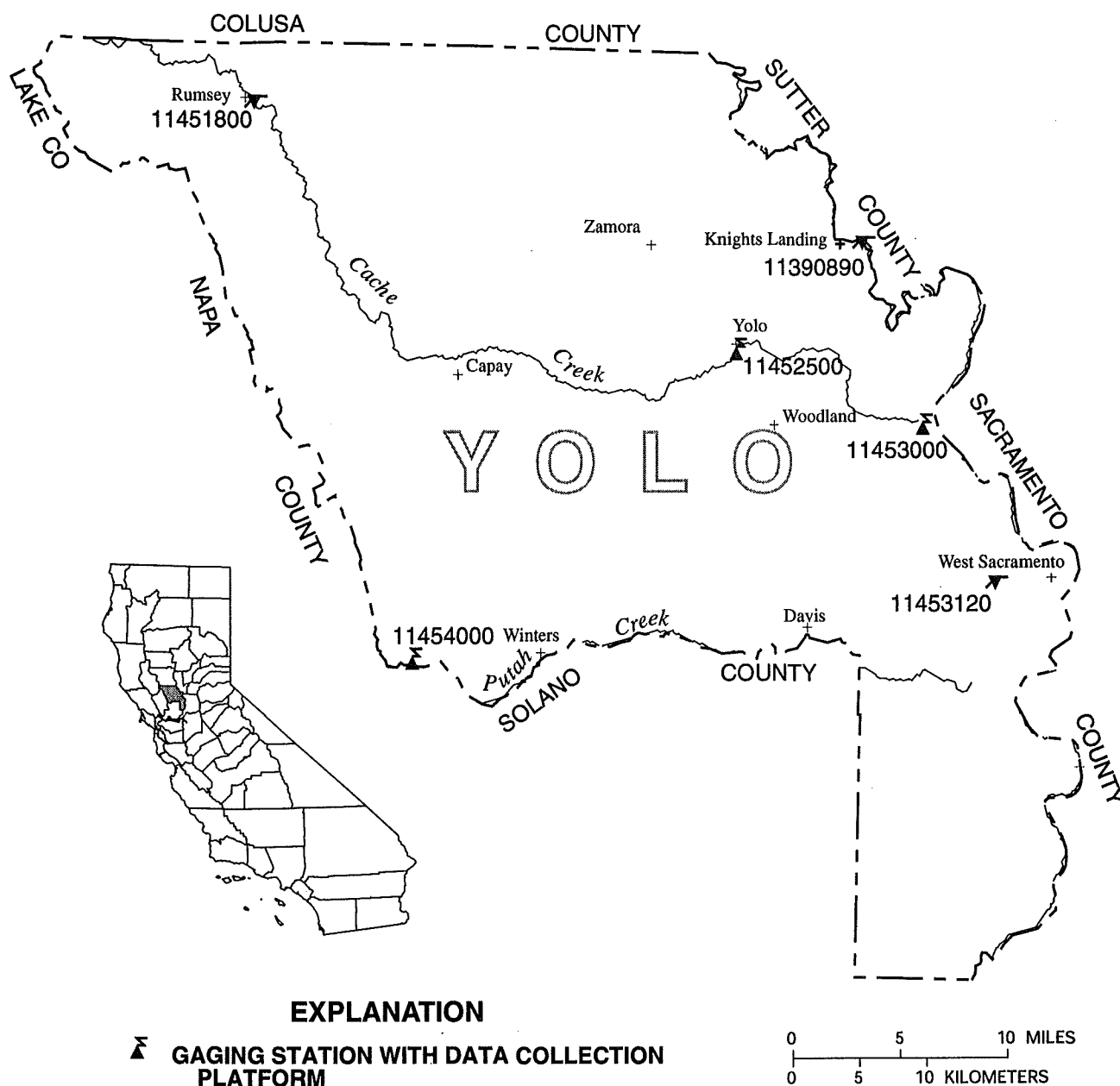


Figure 22. Location of discharge and water-quality stations in Yolo County.

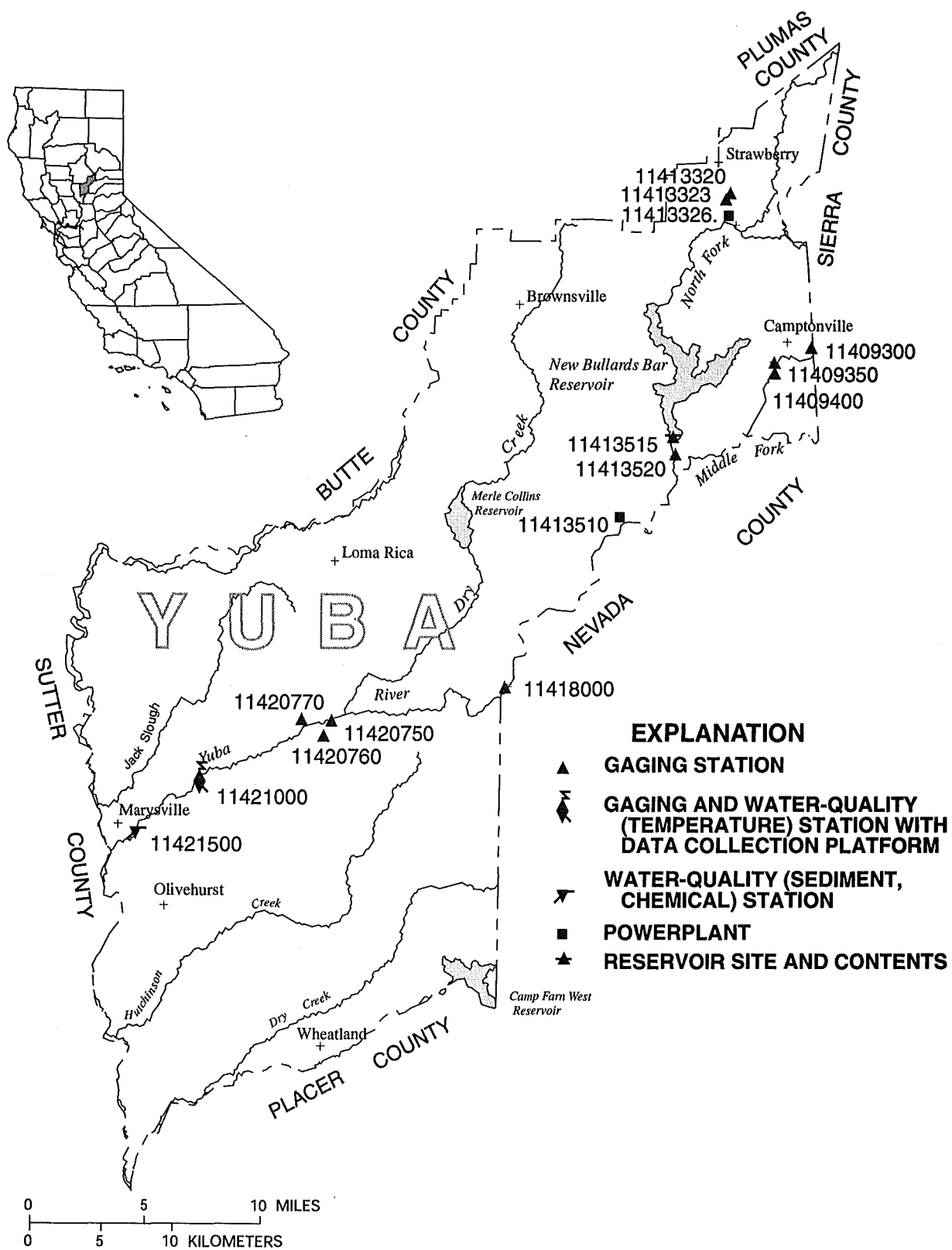


Figure 23. Location of discharge and water-quality stations in Yuba County.



## SURFACE-WATER-DISCHARGE AND SURFACE-WATER-QUALITY RECORDS

## Remark Codes

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

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
e	Estimated value.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
K	Results based on colony count outside the acceptable range (non-ideal colony count).
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted).
D	Biological organism count equal to or greater than 15 percent (dominant).
ND	Not detected.
&	Biological organism estimated as dominant.
*	Instantaneous streamflow at the time of cross-sectional measurements.
**	Partial sampled width.
1	Laboratory value.
2	Laboratory fixed-end point titration.
A	Samples collected by another agency.
N	Suspended-sediment concentration value determined from a sample collected and processed according to National Water-Quality Assessment (NAWQA) protocol.
V	Analyte was detected in both the environmental sample and the associated blanks.

## Dissolved Trace-Element Concentrations

NOTE: Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ( $\mu\text{g/L}$ ) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter ( $\text{ng/L}$ ). Data above the  $\mu\text{g/L}$  level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

## Change in National Trends Network Procedures

NOTE: Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643).



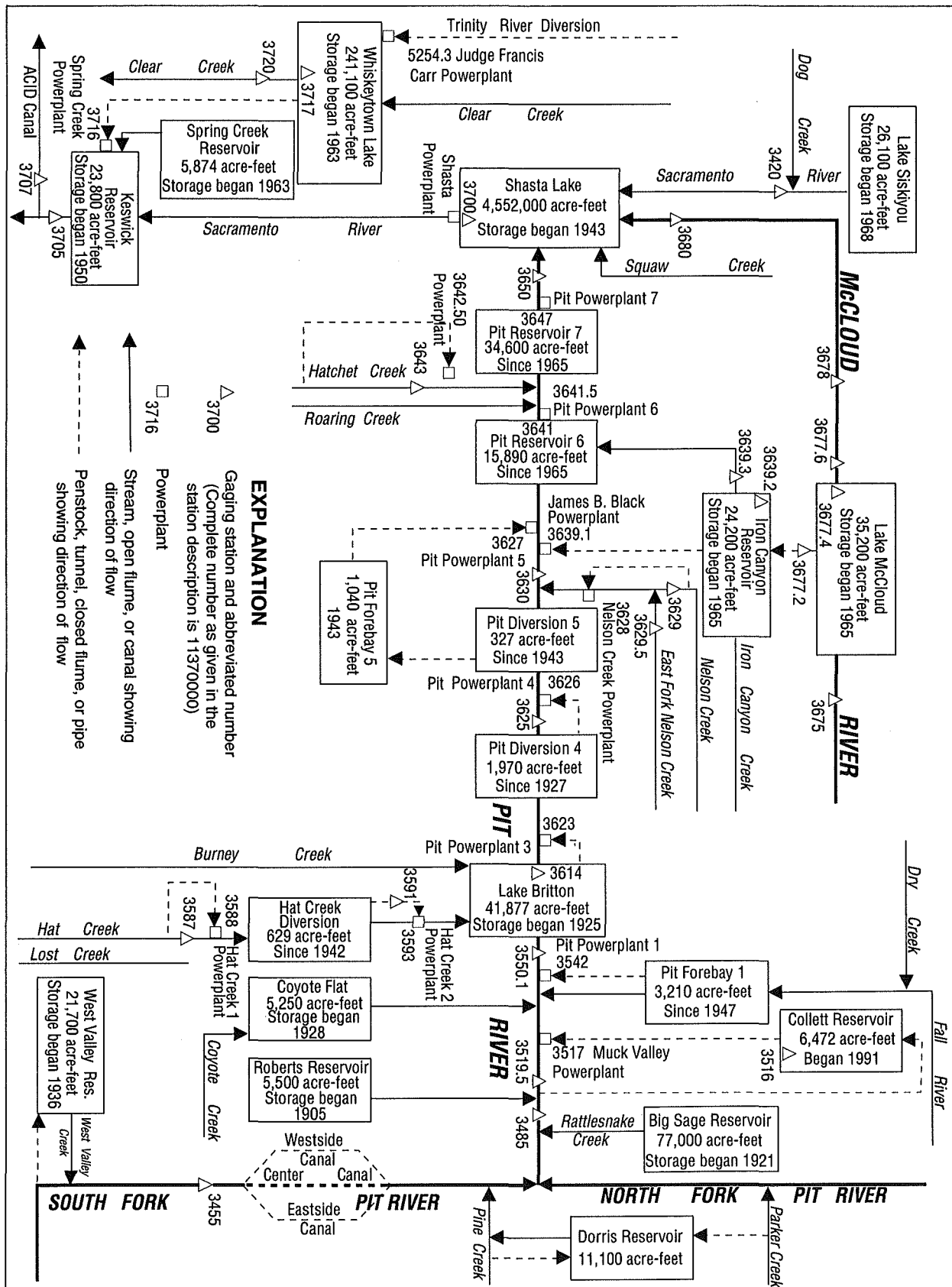


Figure 24. Diversions and storage in Pit and McCloud River Basins.



## 11342000 SACRAMENTO RIVER AT DELTA, CA

LOCATION.—Lat 40°56'23", long 122°24'58", in SW 1/4 NW 1/4 sec.35, T.36 N., R.5 W, Shasta County, Hydrologic Unit 18020005, U.S. Bureau of Reclamation property, on left bank 0.2 mi downstream from Dog Creek, 0.6 mi southeast of Delta, 2.8 mi south of Lamoine, and 29 mi downstream from Lake Siskiyou.

DRAINAGE AREA.—425 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1944 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1951–81.

WATER TEMPERATURE: Water years 1951, 1954–57, 1963–79.

REVISED RECORDS.—WSP 1395: 1951(M). WDR-CA-94-4: 1993(P).

GAGE.—Water-stage recorder. Datum of gage is 1,075.00 ft above sea level (levels by U.S. Bureau of Reclamation).

REMARKS.—Records excellent. Some regulation by Lake Siskiyou, capacity, 26,100 acre-ft, since December 1968. Some minor diversions for irrigation upstream from station. See schematic diagram of Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 69,800 ft<sup>3</sup>/s, Jan. 16, 1974, gage height, 27.20 ft in gage well, 28.7 ft from floodmarks, from rating curve extended above 19,000 ft<sup>3</sup>/s on basis of slope-area measurements at gage height 19.50 ft, and of peak flow; minimum daily, 117 ft<sup>3</sup>/s, Aug. 5, 6, 12–15, 1977.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 8,000 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 18	1800	19,300	13.25	Feb. 19	1445	8,710	10.27
Jan. 26	2030	9,960	10.69	Mar. 23	1700	26,300	15.09
Feb. 6	1715	20,900	13.64				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	260	1180	551	7580	2470	2960	4690	4240	2180	566	350
2	256	250	951	1580	8170	2560	3090	6290	4480	2170	561	344
3	244	246	808	3080	16500	2680	3340	5030	5320	2100	554	339
4	242	244	902	4420	11600	2510	3250	4270	4910	1980	541	339
5	223	240	838	2280	12100	2320	3050	4030	4480	1890	540	337
6	221	263	863	1630	16700	2140	2890	3860	4530	1820	533	339
7	223	326	e2200	1360	19100	1970	2730	3990	4590	1800	533	339
8	281	269	1870	1210	14000	1870	2580	4970	4970	1750	528	341
9	419	257	1270	1220	7860	1740	2630	4590	4500	1630	489	365
10	333	259	1040	1490	5840	1690	4260	3810	4610	1530	452	364
11	283	307	883	e3500	4730	1630	5120	3390	4520	1410	448	356
12	260	304	782	e7800	5080	1830	4080	3440	4500	1280	447	348
13	250	403	717	3990	5700	e3600	3430	3070	4460	1220	435	344
14	245	488	778	5440	6790	e2950	3070	2910	4310	1170	430	340
15	239	909	746	5450	5560	e2700	2760	2780	4120	1100	418	336
16	237	1980	741	5000	4630	e2500	2530	2750	3980	1020	410	332
17	236	1050	996	7720	4080	4530	2390	2610	3390	971	401	325
18	238	750	994	13500	3720	3880	2350	2380	3270	917	397	324
19	239	e2000	859	11400	6860	3370	2440	2380	3380	878	396	324
20	238	861	786	6560	5560	3230	2610	2640	3170	832	394	324
21	238	622	733	4610	6050	4230	2880	2520	3100	798	388	322
22	238	529	648	3640	4690	13500	3270	2380	3080	768	385	321
23	235	1260	619	3170	4520	21300	e1700	2500	3210	761	383	318
24	233	2200	591	3040	4440	14600	e2700	2810	2950	743	380	317
25	233	1810	555	3130	3640	8850	e2400	3600	2740	713	376	317
26	234	e3000	524	6300	3050	6690	3020	3200	2530	676	371	318
27	235	2130	503	7630	2720	5330	3060	2860	2300	643	368	317
28	236	1340	488	5510	2520	4490	e2700	5040	2210	618	361	322
29	245	1140	486	7560	---	3910	e2550	7100	2210	598	356	324
30	247	1620	514	5960	---	3380	4380	5370	2170	583	355	321
31	269	---	522	4790	---	3270	---	4460	---	574	352	---
TOTAL	7777	27317	26387	144521	203890	141720	90220	115720	112230	37123	13548	10007
MEAN	251	911	851	4662	7282	4572	3007	3733	3741	1198	437	334
MAX	419	3000	2200	13500	19100	21300	5120	7100	5320	2180	566	365
MIN	221	240	486	551	2520	1630	1700	2380	2170	574	352	317
AC-FT	15430	54180	52340	286700	404400	281100	179000	229500	222600	73630	26870	19850

e Estimated.

## 11342000 SACRAMENTO RIVER AT DELTA, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	356	784	1358	1892	2306	2253	1998	1687	826	345	235	233
MAX	1837	6075	5770	7162	9557	7957	4264	4216	3741	1198	462	514
(WY)	1951	1974	1997	1995	1958	1983	1963	1983	1998	1998	1983	1957
MIN	150	187	197	214	226	243	264	410	229	145	122	154
(WY)	1945	1992	1977	1991	1977	1977	1977	1977	1977	1977	1977	1991

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1945 - 1998			
ANNUAL TOTAL	361717				930460							
ANNUAL MEAN	991				2549				1183			
HIGHEST ANNUAL MEAN									2715			
LOWEST ANNUAL MEAN									228			
HIGHEST DAILY MEAN	45700				Jan 1	21300	Mar 23	53900	Jan 16	1974		
LOWEST DAILY MEAN	215				Aug 6	221	Oct 6	117	Aug 5	1977		
ANNUAL SEVEN-DAY MINIMUM	220				Aug 1	234	Oct 1	117	Aug 11	1977		
INSTANTANEOUS PEAK FLOW						26300	Mar 23	69800	Jan 16	1974		
INSTANTANEOUS PEAK STAGE						15.09	Mar 23	27.20	Jan 16	1974		
ANNUAL RUNOFF (AC-FT)	717500					1846000		857400				
10 PERCENT EXCEEDS	1660					5350		2660				
50 PERCENT EXCEEDS	522					1820		530				
90 PERCENT EXCEEDS	233					276		199				

## 11345500 SOUTH FORK PIT RIVER NEAR LIKELY, CA

LOCATION.—Lat 41°13'51", long 120°26'10", in NE 1/4 SE 1/4 sec.11, T.39 N., R.13 E., Modoc County, Hydrologic Unit 18020002, on left bank 250 ft downstream from highway bridge, 1.4 mi downstream from West Valley Creek, and 3.5 mi east of Likely.

DRAINAGE AREA.—247 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1928 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1951–79.

WATER TEMPERATURE: Water years 1965–79.

SEDIMENT DATA: Water years 1957–61, 1967–70.

REVISED RECORDS.—WSP 1931: Drainage area, 1932(M), 1938(M), 1952(M). WDR CA-88-4: 1983(M).

GAGE.—Water-stage recorder. Datum of gage is 4,507.74 ft above sea level. Prior to Oct. 1, 1931, at site 1,000 ft downstream at different datum.

REMARKS.—Records fair. Considerable regulation by West Valley Reservoir on West Valley Creek beginning in May 1937, usable capacity, 21,700 acre-ft. Diversions for irrigation of about 3,800 acres upstream from station. See schematic diagram of Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 1,620 ft<sup>3</sup>/s, June 2, 1971, gage height, 6.05 ft; minimum, 0.2 ft<sup>3</sup>/s, Feb. 3, 1941.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	31	15	24	25	38	38	191	457	334	205	175
2	55	29	14	26	24	46	32	218	479	317	192	182
3	55	28	16	27	28	61	30	226	536	297	198	180
4	55	27	15	22	31	54	51	259	578	274	227	178
5	56	27	15	e12	27	37	53	284	599	258	239	176
6	57	27	15	e8.0	26	36	48	286	606	246	253	175
7	60	32	17	e7.5	25	33	44	336	610	233	252	175
8	59	30	17	e7.5	24	34	31	382	657	217	250	178
9	66	29	e10	e9.0	24	32	26	622	669	205	245	160
10	48	30	e7.6	17	23	30	21	751	738	199	242	128
11	36	30	e7.6	23	23	29	20	795	930	189	237	115
12	35	29	e7.6	29	23	30	20	815	995	176	230	99
13	34	29	e7.6	35	23	30	18	735	923	163	228	80
14	34	30	e10	34	24	30	16	726	887	153	228	78
15	33	29	17	36	25	33	18	682	863	150	213	77
16	31	29	19	83	22	48	22	617	841	163	199	78
17	31	29	23	170	23	49	16	596	792	189	198	76
18	30	28	e15	131	23	42	14	574	746	191	197	74
19	30	29	e8.0	88	23	39	18	534	709	182	192	74
20	29	23	e7.5	56	22	40	28	501	681	174	184	73
21	29	14	e7.5	40	23	42	43	477	642	187	168	74
22	29	14	e7.5	37	25	65	67	456	602	229	168	89
23	29	15	e7.5	37	26	59	80	450	565	265	168	126
24	29	16	e7.5	33	24	38	98	450	536	241	167	150
25	29	18	e7.5	28	22	36	85	484	517	233	163	137
26	30	16	e7.0	27	22	32	80	519	494	249	159	147
27	30	17	e7.0	26	24	30	85	516	463	224	157	140
28	29	15	e7.0	25	33	32	100	477	423	202	155	120
29	29	15	e10	25	---	32	109	493	386	170	161	96
30	29	17	19	28	---	40	126	483	357	152	168	52
31	31	---	21	26	---	47	---	463	---	175	169	---
TOTAL	1213	732	372.4	1177.0	687	1224	1437	15398	19281	6637	6212	3662
MEAN	39.1	24.4	12.0	38.0	24.5	39.5	47.9	497	643	214	200	122
MAX	66	32	23	170	33	65	126	815	995	334	253	182
MIN	29	14	7.0	7.5	22	29	14	191	357	150	155	52
AC-FT	2410	1450	739	2330	1360	2430	2850	30540	38240	13160	12320	7260

e Estimated.

## 11345500 SOUTH FORK PIT RIVER NEAR LIKELY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	31.8	28.0	28.6	31.3	35.3	48.8	109	235	180	92.1	116	57.8
MAX	63.4	57.8	107	98.5	101	219	385	570	643	238	236	159
(WY)	1997	1985	1965	1997	1965	1972	1952	1984	1998	1995	1995	1975
MIN	15.7	5.17	3.28	5.99	4.07	4.63	16.9	25.7	12.1	7.70	9.97	10.5
(WY)	1932	1980	1980	1941	1978	1977	1991	1931	1931	1931	1934	1931

## SUMMARY STATISTICS                      FOR 1997 CALENDAR YEAR                      FOR 1998 WATER YEAR                      WATER YEARS 1929 - 1998

ANNUAL TOTAL	36585.4	58032.4	
ANNUAL MEAN	100	159	83.1
HIGHEST ANNUAL MEAN			183
LOWEST ANNUAL MEAN			27.3
HIGHEST DAILY MEAN	334	Apr 24	995
LOWEST DAILY MEAN	7.0	Dec 26	7.0
ANNUAL SEVEN-DAY MINIMUM	7.3	Dec 22	7.3
INSTANTANEOUS PEAK FLOW			1050
INSTANTANEOUS PEAK STAGE			5.22
ANNUAL RUNOFF (AC-FT)	72570	115100	60190
10 PERCENT EXCEEDS	208	507	190
50 PERCENT EXCEEDS	72	49	43
90 PERCENT EXCEEDS	18	16	12



## 11348500 PIT RIVER NEAR CANBY, CA

LOCATION.—Lat 41°24'22", long 120°55'36", in NW 1/4 SW 1/4 sec.10, T.41 N., R.9 E., Modoc County, Hydrologic Unit 18020002, on right bank at lower end of Warm Spring Valley, 3.9 mi southwest of Canby.

DRAINAGE AREA.—1,431 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—January 1904 to December 1905, May 1929 to current year (1929–31 incomplete).

CHEMICAL DATA: Water years 1951–79.

WATER TEMPERATURE: Water years 1965–79.

SEDIMENT DATA: Water years 1957–61, 1967–70.

REVISED RECORDS.—WSP 1445: 1904, 1935(M), 1936, 1937(M). WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 4,266.0 ft above sea level. January 1904 to December 1905, nonrecording gage and May 6, 1929, to Sept. 30, 1931, water-stage recorder, at site 100 ft upstream at different datum.

REMARKS.—Records good. Low flow regulated by many small reservoirs, total capacity about 144,000 acre-ft. Diversions for irrigation of about 39,000 acres upstream from station. See schematic diagram of Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge observed, 13,000 ft<sup>3</sup>/s, Mar. 8, 1904, gage height, 15.0 ft, site and datum then in use; minimum daily, 0.1 ft<sup>3</sup>/s, several days in April 1934 and August 1935.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 18	1745	2,050	6.51	Apr. 2	0215	1,150	5.15
Mar. 3	2230	841	4.60	May 13	1345	3,900	8.70
Mar. 24	0715	943	5.15	June 15	1915	2,850	7.53

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	86	132	93	219	447	1020	527	1730	475	125	133
2	28	86	118	122	235	594	1100	566	1620	416	74	112
3	26	99	107	176	329	790	963	584	1560	401	68	77
4	25	93	97	184	432	782	1010	609	1540	391	95	60
5	20	90	91	193	409	637	925	756	1440	353	106	60
6	16	85	88	135	330	489	848	1160	1430	297	96	59
7	25	80	96	134	297	410	806	1430	1390	224	90	87
8	60	81	114	129	274	374	885	1400	1340	255	61	114
9	118	91	114	109	258	364	764	1790	1320	233	88	127
10	108	107	111	118	246	346	615	2410	1370	226	83	133
11	114	119	117	262	239	325	522	3350	1520	215	80	154
12	96	98	109	712	238	313	438	3670	1800	180	78	188
13	80	112	109	1140	270	321	427	3870	2260	156	77	207
14	69	113	107	1230	340	320	417	3790	2570	158	94	237
15	61	105	100	787	386	320	429	3610	2800	82	97	256
16	59	114	113	742	367	399	410	3570	2810	79	125	288
17	89	131	122	1520	299	475	413	3500	2690	69	128	271
18	107	141	144	1970	245	472	379	3300	2530	64	115	251
19	85	114	160	1690	239	372	333	3010	2360	78	116	220
20	78	121	130	979	258	327	326	2730	2160	73	103	216
21	78	104	106	554	273	336	321	2480	1900	67	93	209
22	79	111	98	393	325	449	354	2210	1680	85	95	237
23	71	114	117	339	313	746	460	1920	1490	87	112	230
24	65	102	115	343	291	927	562	1710	1320	92	102	220
25	70	114	111	340	272	813	605	1640	1170	177	128	190
26	75	127	96	281	256	665	592	1660	1060	196	140	213
27	67	137	95	273	254	589	550	1790	948	220	135	285
28	64	144	82	267	291	598	545	1900	838	250	153	339
29	72	150	77	254	---	651	481	1920	722	273	135	345
30	75	141	78	244	---	696	462	1910	594	284	92	506
31	79	---	86	227	---	785	---	1860	---	189	99	---
TOTAL	2084	3310	3340	15940	8185	16132	17962	66632	49962	6345	3183	6024
MEAN	67.2	110	108	514	292	520	599	2149	1665	205	103	201
MAX	118	150	160	1970	432	927	1100	3870	2810	475	153	506
MIN	16	80	77	93	219	313	321	527	594	64	61	59
AC-FT	4130	6570	6620	31620	16230	32000	35630	132200	99100	12590	6310	11950

## SACRAMENTO RIVER BASIN

## 11348500 PIT RIVER NEAR CANBY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	77.5	103	192	318	430	551	475	478	284	67.7	44.4	65.2
MAX	1068	418	1225	1684	2249	1749	2774	2176	1746	312	125	201
(WY)	1963	1982	1938	1970	1986	1972	1952	1995	1971	1971	1983	1998
MIN	.26	12.7	31.0	14.7	19.2	5.83	1.29	2.32	3.53	4.62	.22	.28
(WY)	1935	1935	1937	1937	1937	1934	1934	1992	1992	1931	1934	1934

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1904 - 1998			
ANNUAL TOTAL	123189				199099							
ANNUAL MEAN	338				545				255			
HIGHEST ANNUAL MEAN									676			
LOWEST ANNUAL MEAN									22.4			
HIGHEST DAILY MEAN	6650				3870				8580			
LOWEST DAILY MEAN	13				16				.10			
ANNUAL SEVEN-DAY MINIMUM	19				24				.13			
INSTANTANEOUS PEAK FLOW					3900				13000			
INSTANTANEOUS PEAK STAGE					8.70				15.00			
ANNUAL RUNOFF (AC-FT)	244300				394900				185100			
10 PERCENT EXCEEDS	561				1650				652			
50 PERCENT EXCEEDS	125				244				95			
90 PERCENT EXCEEDS	41				78				16			

## 11351600 COLLETT RESERVOIR NEAR LITTLE VALLEY, CA

LOCATION.—Lat 40°58'00", long 121°13'00", unsurveyed, Lassen County, Hydrologic Unit 18020003, on right bank, 1.9 mi east of Muck Valley powerplant, 5.5 mi northwest of Little Valley, and 9.1 mi southwest of Nubieber.

PERIOD OF RECORD.—October 1991 to September 1992. October 1993 to current year.

GAGE.—Water-stage recorder. Datum of gage is sea level.

REMARKS.—Lake is formed by earth and rockfill dam. Storage began December 31, 1990. Water is diverted from the Pit River through a tunnel to the reservoir. Operating pool from elevation 4,030 ft, capacity 155 acre-ft, to 4,065 ft, capacity 7,693 acre-ft. Crest of spillway is at elevation 4,065 ft. Reservoir is used for power generation. Figures given represent total contents. Data not published below the minimum operating level at elevation 4,030 ft, capacity 155 acre-ft. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were provided by Malacha Hydro Limited Partnership, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Malacha Hydro Limited Partnership, dated November 1991)

4,030	155	4,040	1,899
4,032	395	4,050	4,052
4,035	931	4,065	7,693

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	377	324	324	275	3582	2929	2816	4979	6431	7204	6771	1525
2	377	324	324	355	3572	2929	2814	5124	6328	7217	6930	1396
3	377	324	324	359	3566	2923	2816	5262	6239	7225	6766	1610
4	377	324	406	374	3472	2914	2826	5349	6140	7336	6523	1535
5	377	324	406	377	3351	2913	2828	5424	6036	7446	6255	1603
6	399	324	406	380	3342	2907	3015	5500	6160	7458	5990	1667
7	409	324	421	380	3334	2900	3198	5568	6279	7437	5727	1661
8	409	324	429	380	3325	2894	3378	5664	6330	7387	5881	1525
9	373	324	431	385	3321	2885	3552	5829	6371	7504	5884	1294
10	373	324	431	391	3253	2877	3655	5955	6431	7251	5622	1062
11	395	324	396	757	3183	2871	3821	6093	6485	7461	5361	1168
12	427	324	373	790	3122	2863	3986	6145	6530	7653	5106	1327
13	487	324	373	916	3064	2860	4065	6188	6652	7380	4846	1494
14	557	324	373	1023	3071	2850	4141	6232	6799	7258	4584	1493
15	471	324	380	1274	3068	2843	4208	6274	6830	7134	4572	1333
16	475	324	383	1625	3061	2846	4271	6406	6861	7026	4559	1321
17	515	324	394	1972	2998	2839	4334	6529	6886	6845	4295	1379
18	655	324	397	2321	2935	2831	4485	6550	6911	6866	4034	1435
19	701	324	397	2659	2934	2823	4633	6581	6843	6933	3772	1472
20	563	324	397	2990	2929	2814	4671	6605	6954	6678	3510	1767
21	453	324	303	3317	2935	2816	4711	6625	7061	6413	3245	2273
22	379	324	206	3436	2934	2819	4747	6661	7079	6398	3235	2242
23	385	324	206	3426	2930	2827	4779	6773	7092	6225	3225	2172
24	445	324	206	3568	2947	2826	4825	6893	7120	5973	2965	2144
25	515	324	206	3925	2944	2824	4964	7019	7042	6000	2708	2148
26	515	324	206	3780	2941	2819	5084	6918	6954	6202	2446	2616
27	529	324	206	3637	2938	2815	5032	6812	7061	6159	2194	3013
28	536	324	216	3621	2934	2825	4986	6709	7165	6186	1937	3233
29	540	324	216	3614	---	2825	4941	6613	7177	6286	1931	3430
30	420	324	216	3602	---	2823	4900	6575	7193	6398	1926	3635
31	324	---	216	3588	---	2823	---	6536	---	6521	1708	---
MAX	701	324	431	3925	3582	2929	5084	7019	7193	7653	6930	3635
MIN	324	324	206	275	2929	2814	2814	4979	6036	5973	1708	1062
a	3500	6570	7740	27440	34770	38400	33040	33870	32320	12150	5290	5620

a Discharge, in acre-feet, for Muck Valley Powerplant (station 11351700), provided by Malacha Hydro Limited Partnership.

## 11351950 PIT RIVER BELOW DIVERSION TO MUCK VALLEY POWERPLANT, NEAR BIEBER, CA

LOCATION.—Lat 41°00'55", long 121°09'13", in NE 1/4 SW 1/4 sec.27, T.37 N., R.7 E., Lassen County, Hydrologic Unit 18020003, on right bank 1.7 mi upstream from North Gulch, 2.2 mi upstream from Spring Gulch, and 7.4 mi south of Bieber.

DRAINAGE AREA.—2,475 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—October 1994 to current year.

GAGE.—Acoustic velocity meter measures minimum bypass flow and water-stage recorder and Ogee weir for spillway. Elevation of gage is 4,120 ft above sea level, from topographic map.

REMARKS.—Flow at this station has two components which are combined for publication: low flow release (station 11351946) and flow over Ogee weir (station 11351948). Water is diverted upstream of weir through a tunnel to Collett Reservoir (station 11351600), for power generation. During powerplant operation, the minimum release is 50 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were provided by Malacha Hydro Limited Partnership, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 16,800 ft<sup>3</sup>/s, Jan. 3, 1997; no flow many days during 1995 and 1997.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	39	52	52	231	911	1790	351	2200	418	54	24
2	11	11	52	52	181	1210	1830	385	2040	246	54	46
3	10	45	52	52	470	1580	1920	402	1880	84	54	53
4	10	35	52	52	1020	1860	1970	522	1920	53	51	45
5	10	29	53	52	1060	1790	1990	725	1990	54	23	41
6	32	38	53	52	848	1390	1970	973	1880	54	17	45
7	46	41	53	52	631	1020	1810	1370	1740	54	31	8.0
8	22	52	53	52	437	807	1690	1440	1670	54	47	26
9	30	52	53	52	385	594	1690	1830	1560	54	51	6.0
10	34	52	53	52	402	504	1560	2580	1490	54	23	6.0
11	42	21	53	53	351	436	1530	3150	1810	54	19	33
12	54	36	52	1280	351	436	1210	3910	2110	54	23	53
13	54	53	53	1970	487	594	1060	4480	2510	54	24	53
14	53	53	53	2410	613	612	1040	4690	2870	55	22	52
15	54	53	53	2290	1060	558	952	4850	3170	55	20	22
16	49	52	53	1900	1080	746	848	4830	3050	55	25	35
17	54	52	53	1950	869	1240	746	5020	2850	54	24	53
18	54	52	53	2510	613	1300	631	5070	2650	53	31	53
19	51	52	53	3030	385	1080	522	5100	2510	53	30	53
20	42	52	53	2980	385	725	453	4590	2240	52	32	53
21	36	52	53	2290	436	576	368	4090	2080	17	35	53
22	44	52	52	1390	505	828	334	3640	1920	38	35	53
23	31	52	52	705	725	1490	317	2870	1720	54	33	52
24	39	52	52	453	631	1830	402	2250	1490	30	35	53
25	37	52	52	402	577	1990	504	2200	1370	14	28	53
26	10	52	52	419	523	1880	540	2180	1210	54	23	53
27	35	52	52	488	522	1650	613	2250	993	54	23	53
28	34	52	52	454	685	1510	540	2290	847	54	23	53
29	30	52	52	368	---	1490	522	2290	744	54	24	53
30	35	52	52	523	---	1560	487	2290	575	54	29	53
31	39	---	52	402	---	1650	---	2250	---	54	29	---
TOTAL	1105	1390	1628	28787	16463	35847	31839	84868	57089	2141	972	1289.0
MEAN	35.6	46.3	52.5	929	588	1156	1061	2738	1903	69.1	31.4	43.0
MAX	54	53	53	3030	1080	1990	1990	5100	3170	418	54	53
MIN	10	11	52	52	181	436	317	351	575	14	17	6.0
AC-FT	2190	2760	3230	57100	32650	71100	63150	168300	113200	4250	1930	2560

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	36.2	50.8	169	1564	1517	1653	984	1785	629	36.0	11.1	29.1
MAX	44.3	53.5	444	3344	3089	3316	1677	3679	1903	69.1	31.4	43.0
(WY)	1997	1996	1997	1997	1996	1995	1995	1995	1998	1998	1998	1998
MIN	21.5	46.3	52.5	336	588	366	248	102	47.1	4.77	2.65	19.8
(WY)	1995	1998	1998	1996	1998	1997	1997	1997	1997	1997	1997	1997

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1995 - 1998

ANNUAL TOTAL	171725.00	263418.0	
ANNUAL MEAN	470	722	702
HIGHEST ANNUAL MEAN			1995
LOWEST ANNUAL MEAN			1997
HIGHEST DAILY MEAN	16800	Jan 3	5100 May 19
LOWEST DAILY MEAN	.00	Jul 16	6.0 Sep 9
ANNUAL SEVEN-DAY MINIMUM	.00	Jul 16	20 Oct 2
ANNUAL RUNOFF (AC-FT)	340600	522500	508900
10 PERCENT EXCEEDS	827	2190	2070
50 PERCENT EXCEEDS	52	54	54
90 PERCENT EXCEEDS	1.0	30	7.0

## 11354200 PIT NO. 1 POWERPLANT NEAR FALL RIVER MILLS, CA

LOCATION.—Lat 40°59'28", long 121°29'49", in SE 1/4 NE 1/4 sec.10, T.37 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank of Pit River 2.3 mi downstream from Pit River Falls and 3.2 mi southwest of Fall River Mills.

PERIOD OF RECORD.—October 1986 to current year. Unpublished records for water years 1973–86 available in files of the U.S. Geological Survey. Fragmentary record for water years 1922–72 available in files of the Pacific Gas & Electric Co.

GAGE.—Discharge computed from powerplant output.

REMARKS.—Water is diverted from Fall River at Pit No. 1 Forebay at NW 1/4 SW 1/4 sec.25, T.37 N., R.4 E., through a tunnel to powerplant and then into Pit River. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 2,490 ft<sup>3</sup>/s, Mar. 13, 1995; no flow several days most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1260	1260	1260	1180	1840	1860	1910	1800	1880	1570	1380	1350
2	1240	1260	1430	1400	1970	1680	2040	2020	1880	1500	1610	1300
3	1260	1260	1210	1300	2100	1780	1750	1830	1930	1430	1460	1450
4	1260	1260	1470	1560	2100	1960	1990	1970	1890	1390	1400	1400
5	1260	1260	1270	1550	2070	1770	1960	1970	1830	1380	1180	1340
6	1260	1260	1400	1440	1980	1790	1830	2030	1730	1550	1570	1320
7	1260	1260	1310	1460	2060	1910	1880	1990	1800	1360	1460	1220
8	1260	1260	1330	1270	1970	1640	1880	1960	1660	1440	1170	1700
9	1300	1260	1380	1440	2010	1760	1780	2050	1950	1360	1430	1250
10	1260	1260	1450	1270	1920	1740	1880	1920	1760	1420	1290	1170
11	1260	1260	1280	1610	1900	1730	1710	1360	1870	1450	1380	909
12	1270	1260	1190	1760	1850	1580	1870	1950	1690	1290	1440	.00
13	1270	1260	1360	1920	1300	1820	2010	1880	1200	1300	1340	.00
14	1270	1260	1310	2000	1210	1740	2110	2060	1780	1530	1440	910
15	1270	1260	1300	1910	1220	1680	2140	2040	1910	1510	1460	1180
16	1260	1260	1330	1800	1400	1650	2100	2140	1820	1390	1340	1370
17	1260	1100	1470	1970	1950	1800	1970	2120	1860	1390	1320	1320
18	1260	1260	1320	2110	1890	1630	1820	2140	1670	1440	1360	1410
19	1260	1270	1360	2110	1890	2000	1830	1890	1680	1340	1350	1320
20	1260	1260	1210	2070	1980	1810	1750	1910	1630	1360	1320	1400
21	1260	1210	1300	2130	2030	1750	1800	1880	1650	1360	1400	1500
22	1260	1260	1360	2010	2080	1960	1700	1830	1550	1460	1340	1270
23	1250	1160	1230	1860	2030	2130	1820	1840	1480	1430	1360	1420
24	1260	1460	1280	1740	1980	2130	1900	1810	1610	1380	1460	1380
25	1280	1510	1210	1760	1930	2130	1920	1840	1540	1450	1340	1400
26	1260	1370	1260	1820	1960	2130	1920	1890	1650	1400	1460	1480
27	1260	1460	1340	1860	1910	1920	1920	2010	1530	1360	1380	1500
28	1260	1320	1250	2000	1860	2130	1990	2030	1550	1490	1350	1320
29	1260	1190	1310	1350	---	2130	1810	1920	1490	1320	1290	1490
30	1260	1420	1240	1830	---	2000	1960	1990	1480	1380	1350	1420
31	1260	---	1320	1840	---	2040	---	2060	---	1350	1330	---
TOTAL	39130	38410	40740	53330	52390	57780	56950	60130	50950	43780	42760	37499.00
MEAN	1262	1280	1314	1720	1871	1864	1898	1940	1698	1412	1379	1250
MAX	1300	1510	1470	2130	2100	2130	2140	2140	1950	1570	1610	1700
MIN	1240	1100	1190	1180	1210	1580	1700	1360	1200	1290	1170	.00
AC-FT	77610	76190	80810	105800	103900	114600	113000	119300	101100	86840	84810	74380

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1114	1131	1124	1215	1253	1432	1409	1325	1175	1081	1058	1078
MAX	1318	1283	1314	1720	1871	1972	1927	1940	1698	1412	1379	1252
(WY)	1987	1987	1998	1998	1998	1995	1995	1998	1998	1998	1998	1997
MIN	941	971	987	996	749	1053	1014	947	914	844	835	900
(WY)	1995	1995	1995	1992	1994	1992	1994	1992	1994	1992	1992	1994

## SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1987 - 1998

ANNUAL TOTAL	475598	573849.00	
ANNUAL MEAN	1303	1572	1199
HIGHEST ANNUAL MEAN			1572
LOWEST ANNUAL MEAN			956
HIGHEST DAILY MEAN	2120	Jan 29	2140
LOWEST DAILY MEAN	397	Jun 25	.00
ANNUAL SEVEN-DAY MINIMUM	1100	Apr 3	774
ANNUAL RUNOFF (AC-FT)	943300		1138000
10 PERCENT EXCEEDS	1470		2000
50 PERCENT EXCEEDS	1260		1460
90 PERCENT EXCEEDS	1190		1260
			868800
			1550
			1150
			940
			2490
			.00
			68
			Mar 13 1995
			Aug 21 1992
			Feb 8 1994

## 11355010 PIT RIVER BELOW PIT NO. 1 POWERPLANT, NEAR FALL RIVER MILLS, CA

LOCATION.—Lat 40°59'00", long 121°30'39", in NE 1/4 NW 1/4 sec.15, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on left bank 0.9 mi downstream from Pit No. 1 Powerplant and 4 mi southwest of Fall River Mills.

DRAINAGE AREA.—3,761 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—August 1975 to current year.

GAGE.—Water-stage recorder and crest-stage gage. Elevation of gage is 2,798.21 ft above sea level (levels by Pacific Gas and Electric Co.).

REMARKS.—Records excellent. Low flow regulated by many small reservoirs (total usable reservoir capacity, 210,000 acre-ft) and Pit No. 1 Powerplant. Many diversions upstream from station for irrigation. See schematic diagram of Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 30,000 ft<sup>3</sup>/s, Feb. 20, 1986, gage height, 17.03 ft; minimum daily, 535 ft<sup>3</sup>/s, Sept. 11, 1994.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of January 1974 reached a stage of 14.8 ft, from floodmarks on right bank, discharge 22,600 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 19	1300	7,060	9.85	May 11	2230	8,570	10.60
Mar. 25	1930	5,740	9.14				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	1580	1610	1540	2960	3520	4740	2950	5170	2670	1740	1530
2	1390	1450	1780	1840	3100	3650	4890	3140	4950	2440	1750	1520
3	1410	1440	1570	2070	3500	4100	4880	2970	4830	2300	1690	1680
4	1390	1550	1760	2160	3850	4620	5340	3190	4870	2100	1680	1650
5	1390	1530	1620	2120	4010	4490	5310	3510	4870	1990	1540	1610
6	1380	1520	1720	2030	3750	4260	4940	3790	4640	2140	1790	1520
7	1440	1560	1680	1950	3630	3840	4860	4040	4440	1920	1730	1360
8	1500	1610	1830	1760	3370	3370	4690	4250	4180	1990	1470	1820
9	1490	1550	1830	1970	3300	3310	4530	5690	4290	1770	1620	1450
10	1460	1560	1910	1890	3210	3120	4500	6220	4080	1760	1520	1440
11	1490	1560	1630	2430	3190	3070	4110	6770	4470	1870	1630	1460
12	1470	1510	1630	3890	3130	2850	3970	7500	4880	1510	1700	1640
13	1500	1650	1710	4870	3010	3230	3820	7490	5700	1580	1570	1650
14	1570	1620	1690	5260	3590	3130	3870	7630	6080	1820	1700	1810
15	1590	1600	1640	5300	3940	3120	3940	7700	6480	1740	1660	1650
16	1580	1610	1710	4660	3990	3220	3840	8000	6180	1710	1520	1750
17	e1560	1490	1900	4750	3730	3720	3580	8060	5880	1710	1510	1590
18	e1540	1630	1910	5440	3450	3730	3350	8080	5510	1680	1590	1680
19	e1510	1670	1800	6840	3250	3950	3280	7840	5310	1500	1610	1570
20	e1500	1640	1700	6570	3260	3460	3080	7400	4930	1580	1630	1530
21	e1490	1680	1760	5620	3450	3240	3040	6780	4590	1650	1650	1700
22	1510	1780	1660	4460	3760	3840	2880	6180	4310	1710	1570	1560
23	1510	1530	1650	3560	3760	4560	2920	5700	4030	1680	1510	1700
24	1480	1650	1660	3090	3630	5200	3060	5330	3860	1690	1620	1670
25	1520	1860	1520	2680	3530	5590	3250	5330	3620	1690	1620	1730
26	1490	1820	1560	3090	3470	5500	3320	5530	3530	1570	1700	1780
27	1470	1910	1570	3260	3360	5100	3420	5350	3220	1510	1650	1650
28	1460	1720	1560	3330	3380	4750	3400	5430	3010	1760	1620	1560
29	1510	1660	1590	2660	---	4760	3190	5430	2880	1620	1550	1810
30	1510	1790	1550	3120	---	4600	3260	5460	2670	1730	1530	1770
31	1560	---	1600	3140	---	4710	---	5400	---	1680	1480	---
TOTAL	46070	48730	52310	107350	97560	123610	117260	178140	137460	56070	50150	48840
MEAN	1486	1624	1687	3463	3484	3987	3909	5746	4582	1809	1618	1628
MAX	1590	1910	1910	6840	4010	5590	5340	8080	6480	2670	1790	1820
MIN	1380	1440	1520	1540	2960	2850	2880	2950	2670	1500	1470	1360
AC-FT	91380	96660	103800	212900	193500	245200	232600	353300	272700	111200	99470	96870

e Estimated.

## 11355010 PIT RIVER BELOW PIT NO. 1 POWERPLANT, NEAR FALL RIVER MILLS, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1375	1595	1784	2332	2890	3241	2581	2348	1700	1315	1268	1306
MAX	1722	3181	3834	6060	8539	6539	5614	6883	4582	1809	1618	1628
(WY)	1976	1982	1984	1997	1986	1993	1982	1995	1998	1998	1998	1998
MIN	939	1133	1214	1222	1268	1294	1173	1050	1012	954	828	784
(WY)	1995	1993	1993	1991	1994	1992	1992	1992	1992	1994	1994	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1975 - 1998			
ANNUAL TOTAL	846000				1063550							
ANNUAL MEAN	2318				2914				1971			
HIGHEST ANNUAL MEAN									2914			
LOWEST ANNUAL MEAN									1149			
HIGHEST DAILY MEAN	20700				8080				28800			
LOWEST DAILY MEAN	1070				1360				535			
ANNUAL SEVEN-DAY MINIMUM	1240				1400				663			
INSTANTANEOUS PEAK FLOW					8570				30000			
INSTANTANEOUS PEAK STAGE					10.60				17.03			
ANNUAL RUNOFF (AC-FT)	1678000				2110000				1428000			
10 PERCENT EXCEEDS	3440				5320				3280			
50 PERCENT EXCEEDS	1630				1970				1490			
90 PERCENT EXCEEDS	1350				1510				1160			

## 11358700 HAT CREEK BELOW HAT NO. 1 DIVERSION DAM, NEAR BURNEY, CA

LOCATION.—Lat 40°55'08", long 121°33'02", in NW 1/4 SW 1/4 sec.5, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank at Hat No. 1 diversion dam on Hat Creek, 6.5 mi northeast of Burney.

DRAINAGE AREA.—347 mi<sup>2</sup>.

PERIOD OF RECORD.—Oct. 1 to Dec. 8, 1987 (fragmentary), Dec. 9, 1987, to current year (operated as a low-flow station only). Unpublished fragmentary records for water years 1980–87 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and Cipolletti weir. Elevation of gage is 3,180 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirement is 2.0 ft<sup>3</sup>/s at all times. Flow is computed to 9.0 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	2.7	2.5	2.7	3.1	3.1	2.8	3.0	3.0	3.2	3.1	3.1
2	2.8	2.7	2.7	2.7	3.1	3.1	2.8	3.0	3.1	3.1	3.1	3.2
3	2.8	2.7	2.8	2.7	3.2	3.1	2.8	3.0	3.1	3.2	3.1	3.0
4	2.8	2.7	3.6	2.9	3.2	3.1	2.8	3.0	3.1	3.2	3.1	3.0
5	2.8	2.6	2.8	2.9	3.1	3.2	2.8	3.1	3.1	3.1	3.1	3.0
6	2.7	2.7	2.8	2.9	3.1	3.1	2.8	3.0	3.0	3.1	3.1	3.1
7	2.8	2.6	2.8	3.0	3.1	3.2	2.8	3.0	3.0	3.1	3.2	3.0
8	2.8	2.6	2.8	3.7	3.1	3.2	2.9	3.0	3.0	3.1	3.2	4.4
9	2.7	4.2	2.7	3.4	3.1	3.0	3.0	3.1	3.0	3.1	3.3	5.7
10	2.8	2.8	2.7	3.4	3.1	2.9	3.0	3.2	3.0	3.1	3.2	5.8
11	2.8	2.7	2.7	3.4	3.1	2.9	3.0	3.2	3.0	3.1	3.2	3.1
12	2.8	2.7	2.7	3.1	3.3	2.9	3.0	3.4	3.0	3.0	3.2	3.1
13	2.8	2.7	2.7	3.0	3.1	2.9	5.1	3.3	3.0	3.0	3.3	3.1
14	2.8	2.7	2.7	3.0	3.1	2.9	5.8	3.0	2.9	3.0	3.3	3.1
15	2.8	2.7	2.9	2.9	3.1	2.9	5.7	2.8	2.8	3.0	3.3	3.2
16	2.8	2.7	2.8	2.9	3.1	2.9	4.7	2.8	2.8	2.9	3.4	3.2
17	2.8	3.0	2.7	2.9	3.1	2.9	3.0	2.7	2.9	2.9	3.4	3.2
18	2.9	2.7	2.7	2.9	3.1	2.9	3.0	2.7	2.9	2.9	3.4	3.3
19	2.8	2.6	2.7	3.0	3.1	2.9	3.0	2.7	3.1	2.9	3.4	3.2
20	2.8	2.5	2.7	2.9	3.1	2.9	2.9	2.7	3.2	2.8	3.3	3.2
21	3.2	2.5	2.7	2.9	3.1	3.0	2.9	2.9	3.2	2.9	3.2	3.2
22	3.0	2.5	2.7	2.9	3.2	3.0	2.9	3.0	3.2	3.0	3.2	3.2
23	2.9	2.5	2.7	2.9	3.2	3.0	2.9	2.8	3.2	3.0	3.2	3.1
24	2.8	2.6	2.7	2.9	3.2	3.0	2.9	2.8	3.1	3.0	3.2	3.1
25	2.7	2.6	2.7	2.9	3.2	2.9	2.9	2.8	3.1	3.0	4.8	3.2
26	2.7	2.6	2.8	2.8	3.2	2.8	2.8	2.9	3.2	3.1	6.9	3.2
27	2.7	2.6	2.8	2.8	3.2	2.8	2.8	3.0	3.2	3.1	4.4	3.2
28	2.7	2.5	2.8	2.8	3.1	2.8	2.9	2.9	3.2	3.2	3.2	3.2
29	2.7	2.6	2.7	3.0	---	2.8	3.0	2.9	3.2	3.1	3.2	3.2
30	2.7	2.5	2.7	3.1	---	2.8	3.0	2.9	3.2	3.1	3.2	3.2
31	2.7	---	2.7	3.1	---	2.8	---	3.0	---	3.1	3.2	---
TOTAL	86.6	80.8	85.5	92.4	87.8	91.7	96.7	91.6	91.8	94.4	106.4	100.8
MEAN	2.79	2.69	2.76	2.98	3.14	2.96	3.22	2.95	3.06	3.05	3.43	3.36
MAX	3.2	4.2	3.6	3.7	3.3	3.2	5.8	3.4	3.2	3.2	6.9	5.8
MIN	2.7	2.5	2.5	2.7	3.1	2.8	2.8	2.7	2.8	2.8	3.1	3.0
AC-FT	172	160	170	183	174	182	192	182	182	187	211	200



## 11358800 HAT CREEK NO. 1 POWERPLANT NEAR BURNEY, CA

LOCATION.—Lat 40°55'45", long 121°32'37", in SW 1/4 SW 1/4 sec.32, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank of Hat Creek at the upper end of Baum Lake, 7.4 mi northeast of Burney.

PERIOD OF RECORD.—October 1986 to current year. Unpublished records for water years 1981–86 available in files of the U.S. Geological Survey. Fragmentary records for water years 1921–80 available in the files of the Pacific Gas & Electric Co.

GAGE.—Discharge computed from powerplant output.

REMARKS.—Water is diverted from left bank of Hat Creek at NW 1/4 SW 1/4 sec.5, T.36 N., R.8 W., through a canal to powerplant and then into Hat Creek. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 454 ft<sup>3</sup>/s, Apr. 20, 1998; no flow several days most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	291	375	404	364	387	398	409	387	420	443	347	347
2	291	280	404	364	387	398	409	387	420	432	347	364
3	280	364	375	375	387	398	409	387	415	432	364	336
4	280	364	278	375	420	398	409	387	443	432	364	302
5	280	375	387	387	409	398	403	364	443	432	387	302
6	325	375	387	387	410	398	409	364	432	432	364	336
7	387	375	387	375	409	398	387	347	432	432	347	335
8	387	375	387	375	409	398	387	336	432	443	347	336
9	387	179	387	375	398	398	375	336	432	443	347	336
10	398	375	387	375	398	398	375	336	432	432	347	336
11	398	375	387	375	387	398	375	336	466	432	347	336
12	398	375	387	375	364	387	375	387	432	432	325	336
13	409	375	387	375	364	387	92	409	454	420	336	336
14	398	375	387	387	364	387	.00	432	454	409	336	336
15	398	375	375	375	398	387	.00	387	443	409	336	347
16	398	375	375	375	398	387	126	398	432	420	336	347
17	387	343	375	375	398	387	443	398	432	420	336	375
18	387	375	375	398	398	387	443	398	432	420	336	375
19	387	375	375	398	398	387	443	398	432	420	347	375
20	375	375	375	420	398	398	454	398	432	420	336	375
21	298	387	375	387	398	398	443	398	432	409	336	364
22	364	387	375	398	398	398	375	375	432	387	336	364
23	375	387	375	387	420	398	375	375	432	398	336	364
24	364	375	375	387	420	398	375	375	420	375	336	347
25	375	375	375	398	420	398	375	375	421	375	336	336
26	375	398	375	387	409	398	375	443	398	375	336	336
27	375	398	364	375	398	420	375	364	392	387	336	336
28	387	398	364	375	398	420	387	364	393	375	336	375
29	364	387	375	387	---	420	387	420	432	375	336	375
30	375	387	375	387	---	409	387	420	432	364	347	398
31	375	---	375	387	---	409	---	420	---	347	347	---
TOTAL	11268	11034	11684	11860	11142	12338	10577.00	11901	12894	12722	10650	10463
MEAN	363	368	377	383	398	398	353	384	430	410	344	349
MAX	409	398	404	420	420	420	454	443	466	443	387	398
MIN	280	179	278	364	364	387	.00	336	392	347	325	302
AC-FT	22350	21890	23180	23520	22100	24470	20980	23610	25580	25230	21120	20750
a	29920	29640	30730	32230	31000	34880	32910	33080	35260	34420	29960	29120

a Discharge, in acre-feet, for Hat Creek No. 2 Powerplant (station 11359300), provided by Pacific Gas & Electric Co.

## 11359100 HAT NO. 2 POWER CANAL DIVERSION TO HAT CREEK, NEAR BURNEY, CA

LOCATION.—Lat 40°57'01", long 121°32'39", in SE 1/4 NW 1/4 sec.29, T.36 N., R.4 E., Shasta County, Hydrologic Unit 18020003, on right bank of Hat No. 2 Power Canal 75 ft downstream from Hat No. 2 Diversion Dam on Hat Creek, 7.9 mi northeast of Burney.

PERIOD OF RECORD.—Oct. 1 to Dec. 9, 1987 (fragmentary), Dec. 10, 1987, to current year (operated as a low-flow station only). Unpublished fragmentary records for water years 1979–87 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and Parshall flume. Elevation of gage is 2,980 ft sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirement is 8.0 ft<sup>3</sup>/s at all times. Flow is computed to 15 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	11	9.9	9.7	9.7	10	11	10	11	9.4	9.8	9.1
2	11	11	9.8	9.9	9.9	10	11	9.9	11	9.6	9.6	9.5
3	11	11	9.8	9.9	10	10	11	9.9	11	9.7	9.6	9.3
4	11	11	9.7	9.8	10	10	11	9.9	11	9.5	9.6	9.2
5	11	11	9.9	9.7	10	10	11	9.8	10	9.7	9.7	9.1
6	11	11	9.8	9.7	10	10	11	10	10	9.3	9.7	9.1
7	11	11	9.9	9.6	10	10	11	10	11	9.2	9.7	9.0
8	11	11	10	9.6	10	10	11	10	10	9.6	9.7	9.0
9	11	10	9.9	9.6	10	10	11	10	10	9.7	9.6	8.9
10	12	11	9.8	9.7	10	10	11	11	9.9	9.4	9.4	9.2
11	12	11	9.7	9.7	10	10	11	11	9.9	9.4	9.5	9.5
12	11	11	9.7	9.7	10	11	11	11	9.8	8.9	9.6	9.5
13	11	11	9.7	9.7	10	11	11	11	9.2	9.1	9.5	9.5
14	11	11	9.8	9.7	10	11	11	10	8.7	9.3	9.5	9.5
15	11	11	9.8	9.7	10	10	11	10	8.8	9.2	9.5	9.7
16	11	11	9.8	9.7	10	11	11	11	8.8	9.4	9.5	9.8
17	11	11	9.9	9.8	10	11	11	11	9.4	9.5	9.5	9.9
18	11	11	9.9	9.9	10	10	10	11	9.9	9.2	9.4	10
19	11	11	9.9	10	10	10	10	11	10	9.0	9.4	9.9
20	11	10	9.8	9.9	10	10	10	11	10	9.3	9.6	9.9
21	10	10	9.8	9.8	11	10	10	11	9.7	9.3	9.4	9.9
22	11	10	9.8	9.7	11	11	10	10	9.5	9.0	9.2	9.9
23	11	10	9.7	9.7	11	11	10	10	10	9.1	9.1	9.9
24	11	10	9.7	9.7	11	11	10	10	10	9.2	9.0	10
25	11	10	9.7	9.7	11	11	10	10	9.9	9.1	9.2	10
26	11	10	9.7	9.7	10	11	10	11	9.6	8.9	9.3	10
27	11	9.9	9.7	9.7	10	11	10	11	9.4	9.3	9.4	10
28	11	9.9	9.7	9.7	10	11	10	11	9.1	9.3	9.3	10
29	11	9.9	9.7	9.8	---	11	10	11	9.0	9.3	9.2	9.7
30	11	9.9	9.7	9.8	---	11	10	11	9.1	9.3	8.9	9.7
31	11	---	9.7	9.7	---	11	---	11	---	9.8	8.9	---
TOTAL	341	317.6	303.4	302.0	284.6	325	317	325.5	294.7	289.0	292.3	287.7
MEAN	11.0	10.6	9.79	9.74	10.2	10.5	10.6	10.5	9.82	9.32	9.43	9.59
MAX	12	11	10	10	11	11	11	11	11	9.8	9.8	10
MIN	10	9.9	9.7	9.6	9.7	10	10	9.8	8.7	8.9	8.9	8.9
AC-FT	676	630	602	599	565	645	629	646	585	573	580	571

## RESERVOIRS IN PIT AND McCLOUD RIVER BASINS, CA

11361400 LAKE BRITTON NEAR BURNEY.—Lat 41°1'20", long 121°40'32", in SW 1/4 SW 1/4 sec.19, T.37 N., R.3 E., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, at control house on right bank 200 ft upstream from dam on Pit River, 1.1 mi downstream from Clark Creek, 1.3 mi northwest of Burney Falls, and 9 mi north of Burney. DRAINAGE AREA, 4,607 mi<sup>2</sup>, excluding Goose Lake Basin. PERIOD OF RECORD, October 1965 to current year (monthend contents only). Fragmentary records for water years 1925–65 in files of the Pacific Gas & Electric Co. GAGE, remote telemark read once daily. Datum of gage is 19.53 ft above sea level (levels by Pacific Gas & Electric Co.). Monthend contents based on capacity table dated Dec. 1, 1976, provided by Pacific Gas & Electric Co.

REMARKS.—Reservoir is formed by gravity-type concrete dam. Storage began July 15, 1925. Usable capacity, 41,877 acre-ft between elevations 2,665.0 ft, invert of sluice gate, and 2,758.0 ft, top of flash boards. Dead storage, 30 acre-ft. Normal operating pool is from elevation 2,744.0 ft, capacity, 26,183 acre-ft, to 2,757.0 ft, capacity, 40,626 acre-ft. Figures given represent total contents. Lake is used for power generation and recreation. See schematic diagram of Pit and McCloud River basins. Records prior to water year 1977 reported usable contents only.

COOPERATION.—Record of contents collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.—Maximum total contents, 47,922 acre-ft, Feb. 20, 1986, elevation, 2,762.50 ft; minimum total contents, 26,755 acre-ft, Oct. 9, 1976, elevation, 2,744.60 ft.

EXTREMES (AT 2400) FOR CURRENT YEAR.—Maximum contents, 40,626 acre-ft, Jan. 13, 14, elevation, 2,757.00 ft; minimum, 27,632 acre-ft, Oct. 23, elevation, 2,745.50 ft.

11363920 IRON CANYON RESERVOIR NEAR BIG BEND.—Lat 41°02'41", long 121°58'52", in SW 1/4 SE 1/4 sec.21, T.37 N., R.1 W., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, in control house on left bank 500 ft upstream from Iron Canyon Dam on Iron Canyon Creek, 3.7 mi northwest of Big Bend. DRAINAGE AREA, 11.1 mi<sup>2</sup>. PERIOD OF RECORD, December 1965 to current year (monthend contents only). GAGE, water-stage recorder. Datum of gage is sea level (levels by Pacific Gas & Electric Co.). Monthend contents based on capacity table dated May 17, 1965, provided by Pacific Gas & Electric Co.

REMARKS.—Reservoir is formed by a rockfill dam completed in 1965. Usable capacity is 24,197 acre-ft between elevations 2,525.00 ft, invert of sluice pipe, and 2,665.00 ft, crest of spillway. Dead storage, 44 acre-ft. Normal operating pool is from elevation 2,565.0 ft, capacity, 990 acre-ft, to 2,664.0 ft, capacity, 23,738 acre-ft. Water is diverted from Lake McCloud (station 11367740) through a tunnel to Iron Canyon Reservoir and then into the Pit River via James B. Black Powerplant (station 11363910). Figures given represent total contents. Water is used for power generation and recreation. See schematic diagram of Pit and McCloud River basins.

COOPERATION.—Record of contents collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.—Maximum contents, 23,539 acre-ft, May 16, 22, 1977, elevation, 2,663.60 ft; normal minimum since reservoir first filled, 2,860 acre-ft, May 23, 24, 29, June 2, 7, 9, 14, 23, 24, 1966, elevation, 2,590.00 ft. Contents reduced to 195 acre-ft, elevation, 2,540.00 ft, Feb. 10, 1971, when reservoir was drained for inspection.

EXTREMES (AT 2400) FOR CURRENT YEAR.—Maximum contents, 15,444 acre-ft, Oct. 5, elevation, 2,644.90 ft; minimum, 3,245 acre-ft, Mar. 1, elevation, 2,593.40 ft.

11367740 LAKE McCLOUD NEAR McCLOUD.—Lat 41°08'06", long 122°04'26", in SE 1/4 SW 1/4 sec.22, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on McCloud Dam near spillway on McCloud River, 200 ft downstream from Panther Creek, and 8.8 mi southeast of McCloud. DRAINAGE AREA, 403 mi<sup>2</sup>. PERIOD OF RECORD, October 1965 to current year (monthend contents only). GAGE, water-stage recorder. Datum of gage is sea level (levels by Pacific Gas & Electric Co.). Monthend contents based on capacity table dated June 29, 1965, provided by Pacific Gas & Electric Co.

REMARKS.—Reservoir is formed by a rockfill dam completed in 1965. Usable capacity, 35,231 acre-ft between elevations 2,471.30 ft, invert of sluice pipe, and 2,680.00 ft, maximum operational water surface. Dead storage, 3 acre-ft. Normal operating pool is from elevation 2,635.00 ft, capacity, 16,425 acre-ft, to 2,680.00 ft, capacity, 35,234 acre-ft. Water is diverted from Lake McCloud (station 11367740) through a diversion tunnel to Iron Canyon Reservoir (station 11363920) and then into the Pit River via James B. Black Powerplant (station 11363910). Figures given represent total contents. Water is used for power generation and recreation. See schematic diagram of Pit and McCloud River basins.

COOPERATION.—Record of contents collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.—Maximum contents, 35,967 acre-ft, Jan. 15, 1974, elevation, 2,681.40 ft; minimum since reservoir first filled, 13,017 acre-ft, Oct. 14–22, 1981, elevation, 2,632.50 ft.

EXTREMES (AT 2400) FOR CURRENT YEAR.—Maximum contents, 35,130 acre-ft, Mar. 23, elevation, 2,679.80 ft; minimum, 18,851 acre-ft, Nov. 15, elevation, 2,642.20 ft.

## RESERVOIRS IN PIT AND McCLOUD RIVER BASINS, CA—Continued

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

11361400 LAKE BRITTON				11363920 IRON CANYON RESERVOIR			11367740 LAKE McCLOUD		
Date	Elevation (ft)	Contents (acre- ft)	Change in contents (acre- ft)	Elevation (ft)	Contents (acre- ft)	Change in contents (acre- ft)	Elevation (ft)	Contents acre- ft)	Change in contents (acre- ft)
Sept. 30 . . . . .	2,755.80	39,120	—	2,643.90	15,077	—	2,660.60	26,047	—
Oct. 31 . . . . .	2,751.10	33,552	−5,568	2,625.60	9,370	−5,707	2,650.70	21,995	−4,052
Nov. 30 . . . . .	2,752.80	35,504	+1,952	2,622.30	8,514	−856	2,653.10	22,938	+943
Dec. 31 . . . . .	2,751.35	33,835	−1,669	2,622.60	8,589	+75	2,648.10	21,001	−1,93
CAL YR 1997 . . . . .	—	—	−6,269	—	—	+1,593	—	—	−13,561
Jan. 31 . . . . .	2,755.40	38,625	+4,790	2,597.70	3,794	−4,795	2,676.40	33,394	+12,393
Feb. 28 . . . . .	2,755.05	38,196	−429	2,597.40	3,753	−41	2,675.60	32,994	−400
Mar. 31 . . . . .	2,755.50	38,748	+552	2,596.00	3,569	−184	2,677.90	34,153	+1,159
Apr. 30 . . . . .	2 756.50	39,994	+1,246	2,615.30	6,864	+3,295	2,679.40	34,923	+770
May 31 . . . . .	2,756.20	39,618	−376	2,617.60	7,379	+515	2,678.00	34,204	−719
June 30 . . . . .	2,756.20	39,618	0	2,616.40	7,107	−272	2,678.80	34,614	+410
July 31 . . . . .	2,753.40	36,210	−3,408	2,631.80	11,110	+4,003	2,676.50	33,445	−1,169
Aug. 31 . . . . .	2,754.30	37,285	+1,075	2,638.60	13,240	+2,130	2,676.50	33,445	0
Sept. 30 . . . . .	2,752.50	35,154	−2,131	2,625.30	9,290	−3,950	2,660.40	25,961	−7,484
WTR YR 1998 . . . . .	—	—	−3,966	—	—	−5,787	—	—	−86

## 11362500 PIT RIVER BELOW PIT NO. 4 DAM, CA

LOCATION.—Lat 40°58'25", long 121°46'42", unsurveyed, T.36 N., R.2 E., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, on right bank 0.6 mi downstream from Ruling Creek, 1.3 mi downstream from Pit No. 4 Dam, and 2.7 mi downstream from Pit No. 3 Powerplant.

DRAINAGE AREA.—4,648 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—May 1922 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "near Pecks Bridge" April to October 1922, and as "at Lindsay Flat" November 1922 to June 1927.

REVISED RECORDS.—WSP 843: 1935(M). WSP 1315-A: 1928(M). WDR CA-75-4: Drainage area.

GAGE.—Water-stage recorder. Elevation of gage is 2,358 ft above sea level, from river-profile map. Prior to November 1922, water-stage recorder at site at Pecks Bridge 7.4 mi upstream at different datum. November 1922 to June 20, 1927, at site at Lindsay Flat 1.8 mi upstream at different datum. June 20, 1927, to Sept. 5, 1990, at site 200 ft downstream at datum 0.15 ft lower.

REMARKS.—Low flow completely regulated by small reservoirs and powerplants, total usable reservoir capacity, 253,000 acre-ft. Many diversions upstream from station; diversion to Pit No. 4 Powerplant began June 9, 1955. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 33,700 ft<sup>3</sup>/s, Feb. 20, 1986, gage height, 18.70 ft; minimum daily, prior to diversion to Pit No. 4 Powerplant in 1955, 234 ft<sup>3</sup>/s, Sept. 13, 1953. Minimum daily, since diversion to Pit No. 4 Powerplant, 22 ft<sup>3</sup>/s, Dec. 2–4, 1969.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	174	162	171	162	822	1190	2530	1020	2620	165	182	170
2	178	162	168	164	795	1310	2670	827	2740	164	175	167
3	174	163	164	163	2180	1620	2650	378	2460	165	176	169
4	162	170	173	166	2620	2060	2980	953	2450	164	173	167
5	164	166	177	162	2520	2250	3190	1150	2690	170	177	167
6	165	177	174	165	2340	2230	2320	1460	2500	172	174	164
7	168	175	166	166	2140	1900	2480	1680	2050	166	176	166
8	176	169	167	163	1900	713	2680	1820	3420	188	176	165
9	162	165	179	162	1420	884	2390	3230	3760	168	182	167
10	170	158	167	162	1280	815	2290	3880	3550	170	177	166
11	176	166	165	161	1040	373	2100	4380	4510	173	161	166
12	191	168	168	164	845	535	1670	5280	4580	190	164	167
13	176	164	177	2870	1240	626	1400	5280	5560	185	161	166
14	164	166	174	3250	1300	748	1530	5310	5550	183	168	162
15	173	167	181	3570	2130	783	1710	5780	6180	186	175	164
16	165	167	192	3140	2260	965	1670	6250	5950	185	164	170
17	162	167	178	3420	2060	1170	1070	6210	5350	178	166	166
18	163	167	165	4760	1290	1610	803	6190	4170	183	164	168
19	172	173	172	6510	1270	1570	888	5840	2640	179	167	167
20	164	164	166	5640	1380	1530	938	5270	2010	181	165	170
21	165	170	162	3930	1520	938	699	4800	2130	184	167	163
22	171	163	160	2560	2040	1210	399	4150	1850	176	168	169
23	171	162	159	1600	2220	3370	373	3620	1190	176	168	168
24	162	163	161	1190	1890	4160	355	2540	1020	178	165	170
25	165	166	162	679	1490	4130	698	2870	1180	176	167	163
26	164	166	162	327	1360	4130	1050	3560	696	172	168	187
27	162	162	163	158	1320	3160	1070	3580	328	176	165	199
28	160	162	163	1160	1090	2920	1210	3220	168	172	164	195
29	162	166	162	1520	---	2710	570	3580	159	170	163	170
30	162	192	161	1380	---	2630	898	3440	169	178	166	173
31	162	---	163	1240	---	2430	---	3220	---	178	166	---
TOTAL	5205	5008	5222	50864	45762	56670	47281	110768	83630	5451	5250	5091
MEAN	168	167	168	1641	1634	1828	1576	3573	2788	176	169	170
MAX	191	192	192	6510	2620	4160	3190	6250	6180	190	182	199
MIN	160	158	159	158	795	373	355	378	159	164	161	162
AC-FT	10320	9930	10360	100900	90770	112400	93780	219700	165900	10810	10410	10100
a	119300	117000	127900	163600	161300	176700	170300	175100	167500	136500	124300	118100
b	136200	134600	147100	209800	210900	234300	229300	230600	189700	163400	139600	139700

a Discharge, in acre-feet, for Pit No. 3 Powerplant (station 11362300), provided by Pacific Gas & Electric Co.

b Diversion, in acre-feet, to Pit No. 4 Powerplant (station 11362600), provided by Pacific Gas & Electric Co.

## 11362500 PIT RIVER BELOW PIT NO. 4 DAM, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1954, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1945	2102	2458	2700	3338	3799	3766	2877	2307	1925	1833	1865
MAX	2385	2544	5968	5523	6872	8510	11400	5507	4096	2652	2146	2318
(WY)	1954	1954	1938	1953	1942	1938	1952	1938	1953	1952	1954	1953
MIN	1571	1666	1745	1698	1742	1895	1730	1635	1612	1569	1509	1541
(WY)	1935	1934	1935	1937	1933	1934	1934	1934	1934	1934	1934	1934

## SUMMARY STATISTICS

## WATER YEARS 1927 - 1954

ANNUAL MEAN	2572	
HIGHEST ANNUAL MEAN	4066	1952
LOWEST ANNUAL MEAN	1703	1934
HIGHEST DAILY MEAN	26200	Dec 12 1937
LOWEST DAILY MEAN	234	Sep 13 1953
ANNUAL SEVEN-DAY MINIMUM	1450	Aug 2 1936
INSTANTANEOUS PEAK FLOW	a30200	Dec 12 1937
INSTANTANEOUS PEAK STAGE	17.90	Dec 12 1937
ANNUAL RUNOFF (AC-FT)	1863000	
10 PERCENT EXCEEDS	3810	
50 PERCENT EXCEEDS	2170	
90 PERCENT EXCEEDS	1630	

a From rating curve extended above 12,000 ft<sup>3</sup>/s on basis of velocity-area studies.

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	233	221	420	1021	1075	1178	807	564	277	164	163	159
MAX	2189	2436	3791	7250	7657	5545	3416	4770	2788	490	458	268
(WY)	1955	1955	1965	1970	1986	1995	1982	1995	1998	1955	1992	1973
MIN	96.8	66.4	49.8	50.0	49.0	49.7	88.3	128	128	137	120	79.8
(WY)	1962	1957	1979	1981	1981	1981	1961	1961	1961	1964	1955	1955

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1955 - 1998

ANNUAL TOTAL	270541	426202	
ANNUAL MEAN	741	1168	521
HIGHEST ANNUAL MEAN			1868
LOWEST ANNUAL MEAN			98.4
HIGHEST DAILY MEAN	23800	Jan 4	31100
LOWEST DAILY MEAN	158	Jan 17	22
ANNUAL SEVEN-DAY MINIMUM	160	May 4	27
INSTANTANEOUS PEAK FLOW			11300
INSTANTANEOUS PEAK STAGE			12.15
ANNUAL RUNOFF (AC-FT)	536600		377600
10 PERCENT EXCEEDS	1060		1260
50 PERCENT EXCEEDS	164		157
90 PERCENT EXCEEDS	160		59

## 11362900 NELSON CREEK BELOW DIVERSION TO NELSON CREEK POWERPLANT, NEAR BIG BEND, CA

LOCATION.—Lat 41°02'32", long 121°52'34", in NE 1/4 NE 1/4 sec.29, T.37 N., R.1 E., Shasta County, Hydrologic Unit 18020003, on right bank 400 ft upstream from Snowslide Creek, 0.3 mi downstream from Bull Creek, and 2.3 mi northeast of Big Bend.

DRAINAGE AREA.—13.2 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1993 to September 1996. October 1996 to current year (operated as a low-flow station only).

GAGE.—Water-stage recorder and broad-crested weir; water-stage recorder and sharp-crested weir. Elevation of gages is 2,320 ft above sea level, from topographic map.

REMARKS.—Records fair. Flow at this station has two components which are combined for publication: flow over a broad-crested weir (station 11362880) and flow over a sharp-crested weir (station 11362890). Water is diverted upstream of weirs through a tunnel to Nelson Creek Powerplant (station 11362800), returning to Nelson Creek at its confluence with the Pit River. Flow is computed to 100 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 623 ft<sup>3</sup>/s, Feb. 19, 1996; minimum daily, 7.4 ft<sup>3</sup>/s, Sept. 8, 21, 22, 1994.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	14	18	---	---	57	---	80	---	17	15	15
2	e13	15	18	---	---	77	---	81	---	17	15	16
3	12	16	18	---	---	88	---	77	---	16	15	17
4	12	16	18	---	---	73	---	74	---	16	15	17
5	12	16	15	---	---	67	---	73	88	16	15	17
6	12	e15	15	---	---	61	---	83	82	16	15	17
7	12	15	e18	---	---	56	88	78	75	16	15	17
8	e13	16	15	---	---	54	87	---	72	16	15	17
9	e23	17	16	---	---	50	88	---	68	16	15	17
10	e19	16	17	---	---	46	---	79	89	16	15	17
11	e15	14	18	---	---	48	---	73	---	16	15	17
12	e14	15	18	---	---	51	88	74	89	16	15	17
13	e13	15	18	---	---	67	---	70	84	16	15	17
14	e13	15	17	---	---	73	79	---	74	15	15	16
15	e13	16	18	---	---	82	75	---	68	15	15	16
16	e12	34	18	---	---	---	72	---	61	15	15	16
17	12	25	16	---	---	---	69	---	55	15	15	16
18	12	17	17	---	---	---	69	---	50	15	15	16
19	13	---	17	---	---	---	81	---	44	15	15	16
20	13	30	18	---	---	---	69	---	42	15	15	16
21	13	17	18	---	---	---	71	83	37	15	15	16
22	14	17	18	---	90	---	75	75	32	15	15	16
23	14	24	18	---	---	---	82	71	30	16	15	16
24	14	18	18	---	85	---	---	77	27	16	15	16
25	15	27	18	---	89	---	85	---	26	15	15	16
26	15	19	18	---	65	---	77	---	22	15	15	17
27	15	19	18	---	61	---	80	---	20	15	15	17
28	15	18	18	---	57	---	81	---	18	15	15	17
29	15	18	18	---	---	---	80	---	16	15	15	16
30	15	18	18	---	---	---	81	---	17	15	15	16
31	e12	---	18	---	---	---	---	---	---	15	15	---
TOTAL	428	---	541	---	---	---	---	---	---	482	465	493
MEAN	13.8	---	17.5	---	---	---	---	---	---	15.5	15.0	16.4
MAX	23	---	18	---	---	---	---	---	---	17	15	17
MIN	12	---	15	---	---	---	---	---	---	15	15	15
AC-FT	849	---	1070	---	---	---	---	---	---	956	922	978
a	00	456	468	2080	2540	3120	2990	3170	2980	1500	400	8.7

e Estimated.

a Discharge, in acre-feet, for Nelson Creek Powerplant (station 11362800), provided by Sierra Pacific Industries.

## 11362950 EAST FORK NELSON CREEK BELOW DIVERSION TO NELSON CREEK, NEAR BIG BEND, CA

LOCATION.—Lat 41°02'25", long 121°52'28", in NE 1/4 NE 1/4 sec.29, T.37 N., R.1 E., Shasta County, Hydrologic Unit 18020003, on right bank 700 ft upstream from Nelson Creek, and 2.3 mi northeast of Big Bend.

DRAINAGE AREA.—8.18 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1993 to September 1996. October 1996 to current year (operated as a low-flow station only).

GAGE.—Water-stage recorder and broad-crested weir; water-stage recorder and sharp-crested weir. Elevation of gages is 2,360 ft above sea level, from topographic map.

REMARKS.—Records good. Flow at this station has two components which are combined for publication: flow over a broad-crested weir (station 11362940) and flow over a sharp-crested weir (station 11362945). Water is diverted upstream of weirs through a pipe to Nelson Creek (station 11362900). Flows computed to 22 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 267 ft<sup>3</sup>/s, Mar. 15, 1995; minimum daily, 0.07 ft<sup>3</sup>/s, Aug. 12 to Sept. 23, 1994 and Oct. 11, 1994.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	3.2	7.0	5.0	17	---	---	---	---	15	12	8.7
2	3.8	3.2	6.5	10	17	---	---	---	---	15	12	8.6
3	3.2	3.2	6.0	14	21	---	---	---	---	15	12	8.6
4	3.1	3.3	5.7	15	18	---	---	---	---	15	12	8.6
5	3.0	3.4	5.6	12	16	---	---	---	---	15	11	8.5
6	3.1	3.5	5.5	11	15	---	---	---	---	15	11	8.4
7	3.1	3.4	8.1	10	17	---	---	---	---	14	11	8.4
8	3.8	3.3	7.8	9.3	17	---	---	---	22	14	11	8.4
9	6.3	3.2	6.8	9.2	22	---	---	---	22	14	11	8.4
10	5.4	3.3	6.4	10	20	---	---	---	---	15	11	8.4
11	4.1	3.7	6.4	17	19	22	---	22	---	14	11	8.2
12	3.7	3.4	6.1	---	---	---	---	22	---	14	10	8.0
13	3.5	3.7	5.7	19	---	---	---	---	---	14	10	7.9
14	3.4	3.8	5.9	19	---	---	---	---	---	14	10	7.9
15	3.3	3.9	5.7	19	---	---	---	---	---	14	10	7.8
16	3.3	6.5	5.7	19	22	---	---	---	22	14	10	7.8
17	3.2	6.9	7.0	25	22	---	---	---	20	14	10	7.8
18	3.3	5.4	6.4	27	22	---	---	---	20	13	10	7.8
19	3.3	15	6.0	21	22	---	---	---	19	13	9.9	7.8
20	3.3	10	5.8	18	---	---	---	---	19	14	9.6	7.8
21	3.2	6.9	5.8	18	---	---	---	---	18	14	9.8	7.7
22	3.2	6.0	5.7	18	---	---	---	---	18	14	9.5	7.7
23	3.2	7.6	5.7	18	---	---	---	22	17	12	9.1	7.7
24	3.2	8.5	5.7	18	---	---	---	22	17	12	9.2	7.6
25	3.2	10	5.7	18	---	---	---	---	17	12	9.1	7.6
26	3.2	9.4	5.7	18	---	---	---	---	17	12	9.1	7.4
27	3.2	8.6	5.9	18	---	---	---	---	16	12	8.9	6.8
28	3.2	7.5	6.1	18	---	---	---	---	16	12	8.9	6.6
29	3.2	7.3	5.5	18	---	---	---	---	16	12	8.8	6.4
30	3.2	8.0	4.9	18	---	---	---	---	16	12	8.8	6.2
31	3.3	---	4.8	17	---	---	---	---	---	12	8.8	---
TOTAL	107.6	175.1	187.6	---	---	---	---	---	---	421	314.5	235.5
MEAN	3.47	5.84	6.05	---	---	---	---	---	---	13.6	10.1	7.85
MAX	6.3	15	8.1	---	---	---	---	---	---	15	12	8.7
MIN	3.0	3.2	4.8	---	---	---	---	---	---	12	8.8	6.2
AC-FT	213	347	372	---	---	---	---	---	---	835	624	467



## 11363000 PIT RIVER AT BIG BEND, CA

LOCATION.—Lat 41°01'10", long 121°54'36", in NW 1/4 SW 1/4 sec.31, T.37 N., R.1 E., Shasta County, Hydrologic Unit 18020003, on left bank at Big Bend, 0.4 mi downstream from Nelson Creek, 1.5 mi upstream from Kosk Creek, and 3.1 mi downstream from Pit No. 5 Dam.

DRAINAGE AREA.—4,711 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—October 1910 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Published as "at Henderson" 1910–23.

REVISED RECORDS.—WSP 1345: 1911, 1914(M), 1916(M), 1917, 1928, 1935–36(M). WDR CA-75-4: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 1,674.47 ft above sea level. Prior to Dec. 28, 1912, nonrecording gage; Dec. 28, 1912, to June 21, 1924, water-stage recorder at same site, at datum 7.69 ft higher. June 22, 1924, to Sept. 30, 1988, at site 200 ft downstream at same datum.

REMARKS.—Low flow completely regulated by many reservoirs and powerplants, total usable reservoir capacity, about 253,000 acre-ft. Many diversions upstream from station; diversion to Pit No. 5 Powerplant (station 11362700) began May 1, 1944. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 49,000 ft<sup>3</sup>/s, Jan. 25, 1970, gage height, 18.17 ft in gage well, 19.0 ft from floodmarks, site then in use, from rating curve extended above 17,000 ft<sup>3</sup>/s; maximum gage height, 18.70 ft, Feb. 20, 1986, site then in use; minimum daily, 692 ft<sup>3</sup>/s, July 9, 1925; since diversion to Pit No. 5 Powerplant, minimum daily, 34 ft<sup>3</sup>/s, Mar. 29, 1955.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 6,000 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 18	0730	11,900	12.99	May 15	1415	10,100	12.37
Mar. 24	2145	8,050	11.67				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	143	142	166	177	1680	1540	3410	1210	3630	300	162	150
2	149	137	157	274	1510	1710	3470	1070	3880	236	164	155
3	145	147	153	314	3550	2100	3430	721	3540	244	168	152
4	146	142	155	320	3960	2690	3760	748	3670	243	171	153
5	144	140	161	240	3820	3140	4010	1390	3950	236	169	149
6	144	145	170	209	3640	e3180	3100	1620	3770	229	170	148
7	143	143	212	201	3370	e3090	2960	1850	3170	229	165	150
8	158	140	186	195	3160	e2680	3440	2130	2540	221	156	150
9	175	143	170	191	2590	e2130	3010	3510	2620	223	149	152
10	166	140	170	221	2030	1100	2870	4590	2430	219	159	151
11	157	153	167	410	1710	716	2550	5180	3240	211	166	148
12	149	153	162	1120	1460	763	2100	5490	3680	207	165	153
13	144	153	160	3290	1940	922	1800	5030	4390	196	171	148
14	142	145	162	4230	2080	1070	1830	4520	4490	196	164	149
15	140	149	157	4730	3170	1080	2040	5510	5450	193	158	147
16	140	176	162	4400	3350	1390	2010	7490	5460	189	150	151
17	145	159	179	5320	3090	1490	1420	7390	4340	185	153	150
18	139	146	163	6610	2020	2080	1090	7360	4490	185	165	146
19	147	317	156	8370	1880	1970	1130	6880	3900	188	163	142
20	144	189	178	7220	1930	1940	1200	6250	3140	190	165	148
21	135	151	156	5200	2130	1530	1040	5660	3450	181	158	148
22	136	139	185	3660	2580	2060	733	4890	2950	183	160	145
23	138	165	158	2340	2920	4520	702	4280	1910	203	152	148
24	139	203	153	1890	2460	5330	756	3120	1850	191	150	147
25	134	206	143	1400	1990	5430	921	3660	1850	191	153	150
26	141	187	178	1060	1760	5170	1200	4290	1270	180	150	175
27	146	184	164	854	1740	4150	1210	3990	1170	177	148	188
28	144	165	168	1680	1460	3810	1410	4260	566	172	150	172
29	144	164	172	2440	---	3700	816	4680	486	170	151	149
30	137	176	172	2200	---	3350	1090	4610	280	168	152	148
31	159	---	171	1980	---	3320	---	4300	---	158	152	---
TOTAL	4513	4899	5166	72746	68980	79151	60508	127679	91562	6294	4929	4562
MEAN	146	163	167	2347	2464	2553	2017	4119	3052	203	159	152
MAX	175	317	212	8370	3960	5430	4010	7490	5460	300	171	188
MIN	134	137	143	177	1460	716	702	721	280	158	148	142
AC-FT	8950	9720	10250	144300	136800	157000	120000	253300	181600	12480	9780	9050

e Estimated.

## 11363000 PIT RIVER AT BIG BEND, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1943, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2206	2373	2676	3000	3927	4449	4446	3229	2520	2214	2100	2107
MAX	3021	3186	6792	7675	7989	9953	11410	6216	3763	3218	2987	2975
(WY)	1912	1912	1938	1914	1942	1938	1917	1938	1911	1911	1911	1911
MIN	1607	1740	1764	1750	1746	2051	1860	1734	1672	1584	1526	1565
(WY)	1935	1934	1935	1937	1933	1931	1934	1934	1934	1934	1934	1934

## SUMMARY STATISTICS

## WATER YEARS 1911 - 1943

ANNUAL MEAN	2931
HIGHEST ANNUAL MEAN	4597
LOWEST ANNUAL MEAN	1787
HIGHEST DAILY MEAN	30300
LOWEST DAILY MEAN	692
ANNUAL SEVEN-DAY MINIMUM	915
INSTANTANEOUS PEAK FLOW	a34200
INSTANTANEOUS PEAK STAGE	16.26
ANNUAL RUNOFF (AC-FT)	2123000
10 PERCENT EXCEEDS	4520
50 PERCENT EXCEEDS	2440
90 PERCENT EXCEEDS	1750

a From rating extended above 11,000 ft<sup>3</sup>/s on basis of velocity-area studies.

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	206	211	489	1090	1229	1416	1130	681	290	134	131	125
MAX	2322	2469	3889	8804	9457	6658	8441	5420	3052	203	448	284
(WY)	1944	1944	1965	1970	1986	1995	1952	1995	1998	1998	1992	1986
MIN	58.8	56.0	45.0	51.4	57.1	52.6	49.9	114	78.5	63.5	60.9	60.1
(WY)	1949	1979	1979	1949	1977	1977	1977	1977	1944	1944	1944	1945

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1944 - 1998

ANNUAL TOTAL	303847	530989	
ANNUAL MEAN	832	1455	591
HIGHEST ANNUAL MEAN			1638
LOWEST ANNUAL MEAN			86.5
HIGHEST DAILY MEAN	30200	Jan 4	8370
LOWEST DAILY MEAN	134	Oct 25	134
ANNUAL SEVEN-DAY MINIMUM	138	Oct 20	138
INSTANTANEOUS PEAK FLOW			11900
INSTANTANEOUS PEAK STAGE			12.99
ANNUAL RUNOFF (AC-FT)	602700	1053000	428300
10 PERCENT EXCEEDS	863	4240	1620
50 PERCENT EXCEEDS	167	229	139
90 PERCENT EXCEEDS	142	146	74

## 11363910 JAMES B. BLACK POWERPLANT NEAR BIG BEND, CA

LOCATION.—Lat 40°59'12", long 121°58'35", in SW 1/4 SE 1/4 sec.9, T.36 N., R.1 W., Shasta County, Hydrologic Unit 18020003, at powerplant on right bank of Pit River, 5.8 mi downstream from Big Bend.

PERIOD OF RECORD.—December 1965 to current year.

GAGE.—Discharge computed from powerplant output.

REMARKS.—Water is diverted from Lake McCloud (station 11367740) at SE 1/4 SW 1/4 sec.22, T.38 N., R.2 W., through McCloud–Iron Canyon Diversion Tunnel (station 11367720) to Iron Canyon Reservoir (station 11363920), then through the penstock for powerplant and into the Pit River. Records are combined flow of diversion from McCloud River at McCloud Dam plus Iron Canyon Creek. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 2,420 ft<sup>3</sup>/s, July 15, 1966; no flow several days most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1100	494	445	1110	1540	1680	1460	1320	1050	1370	939	861
2	596	902	969	1210	1650	1130	1610	1410	1420	1110	1200	1160
3	873	1010	1210	1230	1870	1260	1390	1270	1500	1420	1350	1240
4	768	733	856	1140	1870	1900	1620	1250	1260	1200	1050	1400
5	177	876	1020	1070	1640	1560	1300	1230	1290	1240	1030	1300
6	871	784	652	1250	1800	1410	1650	1490	1300	1170	1010	1180
7	930	811	1150	1010	1850	1470	1430	1240	1120	1140	1120	1380
8	762	1200	686	840	1710	1440	1480	1500	1240	916	913	1460
9	817	624	800	1130	1850	1400	1520	1360	1390	1300	1060	1480
10	967	1020	1120	962	1740	1420	1540	1100	1130	1210	1220	1210
11	596	747	784	859	1530	1520	1450	1590	1590	1050	1060	1640
12	631	654	1150	1940	1530	1300	1580	1230	1440	1340	924	1690
13	754	939	714	1880	1640	1590	1560	1240	1490	1430	1080	1260
14	1460	571	901	1600	1620	1460	1580	1510	1090	1650	1160	1350
15	872	549	994	1380	1640	1270	1400	1220	1100	1440	1360	1200
16	769	805	732	1420	1600	1650	1470	1390	1390	931	1190	1270
17	777	1160	760	1260	1410	1510	1590	1310	1490	1160	537	1270
18	888	453	900	1740	1740	1540	1650	1350	1470	1450	635	1010
19	1070	981	862	1690	1590	1270	1340	1430	1250	1340	289	1050
20	942	859	811	1540	1590	1460	1610	1390	1340	1130	750	1110
21	473	848	974	1370	1620	1400	1560	1120	1270	1180	1190	520
22	944	836	694	1710	1480	1670	1450	1410	1330	631	1450	1590
23	1160	471	767	1480	1570	1560	1260	1300	1230	1170	1320	1310
24	1490	904	1150	1470	1490	1880	274	1250	1310	1290	1250	1310
25	.00	1030	920	1390	1570	1880	1220	1120	1220	951	1030	743
26	231	1130	771	1550	1430	1570	1320	1230	1200	1050	1020	.00
27	1430	1060	769	1590	1620	1550	1360	1460	1380	961	1140	.00
28	1720	649	713	1500	1310	1490	1440	1550	1250	1290	1060	1480
29	948	1270	845	1670	---	1730	1250	1100	1290	1070	855	1430
30	899	932	829	1650	---	1370	1420	1570	1300	864	1210	1230
31	913	---	1170	1430	---	1510	---	1090	---	1020	1070	---
TOTAL	26828.00	25302	27118	43071	45500	46850	42784	41030	39130	36474	32472	35134.00
MEAN	865	843	875	1389	1625	1511	1426	1324	1304	1177	1047	1171
MAX	1720	1270	1210	1940	1870	1900	1650	1590	1590	1650	1450	1690
MIN	.00	453	445	840	1310	1130	274	1090	1050	631	289	.00
AC-FT	53210	50190	53790	85430	90250	92930	84860	81380	77610	72350	64410	69690
a	150000	151300	164700	226300	224600	248600	239200	246900	239400	186500	163700	160700

a Discharge, in acre-feet, for Pit No. 5 Powerplant (station 11362700), provided by Pacific Gas & Electric Co.

## 11363910 JAMES B. BLACK POWERPLANT NEAR BIG BEND, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	741	746	883	974	1034	1173	1146	1006	892	837	811	788
MAX	1122	1401	1538	1651	1625	1566	1670	1797	1735	1260	1101	1225
(WY)	1976	1974	1974	1970	1998	1995	1966	1967	1967	1966	1983	1983
MIN	505	428	433	500	373	581	421	368	523	533	465	515
(WY)	1993	1992	1992	1992	1978	1991	1990	1977	1987	1994	1992	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR					FOR 1998 WATER YEAR				WATER YEARS 1966 - 1998		
ANNUAL TOTAL	348154.00					441693.00						
ANNUAL MEAN	954					1210				915		
HIGHEST ANNUAL MEAN										1313		
LOWEST ANNUAL MEAN										547		
HIGHEST DAILY MEAN	1910					1940				2420		
LOWEST DAILY MEAN	.00					.00				.00		
ANNUAL SEVEN-DAY MINIMUM	446					711				.00		
ANNUAL RUNOFF (AC-FT)	690600					876100				663100		
10 PERCENT EXCEEDS	1430					1610				1500		
50 PERCENT EXCEEDS	939					1250				883		
90 PERCENT EXCEEDS	559					761				394		

## 11363930 IRON CANYON CREEK BELOW IRON CANYON DAM, NEAR BIG BEND, CA

LOCATION.—Lat 41°02'22", long 121°59'03", in NW 1/4 NW 1/4 sec.28, T.37 N., R.1 W., Shasta County, Hydrologic Unit 18020003, on left bank 0.2 mi downstream from Iron Canyon Dam and 4.2 mi west of Big Bend.

DRAINAGE AREA.—11.2 mi<sup>2</sup>.

PERIOD OF RECORD.—August 1966 to current year (beginning October 1994, operated as a low-flow station only).

REVISED RECORDS.—WDR CA-95-4; Drainage area.

GAGE.—Water-stage recorder, 60° sharp-crested V-notch weir, and concrete control with flashboards in 2- x 10-ft opening. Datum of gage is 2,461.52 ft above sea level (levels by Pacific Gas & Electric Co.).

REMARKS.—Flow is completely regulated by Iron Canyon Reservoir (station 11363920). There is an interbasin diversion from Lake McCloud (station 11367740) to Iron Canyon Reservoir and then through a tunnel to James B. Black Powerplant on the Pit River (station 11363910). This station records fishwater release only. The minimum release requirement is 3.0 ft<sup>3</sup>/s at all times. Flow is computed to 12.0 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 650 ft<sup>3</sup>/s, Feb. 5, 1986, gage height unknown (flashboards removed from weir), from equation for a 4 by 4-ft slide gate. Flow was the result of full travel test of slide gate at Iron Canyon Dam; maximum gage height, 3.24 ft, Feb. 25, 1978 (flashboards in weir), was the result of failure of the James B. Black Penstock; no flow, July 15–18, 1967.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	3.7	4.0	3.5	4.5	4.1	4.1	5.5	5.4	4.7	6.0	4.8
2	3.9	3.8	4.0	4.2	5.2	4.1	4.1	5.7	5.7	4.7	6.3	4.8
3	3.9	3.8	3.9	4.5	7.3	4.3	4.2	5.4	5.7	4.7	6.0	4.7
4	3.8	3.7	3.8	4.4	5.7	4.2	4.1	5.6	5.5	4.7	5.7	4.7
5	3.8	3.7	4.1	4.3	5.6	4.1	4.1	5.4	5.3	4.8	5.7	4.7
6	3.9	3.7	4.4	4.2	5.8	3.9	4.1	5.6	5.3	4.8	5.7	4.7
7	3.8	3.8	4.6	4.0	5.9	3.9	---	5.5	5.7	4.8	5.7	4.7
8	3.9	3.7	4.5	4.0	6.7	3.8	4.3	5.7	5.3	4.8	5.7	4.7
9	4.0	3.7	4.5	4.1	5.4	3.7	4.1	5.6	4.4	4.9	5.7	4.3
10	3.9	3.7	4.5	4.2	4.7	3.8	3.9	5.7	3.8	5.1	5.9	4.2
11	3.9	3.7	4.5	4.4	4.6	3.6	3.6	5.7	3.7	5.1	5.9	3.9
12	3.8	3.6	4.5	4.6	4.6	3.8	3.6	5.7	3.6	5.1	5.8	3.5
13	3.8	3.6	4.5	4.4	4.6	4.1	3.7	5.5	3.5	4.9	5.9	3.3
14	3.8	3.7	4.5	4.3	4.6	4.0	3.8	5.2	3.5	4.9	5.7	4.0
15	3.7	3.8	4.5	4.3	4.5	3.9	3.6	5.2	3.5	4.4	5.7	4.4
16	3.6	4.3	4.4	4.3	4.5	4.0	3.5	5.7	3.5	4.7	5.7	4.6
17	3.7	4.0	4.4	4.6	4.4	3.9	3.5	5.4	3.5	4.7	5.7	4.7
18	3.7	3.9	4.0	4.6	4.4	3.8	3.5	5.2	3.3	4.3	6.1	4.7
19	3.6	4.5	3.7	4.5	4.4	3.8	3.5	5.2	3.3	4.5	5.8	4.8
20	3.5	4.0	3.7	4.4	4.4	3.8	3.4	5.2	3.3	4.7	5.2	4.9
21	3.6	3.9	3.7	4.3	4.4	3.9	3.3	4.9	3.3	4.7	5.2	5.2
22	3.6	3.8	3.7	4.1	4.4	4.3	3.5	4.9	3.3	4.6	5.2	5.4
23	3.5	4.0	3.7	4.0	4.3	5.2	3.7	4.9	3.3	5.2	5.2	4.9
24	3.4	4.3	3.6	3.9	4.3	5.1	4.6	5.0	3.3	5.2	4.9	4.8
25	3.4	4.2	3.6	4.0	4.3	4.5	5.7	5.7	3.4	5.2	4.8	4.7
26	3.5	4.1	3.6	4.3	4.2	4.4	5.4	5.7	3.3	5.3	4.8	5.2
27	3.5	4.0	3.6	4.4	4.2	4.4	5.4	5.7	3.3	5.5	4.8	5.7
28	3.5	3.9	3.6	4.3	4.1	4.3	5.4	6.1	3.2	5.7	4.7	6.0
29	3.7	3.9	3.6	4.5	---	4.2	5.3	6.3	4.0	5.7	4.8	5.7
30	3.7	4.1	3.6	4.4	---	4.1	5.4	5.9	4.7	5.7	4.7	5.4
31	3.7	---	3.5	4.3	---	4.2	---	5.4	---	6.0	4.8	---
TOTAL	115.0	116.6	124.8	132.3	136.0	127.2	---	170.2	121.9	154.1	169.8	142.1
MEAN	3.71	3.89	4.03	4.27	4.86	4.10	---	5.49	4.06	4.97	5.48	4.74
MAX	4.0	4.5	4.6	4.6	7.3	5.2	---	6.3	5.7	6.0	6.3	6.0
MIN	3.4	3.6	3.5	3.5	4.1	3.6	---	4.9	3.2	4.3	4.7	3.3
AC-FT	228	231	248	262	270	252	---	338	242	306	337	282

## 11364300 HATCHET CREEK BELOW DIVERSION TO HATCHET CREEK POWERPLANT, NEAR MONTGOMERY CREEK, CA

LOCATION.—Lat 40°52'39", long 121°51'55", in SW 1/4 NE 1/4 sec.21, T.35 N., R.1 E., Shasta County, Hydrologic Unit 18020003, on left bank 1,100 ft downstream from diversion to powerplant, 1,400 ft downstream from Buffom Creek, and 3.8 mi northeast of Montgomery Creek.

DRAINAGE AREA.—29.6 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to September 1988, October 1990 to September 1996, October 1989 to September 1990 and October 1997 to September 1998 (operated as low-flow station only),

GAGE.—Water-stage recorder and sharp-crested weir. Elevation of gage is 3,460 ft above sea level, from topographic map.

REMARKS.—During times of powerplant operation the minimum flow requirement is 15 ft<sup>3</sup>/s. Flows computed to 40 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Shasta Hydroelectric, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—(Water years 1991–96) Maximum discharge, 1,930 ft<sup>3</sup>/s, Oct. 29, 1992, gage height, 7.06 ft, from outside highwater mark, from rating curve extended above 42 ft<sup>3</sup>/s on basis of theoretical computation of flow over weir; minimum daily, 3.8 ft<sup>3</sup>/s, Aug. 18 to Sept. 8, 1992.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	19	21	21	---	36	---	---	---	19	18	17
2	23	19	22	---	---	---	---	---	---	18	18	18
3	17	18	21	---	---	---	---	---	---	18	18	17
4	16	16	21	---	---	---	---	---	---	18	18	17
5	15	16	21	38	---	---	---	---	---	18	18	17
6	15	18	21	26	---	---	---	---	---	18	18	18
7	15	22	---	22	---	36	---	---	---	18	18	17
8	20	20	30	22	---	27	---	---	---	18	18	17
9	---	19	21	22	---	26	---	---	---	18	18	17
10	---	19	21	38	---	32	---	---	---	18	18	17
11	39	21	21	---	---	---	---	---	---	20	18	18
12	31	21	21	---	---	---	---	---	---	18	18	18
13	27	23	21	---	---	---	---	---	---	18	18	17
14	26	22	21	---	---	---	---	---	---	18	18	17
15	25	23	21	---	---	---	---	---	---	20	18	17
16	25	21	21	---	---	---	---	---	36	18	18	18
17	23	30	21	---	---	---	---	---	31	18	18	18
18	23	21	21	---	---	---	---	---	30	18	18	18
19	22	30	21	---	---	---	---	---	28	18	18	18
20	22	38	21	---	---	---	---	---	21	18	18	18
21	21	21	21	---	---	---	---	---	21	18	18	17
22	21	21	e21	---	---	---	---	---	21	18	18	17
23	21	21	e21	---	---	---	---	---	21	18	18	16
24	20	22	e21	---	---	---	---	---	21	18	18	16
25	20	---	21	---	---	---	---	---	21	18	18	16
26	20	---	21	---	34	---	---	---	21	18	18	16
27	20	---	21	---	---	---	---	---	21	18	18	16
28	19	40	21	---	32	---	---	---	20	18	18	16
29	19	24	21	---	---	---	---	---	18	18	17	18
30	19	34	21	---	---	---	---	---	19	18	18	16
31	19	---	21	---	---	---	---	---	---	18	17	---
TOTAL	---	---	---	---	---	---	---	---	---	563	556	513
MEAN	---	---	---	---	---	---	---	---	---	18.2	17.9	17.1
MAX	---	---	---	---	---	---	---	---	---	20	18	18
MIN	---	---	---	---	---	---	---	---	---	18	17	16
AC-FT	---	---	---	---	---	---	---	---	---	1120	1100	1020
a	00	1680	3390	4340	4240	4680	4930	5110	4620	1920	559	165

e Estimated.

a Discharge, in acre-feet, for Hatchet Creek Powerplant (station 11364250), provided by Mega Renewables/Independent Hydro Developers.

## 11365000 PIT RIVER NEAR MONTGOMERY CREEK, CA

LOCATION.—Lat 40°50'38", long 122°00'05", in NE 1/4 SW 1/4 sec.32, T.35 N., R.1 W., Shasta County, Hydrologic Unit 18020003, Shasta National Forest, on left bank 0.7 mi downstream from Pit No. 7 Dam and Powerplant, 1.4 mi upstream from Potem Creek, and 4.1 mi west of town of Montgomery Creek.

DRAINAGE AREA.—4,952 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—October 1944 to current year (monthly discharge only December 1964 to May 1965). Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1951, 1953, 1955–81.

WATER TEMPERATURE: Water years 1951, 1954–57, 1959.

REVISED RECORDS.—WSP 1931: Drainage area. WDR CA-86-4: 1983 (M).

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 1,000.00 ft above sea level (levels by Pacific Gas & Electric Co.). October 1944 to Feb. 17, 1963, at site 0.7 mi upstream at different datum. Feb. 17, 1963, to May 21, 1965, at site 1.5 mi upstream at different datum. May 21, 1965, to June 20, 1981, at site 0.9 mi downstream at datum 1,036.00 ft above sea level.

REMARKS.—Low flow completely regulated by many reservoirs and powerplants, total usable reservoir capacity, 337,000 acre-ft. Many diversions upstream from station for irrigation. Diversion from McCloud River to Iron Canyon Reservoir (station 11363920) began December 1965. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 73,000 ft<sup>3</sup>/s, Jan. 24, 1970, gage height, 32.36 ft, site and datum then in use; maximum gage height, 74.65 ft, Feb. 19, 1986; minimum daily, 30 ft<sup>3</sup>/s, July 12, 27, 1975, result of construction work below Pit No. 7 Powerplant.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3430	2940	2920	4470	11100	8790	10300	8030	10100	6630	3440	4430
2	3060	3260	3530	5470	11700	8650	10400	6500	10500	6230	2280	4570
3	3530	4610	5350	6970	18000	9400	10400	7580	10800	4300	5030	4710
4	3330	3600	4780	6490	14700	10200	10800	6960	9300	5840	4510	4430
5	2020	3270	5290	5950	13800	9880	11000	7590	9990	5560	4830	3780
6	4430	2760	3750	6170	14500	9660	10300	7920	9700	5590	3690	3670
7	3910	3230	5240	6610	14600	8900	9870	8500	8610	4970	4570	4630
8	3940	4450	5110	6190	13800	8590	10600	8820	8410	4870	3130	4570
9	3200	3290	4440	5800	12300	8370	10300	10000	9280	4650	3520	5010
10	4480	3710	3800	3350	10500	8030	10400	10300	9120	4850	3470	4390
11	2610	3800	3030	6140	10300	8360	10100	11200	9390	4370	3910	4740
12	2780	3350	4240	13000	10300	6410	9600	12200	9920	4070	3840	4330
13	2980	4190	5230	12700	11500	7390	9640	11900	10800	4620	3810	3750
14	4100	3570	4880	13500	12500	8260	9390	11900	10300	4680	4260	4580
15	3590	3880	5790	14200	12000	8000	9590	12700	10500	4870	3510	5080
16	3360	3040	3900	14100	11600	8900	9490	14100	10800	4010	3440	4050
17	4860	4660	5310	18200	11300	9560	8680	14000	9570	4740	3120	4750
18	4410	3340	3250	19100	9820	9210	9010	13200	9920	3510	3980	3890
19	3950	5720	4180	19200	11100	9270	7870	12800	9250	4560	3200	2940
20	5630	8170	3790	16500	10600	9330	7870	11400	8950	4050	1990	2890
21	3630	4370	4200	13100	11800	8990	8130	12300	7870	4200	5260	5200
22	4100	4710	4510	11700	11100	12200	8400	10900	8410	4630	4430	6020
23	7540	4590	3920	9760	11000	14400	6980	10300	7710	4520	3790	5780
24	5130	3290	4920	9480	10600	16500	7240	9340	7470	6140	4260	6960
25	191	4770	3410	8860	9710	15200	6880	10100	7530	4190	3600	4030
26	430	5350	4310	10400	9130	14100	7700	11500	6800	4180	4010	573
27	1790	6530	2230	10900	9040	12300	8510	11400	7950	3850	3500	681
28	3500	4800	3650	10200	8610	11200	8410	11400	6390	4220	4150	3130
29	4290	4300	3700	12100	---	11100	8040	12100	5930	4010	3950	4600
30	3670	3890	3830	11200	---	10700	7930	11900	6060	4310	3190	5540
31	3000	---	4810	10100	---	10300	---	10700	---	2410	3630	---
TOTAL	110871	125440	131300	321910	327010	312150	273830	329540	267330	143630	117300	127704
MEAN	3576	4181	4235	10380	11680	10070	9128	10630	8911	4633	3784	4257
MAX	7540	8170	5790	19200	18000	16500	11000	14100	10800	6630	5260	6960
MIN	191	2760	2230	3350	8610	6410	6880	6500	5930	2410	1990	573
AC-FT	219900	248800	260400	638500	648600	619100	543100	653600	530200	284900	232700	253300
a	15566	14079	14837	15303	15382	15356	14734	15095	14556	15069	14734	14229
b	215500	229000	251000	422600	432400	466200	446500	363300	408300	295600	248900	249100
c	33353	28288	32712	33909	33955	34002	30489	33538	31588	32486	32622	32350

a Contents, in acre-feet, at end of month for Pit No. 6 Reservoir (station 11364100), provided by Pacific Gas & Electric Co.

b Discharge, in acre-feet, for Pit No. 6 Powerplant (station 11364150), provided by Pacific Gas & Electric Co.

c Contents, in acre-feet, at end of month for Pit No. 7 Reservoir (station 11364700), provided by Pacific Gas & Electric Co.

## 11365000 PIT RIVER NEAR MONTGOMERY CREEK, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1965, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2643	2828	3821	4320	5592	5331	5711	4297	3127	2376	2231	2284
MAX	5999	3710	9541	11240	12970	8212	13350	7380	5044	3037	2651	2744
(WY)	1963	1951	1956	1956	1958	1956	1952	1952	1953	1958	1958	1959
MIN	2112	2232	2219	2137	2500	3225	3404	2299	2353	1935	1971	1899
(WY)	1950	1950	1950	1949	1948	1964	1947	1947	1950	1949	1947	1949

## SUMMARY STATISTICS

## WATER YEARS 1945 - 1965

ANNUAL TOTAL	
ANNUAL MEAN	3704
HIGHEST ANNUAL MEAN	5529 1956
LOWEST ANNUAL MEAN	2658 1947
HIGHEST DAILY MEAN	32100 Dec 23 1955
LOWEST DAILY MEAN	150 Jul 19 1965
ANNUAL SEVEN-DAY MINIMUM	1610 Jul 19 1965
INSTANTANEOUS PEAK FLOW	37100 Dec 23 1955
INSTANTANEOUS PEAK STAGE	14.12 Dec 23 1955
ANNUAL RUNOFF (AC-FT)	2684000
10 PERCENT EXCEEDS	6080
50 PERCENT EXCEEDS	3010
90 PERCENT EXCEEDS	1740

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3387	4106	4730	6679	7189	8101	6644	5526	4067	3290	3108	3110
MAX	5865	8683	9814	20890	18670	16030	12920	11900	8911	4633	4187	4257
(WY)	1997	1997	1982	1970	1986	1983	1982	1995	1998	1998	1983	1998
MIN	2286	2533	2408	2632	2784	3241	2626	2404	2268	2291	2049	1428
(WY)	1993	1993	1991	1991	1991	1977	1977	1992	1992	1994	1992	1966

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1966 - 1998

ANNUAL TOTAL	1958428	2588015	
ANNUAL MEAN	5366	7090	4984
HIGHEST ANNUAL MEAN			7693 1974
LOWEST ANNUAL MEAN			2808 1992
HIGHEST DAILY MEAN	40200 Jan 3	19200 Jan 19	53900 Jan 23 1970
LOWEST DAILY MEAN	191 Oct 25	191 Oct 25	30 Jul 12 1975
ANNUAL SEVEN-DAY MINIMUM	2410 Oct 25	2410 Oct 25	939 Sep 5 1966
INSTANTANEOUS PEAK FLOW		21900 Jan 18	73000 Jan 24 1970
INSTANTANEOUS PEAK STAGE		67.79 Jan 18	74.65 Feb 19 1986
ANNUAL RUNOFF (AC-FT)	3885000	5133000	3611000
10 PERCENT EXCEEDS	8380	11900	8550
50 PERCENT EXCEEDS	4200	6020	4030
90 PERCENT EXCEEDS	2570	3350	2090



## 11367500 McCLLOUD RIVER NEAR McCLOUD, CA

LOCATION.—Lat 41°11'18", long 122°03'52", in NW 1/4 NE 1/4 sec.34, T.39 N., R.2 W., Siskiyou County, Hydrologic Unit 18020004, on right bank 0.4 mi downstream from Angel Creek and 6 mi southeast of McCloud.

DRAINAGE AREA.—358 mi<sup>2</sup>.

PERIOD OF RECORD.—April 1931 to current year.

REVISED RECORDS.—WSP 843: 1936(M). WSP 1445: 1940(M). WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 2,711.2 ft above sea level, from river-profile map.

REMARKS.—Two small diversions upstream from station for irrigation, and one 22-in. pipeline for town of McCloud. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 15,400 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 11.22 ft, from rating curve extended above 8,800 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 524 ft<sup>3</sup>/s, Nov. 23, 24, 1932.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 18	2215	2,460	3.67	Mar. 24	0530	5,270	6.06

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	797	782	850	780	1390	1050	1580	1760	1670	1300	1090	1030
2	799	782	835	806	1380	1070	1550	1880	1700	1290	1090	1030
3	796	782	824	928	1900	1100	1550	1820	1720	1280	1090	1030
4	795	782	818	995	1710	1090	1510	1780	1680	1270	1090	1030
5	793	782	815	907	1580	1070	1480	1820	1650	1250	1080	1030
6	794	785	814	870	1640	1060	1480	1820	1660	1240	1080	1030
7	793	783	862	850	1810	1040	1450	1790	1640	1230	1080	1030
8	804	780	928	838	1690	1030	1430	1970	1590	1230	1070	1030
9	812	778	878	838	1510	1020	1430	1980	1590	1220	1070	1030
10	806	780	852	846	1400	1020	1520	1780	1740	1210	1070	1020
11	801	780	836	916	1330	1020	1570	1720	1890	1190	1070	1020
12	797	777	827	1200	1300	1040	1510	1730	1910	1190	1070	1020
13	794	782	818	1350	1310	1110	1490	1640	1800	1180	1060	1020
14	794	782	823	1160	1340	1150	1440	1600	1720	1170	1060	1020
15	793	789	813	1070	1290	1150	1410	1630	1660	1160	1060	1020
16	793	811	809	1130	1240	1260	1380	1710	1620	1160	1060	1020
17	793	801	815	1610	1220	1330	1360	1650	1560	1150	1060	1020
18	792	797	812	2060	1170	1290	1370	1550	1530	1140	1060	1020
19	792	834	804	2030	1180	1260	1390	1520	1540	1140	1060	1010
20	791	813	802	1520	1150	1250	1420	1540	1500	1130	1050	1010
21	789	802	798	1320	1160	1320	1460	1510	1470	1130	1050	1010
22	789	797	793	1200	1130	2030	1520	1460	1460	1120	1050	1010
23	788	834	788	1130	1120	2720	1580	1470	1440	e1160	1050	1010
24	787	1030	786	1100	1100	4420	1650	1490	1420	e1150	1050	1010
25	787	1150	782	1110	1080	3040	1630	1810	1410	e1140	1040	1010
26	787	983	782	1300	1070	2430	1580	1700	1380	e1130	1040	1010
27	787	929	780	1720	1060	2120	1580	1610	1340	e1120	1040	1010
28	785	884	777	1510	1050	1940	1620	1750	1330	e1110	1040	1010
29	785	865	776	1630	---	1770	1670	1900	1310	e1100	1040	1000
30	783	864	776	1560	---	1670	1720	1780	1300	1100	1040	1000
31	785	---	776	1410	---	1640	---	1700	---	1100	1030	---
TOTAL	24581	24920	25249	37694	37310	47510	45330	52870	47230	36490	32890	30550
MEAN	793	831	814	1216	1333	1533	1511	1705	1574	1177	1061	1018
MAX	812	1150	928	2060	1900	4420	1720	1980	1910	1300	1090	1030
MIN	783	777	776	780	1050	1020	1360	1460	1300	1100	1030	1000
AC-FT	48760	49430	50080	74770	74000	94240	89910	104900	93680	72380	65240	60600

e Estimated.

## SACRAMENTO RIVER BASIN

## 11367500 McCLOUD RIVER NEAR McCLOUD, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	761	787	860	907	976	1050	1126	1125	952	835	796	774
MAX	1030	1569	1879	2348	2155	2220	1896	2182	1574	1219	1101	1059
(WY)	1984	1974	1956	1970	1958	1983	1974	1938	1998	1983	1983	1983
MIN	536	537	534	539	549	568	674	606	574	561	556	544
(WY)	1933	1933	1933	1933	1933	1935	1994	1992	1992	1934	1992	1932

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1931 - 1998			
ANNUAL TOTAL	362289				442624							
ANNUAL MEAN	993				1213				914			
HIGHEST ANNUAL MEAN									1406			
LOWEST ANNUAL MEAN									589			
HIGHEST DAILY MEAN	11900				4420				11900			
LOWEST DAILY MEAN	776				776				524			
ANNUAL SEVEN-DAY MINIMUM	778				778				528			
INSTANTANEOUS PEAK FLOW					5270				15400			
INSTANTANEOUS PEAK STAGE					6.06				11.22			
ANNUAL RUNOFF (AC-FT)	718600				877900				662400			
10 PERCENT EXCEEDS	1160				1710				1260			
50 PERCENT EXCEEDS	864				1100				837			
90 PERCENT EXCEEDS	792				790				605			

## 11367720 McCLOUD-IRON CANYON DIVERSION TUNNEL NEAR McCLOUD, CA

LOCATION.—Lat 41°08'06", long 122°04'26", in SE 1/4 SW 1/4 sec.22, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on left bank of Lake McCloud, 8.8 mi southeast of McCloud.

PERIOD OF RECORD.—December 1965 to current year.

REVISED RECORDS.—WDR CA-75-4: 1973.

GAGE.—None. Water-stage recorders on Iron Canyon Reservoir and Lake McCloud (stations 11363920 and 11367740) used to compute record.

REMARKS.—Water is diverted from Lake McCloud (station 11367740) via tunnel to Iron Canyon Reservoir (station 11363920) and then via penstock into James B. Black Powerplant (station 11363910) on the Pit River. Diversion began Dec. 1, 1965. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 1,890 ft<sup>3</sup>/s, several days during May and June 1967; no flow several days in 1965–68, 1971, 1978.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	668	721	799	813	1370	1390	1390	1230	1170	1230	1010	947
2	648	717	809	855	1360	1320	1400	1230	1190	1200	1010	947
3	659	735	839	908	1370	1290	1380	1220	1200	1220	1040	959
4	662	719	822	947	1390	1360	1400	1220	1190	1210	1030	979
5	600	714	834	949	1380	1380	1380	1220	1180	1210	1030	996
6	624	696	796	976	1390	1360	1400	1230	1170	1200	1020	994
7	646	685	826	967	1390	1350	1400	1220	1160	1200	1020	994
8	648	724	810	930	1380	1360	1390	1230	1160	1180	998	994
9	652	692	796	935	1400	1340	1390	1220	1170	1180	998	994
10	664	722	822	927	1400	1330	1400	1190	1170	1180	1000	994
11	650	706	800	903	1400	1330	1390	1220	1200	1180	1000	994
12	635	689	813	1050	1380	1290	1400	1230	1200	1180	986	1120
13	642	699	788	1170	1400	1310	1400	1200	1210	1170	988	1120
14	709	670	793	1220	1400	1340	1420	1210	1190	1200	987	1120
15	711	631	809	1210	1400	1300	1400	1200	1180	1220	1020	1110
16	701	648	793	1240	1400	1330	1400	1210	1180	1220	1020	1100
17	697	701	785	1230	1370	1340	1400	1200	1210	1220	969	1090
18	699	655	791	1330	1390	1360	1420	1200	1220	1220	928	1070
19	716	699	797	1400	1400	1350	1390	1210	1220	1220	874	1040
20	719	709	776	1410	1400	1350	1410	1230	1220	1180	867	1030
21	673	707	790	1380	1400	1350	1420	1200	1210	1180	891	658
22	682	716	767	1410	1390	1390	1400	1220	1220	1120	929	1010
23	719	680	754	1400	1400	1350	1380	1220	1220	1110	951	1030
24	785	742	784	1390	1390	1350	1240	1210	1220	1110	968	1030
25	677	797	799	1380	1400	1390	1230	1190	1210	1090	968	1030
26	610	829	776	1390	1370	1370	1230	1170	1210	1080	968	1030
27	687	860	759	1380	1400	1390	1230	1200	1220	1080	968	1030
28	784	822	740	1390	1360	1380	1230	1220	1220	1080	968	836
29	782	864	743	1390	---	1400	1230	1200	1210	1080	947	890
30	778	853	739	1390	---	1390	1230	1210	1220	1040	947	911
31	770	---	776	1370	---	1390	---	1200	---	1030	947	---
TOTAL	21297	21802	24525	36640	38880	41930	40780	37560	35950	36020	30247	30047
MEAN	687	727	791	1182	1389	1353	1359	1212	1198	1162	976	1002
MAX	785	864	839	1410	1400	1400	1420	1230	1220	1230	1040	1120
MIN	600	631	739	813	1360	1290	1230	1170	1160	1030	867	658
AC-FT	42240	43240	48650	72680	77120	83170	80890	74500	71310	71450	59990	59600

## 11367720 McCLOUD-IRON CANYON DIVERSION TUNNEL NEAR McCLOUD, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	654	672	808	882	964	1104	1132	1020	900	787	750	715
MAX	1028	1205	1362	1451	1583	1592	1624	1729	1854	1305	1150	1123
(WY)	1984	1984	1974	1970	1970	1970	1966	1967	1967	1967	1971	1983
MIN	.000	.000	333	383	439	562	445	388	416	409	343	383
(WY)	1966	1966	1992	1992	1991	1991	1990	1977	1992	1992	1992	1992
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR					FOR 1998 WATER YEAR				WATER YEARS 1966 - 1998		
ANNUAL TOTAL	312695					395678						
ANNUAL MEAN	857					1084				865		
HIGHEST ANNUAL MEAN										1260		
LOWEST ANNUAL MEAN										453		
HIGHEST DAILY MEAN	1410					1420				1890		
LOWEST DAILY MEAN	557					600				.00		
ANNUAL SEVEN-DAY MINIMUM	620					641				.00		
ANNUAL RUNOFF (AC-FT)	620200					784800				626700		
10 PERCENT EXCEEDS	1250					1390				1400		
50 PERCENT EXCEEDS	785					1170				801		
90 PERCENT EXCEEDS	666					708				477		

## 11367760 McCLOUD RIVER BELOW McCLOUD DAM, NEAR McCLOUD, CA

LOCATION.—Lat 41°07'44", long 122°04'08", in SW 1/4 NE 1/4 sec.27, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on left bank 0.1 mi downstream from Lizard Creek, 0.6 mi downstream from McCloud Dam, and 9 mi southeast of McCloud.

DRAINAGE AREA.—404 mi<sup>2</sup>.

PERIOD OF RECORD.—April 1966 to current year (operated as a low-flow station only).

GAGE.—Water-stage recorder. Datum of gage is 2,398.76 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to Apr. 7, 1972, at datum 3.00 ft higher.

REMARKS.—Low flow regulated by Lake McCloud (station 11367740) since November 1965. Most of McCloud River runoff is diverted from reservoir through tunnel to Iron Canyon Reservoir (station 11363920) in Pit River Basin. This station records fishwater release. The minimum release requirement is 40 ft<sup>3</sup>/s at all times. Prior to water year 1974, flow was computed up to 400 ft<sup>3</sup>/s. During water years 1975–81, because of channel changes, flow was computed up to 200 ft<sup>3</sup>/s. Currently, because of maximum required release, flow is computed to 220 ft<sup>3</sup>/s. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	196	185	126	114	---	60	---	---	---	---	171	178
2	196	187	135	94	---	59	---	---	---	---	171	182
3	196	188	148	59	---	54	---	---	---	---	171	182
4	195	186	155	56	---	51	---	---	---	---	173	182
5	195	186	158	55	---	51	153	---	---	---	172	181
6	196	186	161	54	---	52	---	---	---	216	173	181
7	196	185	159	e55	---	52	---	---	---	175	175	181
8	196	185	133	e55	---	51	---	---	---	159	175	181
9	196	185	122	e55	---	54	---	---	---	163	175	180
10	196	184	134	e57	---	59	---	---	---	177	175	180
11	196	184	144	e57	---	63	---	---	---	181	175	180
12	196	184	152	e61	---	63	---	---	---	184	175	181
13	196	184	158	e57	---	66	---	---	---	202	175	182
14	196	184	159	e59	---	66	---	---	---	193	177	181
15	195	184	163	e59	---	66	---	---	---	172	177	182
16	196	166	118	e59	---	68	79	---	---	168	177	184
17	194	154	106	e67	166	68	83	---	---	167	177	184
18	194	166	95	e70	70	67	213	---	---	166	177	183
19	194	118	99	e78	73	66	---	---	---	167	177	183
20	192	142	103	e198	72	66	---	---	---	168	177	182
21	192	157	103	---	74	68	---	---	---	168	177	182
22	193	164	106	e216	72	---	---	---	---	168	178	182
23	190	158	108	e100	71	---	---	---	---	170	178	183
24	190	109	111	e73	70	---	---	---	---	169	178	183
25	189	69	115	e72	68	---	---	---	---	169	178	183
26	188	79	115	e70	66	---	---	---	---	169	178	182
27	189	90	119	---	64	---	---	---	---	169	178	182
28	188	113	119	---	62	---	---	---	154	171	177	182
29	188	126	119	---	---	---	---	---	---	171	178	182
30	187	115	119	---	---	---	---	---	---	171	177	182
31	186	---	118	---	---	---	---	---	---	171	177	---
TOTAL	5987	4703	3980	---	---	---	---	---	---	---	5449	5453
MEAN	193	157	128	---	---	---	---	---	---	---	176	182
MAX	196	188	163	---	---	---	---	---	---	---	178	184
MIN	186	69	95	---	---	---	---	---	---	---	171	178
AC-FT	11880	9330	7890	---	---	---	---	---	---	---	10810	10820

e Estimated.

## 11367800 McCloud River at Ah-Di-Na, near McCloud, CA

LOCATION.—Lat 41°06'39", long 122°05'42", in NE 1/4 SW 1/4 sec.33, T.38 N., R.2 W., Shasta County, Hydrologic Unit 18020004, Shasta National Forest, on right bank at Ah-Di-Na, 1.8 mi downstream from Squirrel Creek, 3.9 mi downstream from McCloud Dam, and 9.6 mi south of McCloud.

DRAINAGE AREA.—427 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1964 to current year.

REVISED RECORDS.—WDR CA-98-4: 1997 (m).

GAGE.—Water-stage recorder. Elevation of gage is 2,160 ft above sea level, from topographic map.

REMARKS.—Low flow completely regulated by Lake McCloud (station 11367740) 3.9 mi upstream since November 1965. Diversion to Iron Canyon Reservoir (station 11363920) through McCloud-Iron Canyon diversion tunnel (station 11367720) started Dec. 1, 1965. This station records fishwater release. The minimum release requirements range from 160 to 210 ft<sup>3</sup>/s per schedule outlined in Federal Energy Regulatory Commission License 2106. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Prior to completion of McCloud Dam in 1965, maximum discharge, 9,660 ft<sup>3</sup>/s, Dec. 22, 1964, gage height, 9.43 ft, from rating curve extended above 2,500 ft<sup>3</sup>/s; minimum daily, 86 ft<sup>3</sup>/s, Oct. 1–26, 1964. Since completion of McCloud Dam, maximum discharge, 31,700 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 14.77 ft, from rating curve extended above 8,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 41 ft<sup>3</sup>/s, Dec. 18–20, 1971 (caused by valve malfunction at McCloud Dam).

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of Dec. 21, 1955, reached a stage of 12.5 ft, discharge, 17,800 ft<sup>3</sup>/s, from rating curve extended above 2,500 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 27	1230	4,010	6.23	Mar. 23	2245	6,450	7.64
Feb. 3	1330	4,630	6.63				

REVISIONS.—The mean daily discharge for water year 1997 has been revised, Oct. 1, 2, 1996, discharge 220 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e233	225	234	173	872	213	669	1020	1000	325	226	225
2	e233	225	234	210	952	224	636	1180	1020	324	225	230
3	e233	225	237	445	2650	243	636	1310	1140	322	225	229
4	e233	225	237	460	2300	235	603	1040	946	319	227	229
5	e233	225	239	299	1650	224	358	1030	916	317	226	228
6	e233	227	238	238	1870	214	370	1030	909	285	225	228
7	e233	226	292	204	2460	204	423	1020	901	245	229	228
8	e239	225	283	186	2100	195	438	1150	889	224	228	228
9	e242	225	248	180	1370	190	441	1430	873	228	227	229
10	235	225	239	193	822	191	506	1250	917	244	227	228
11	232	225	239	278	663	193	693	986	1400	247	226	226
12	230	225	239	477	606	203	564	816	1410	250	226	226
13	230	228	239	475	761	269	506	717	1380	266	226	227
14	230	232	243	441	663	297	486	719	912	259	229	227
15	227	242	239	472	641	307	308	718	904	234	228	226
16	225	299	195	444	592	361	e248	773	893	229	228	230
17	225	261	190	676	435	369	e248	825	733	227	228	229
18	225	240	177	909	300	336	e364	813	680	224	228	228
19	225	276	177	865	338	308	e396	720	676	226	228	228
20	225	239	179	672	326	297	e400	612	669	227	228	228
21	225	232	176	565	316	342	e413	607	661	226	227	227
22	227	228	174	462	290	1140	e434	600	568	225	225	226
23	228	260	174	321	278	3690	e522	592	522	231	225	227
24	228	329	174	276	271	6580	803	597	520	228	225	228
25	228	303	176	285	256	3210	831	946	514	227	225	228
26	228	254	175	435	240	2450	806	1260	509	226	226	228
27	228	239	176	1790	227	1780	743	754	444	225	226	228
28	228	236	175	548	217	1190	737	1230	235	227	225	228
29	227	237	175	1340	---	1090	810	1410	375	227	225	227
30	225	229	175	1390	---	777	1010	1490	360	226	225	226
31	226	---	174	967	---	753	---	1320	---	226	225	---
TOTAL	7119	7267	6522	16676	24466	28075	16402	29965	23876	7716	7019	6830
MEAN	230	242	210	538	874	906	547	967	796	249	226	228
MAX	242	329	292	1790	2650	6580	1010	1490	1410	325	229	230
MIN	225	225	174	173	217	190	248	592	235	224	225	225
AC-FT	14120	14410	12940	33080	48530	55690	32530	59440	47360	15300	13920	13550

e Estimated.

## 11367800 McCLOUD RIVER AT AH-DI-NA, NEAR McCLOUD, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	251	285	317	472	418	493	361	354	265	226	223	234
MAX	919	1140	1863	2211	1770	2107	2102	1498	1173	1035	992	954
(WY)	1966	1974	1965	1970	1986	1983	1965	1965	1965	1965	1965	1965
MIN	180	182	93.2	93.4	119	167	166	162	160	159	155	182
(WY)	1978	1978	1972	1972	1972	1977	1968	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1965 - 1998			
ANNUAL TOTAL	133051				181933							
ANNUAL MEAN	365				498				325			
HIGHEST ANNUAL MEAN									1326			
LOWEST ANNUAL MEAN									168			
HIGHEST DAILY MEAN	25200				Jan 1				25200			
LOWEST DAILY MEAN	166				Feb 22				41			
ANNUAL SEVEN-DAY MINIMUM	168				Feb 21				42			
INSTANTANEOUS PEAK FLOW									31700			
INSTANTANEOUS PEAK STAGE									14.77			
ANNUAL RUNOFF (AC-FT)	263900				360900				235300			
10 PERCENT EXCEEDS	253				1020				524			
50 PERCENT EXCEEDS	224				242				207			
90 PERCENT EXCEEDS	176				225				168			

## 11368000 McCLOUD RIVER ABOVE SHASTA LAKE, CA

LOCATION.—Lat 40°57'30", long 122°13'07", unsurveyed, T.36 N., R.3 W., Shasta County, Hydrologic Unit 18020004, on right bank just upstream from Shasta Lake, 0.2 mi downstream from Big Bollobokka Creek, and 11.3 mi east of Lamoine.

DRAINAGE AREA.—604 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1945 to current year. Prior to 1950, published as "above Shasta Reservoir."

TEMPERATURE: Water years 1956–59.

REVISED RECORDS.—WSP 1445: 1953(M). WSP 1931: Drainage area. WDR CA-94-4: 1993(P).

GAGE.—Water-stage recorder. Datum of gage is 1,100.00 ft above sea level (levels by U.S. Bureau of Reclamation).

REMARKS.—Low flow completely regulated by Lake McCloud (station 11367740) 16.5 mi upstream since Nov. 3, 1965. Diversions to Iron Canyon Reservoir (station 11363920) began Dec. 1, 1965. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 51,300 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 29.00 ft, from rating curve extended above 15,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 109 ft<sup>3</sup>/s, Dec. 16–20, 1971. Minimum prior to regulation by Lake McCloud, 825 ft<sup>3</sup>/s, Jan. 3, 1950.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 4,500 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 18	2000	7,010	16.95	Mar. 24	0400	15,700	20.77
Feb. 3	1530	13,800	20.03				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	301	302	910	388	4080	1410	1770	1710	2270	681	460	371
2	315	300	786	866	5480	1460	1730	1910	2080	676	449	372
3	305	300	686	2530	11400	1560	1770	2090	2050	669	445	372
4	304	294	639	3370	8710	1490	1740	1720	1810	656	442	372
5	299	296	598	2010	7900	1380	1460	1690	1680	648	438	373
6	299	305	590	1430	8970	1280	1410	1660	1620	618	437	373
7	299	312	1050	1130	10900	1180	1400	1630	1590	575	433	377
8	333	301	1160	968	9920	1110	1430	1760	1550	535	429	377
9	387	297	911	936	5950	1050	1450	2080	1490	535	424	377
10	352	301	773	1060	4140	1020	1560	1840	1540	542	419	379
11	327	313	692	1760	3310	994	2050	1660	1930	544	416	371
12	313	305	640	2890	3070	1040	1820	1450	1990	545	414	369
13	309	344	599	2950	3730	1430	1700	1340	1920	553	411	367
14	305	392	628	3160	4020	1570	1630	1350	1520	553	411	363
15	305	475	594	3770	3760	1590	1400	1350	1440	525	410	360
16	303	1110	563	3240	3110	1760	1210	1430	1410	511	409	363
17	300	892	700	4920	2610	1750	1140	1520	1260	507	404	364
18	300	561	735	5410	2160	1600	1180	1480	1160	504	403	367
19	300	1300	653	5410	3190	1460	1210	1390	1140	502	402	359
20	301	740	605	3610	3240	1380	1190	1290	1120	497	398	362
21	298	554	561	2810	3220	1510	1200	1230	1100	497	396	355
22	296	479	511	2320	2880	4010	1230	1200	1030	493	391	356
23	296	708	484	1890	2480	9150	1350	1170	952	517	391	357
24	292	1660	460	1680	2460	12900	1610	1180	943	508	387	359
25	291	1740	439	1670	2110	7060	1600	1560	937	491	385	360
26	294	1350	423	2570	1790	5100	1540	1940	916	488	384	366
27	297	1280	410	4970	1590	3970	1460	1580	882	478	383	362
28	295	966	399	2970	1460	3050	1440	2490	615	475	379	369
29	296	830	391	3820	---	2650	1500	3570	700	476	376	361
30	298	1030	388	3830	---	2150	1660	3480	736	471	374	354
31	309	---	382	3090	---	1990	---	2920	---	468	372	---
TOTAL	9519	20037	19360	83428	127640	81054	44840	54670	41381	16738	12672	10987
MEAN	307	668	625	2691	4559	2615	1495	1764	1379	540	409	366
MAX	387	1740	1160	5410	11400	12900	2050	3570	2270	681	460	379
MIN	291	294	382	388	1460	994	1140	1170	615	468	372	354
AC-FT	18880	39740	38400	165500	253200	160800	88940	108400	82080	33200	25130	21790



## 11368000 McCLOUD RIVER ABOVE SHASTA LAKE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1965, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1121	1252	2080	2077	2617	2177	2467	1965	1460	1159	1059	1020
MAX	1899	2162	6513	4525	7493	3966	4599	2978	2248	1715	1489	1395
(WY)	1951	1951	1956	1953	1958	1958	1963	1958	1958	1958	1958	1958
MIN	856	870	856	903	1040	1265	1320	1085	1069	901	852	839
(WY)	1950	1950	1950	1949	1948	1964	1964	1947	1949	1950	1950	1950

## SUMMARY STATISTICS

## WATER YEARS 1946 - 1965

ANNUAL MEAN	1699
HIGHEST ANNUAL MEAN	2703
LOWEST ANNUAL MEAN	1213
HIGHEST DAILY MEAN	36100
LOWEST DAILY MEAN	825
ANNUAL SEVEN-DAY MINIMUM	826
INSTANTANEOUS PEAK FLOW	a45200
INSTANTANEOUS PEAK STAGE	28.20
ANNUAL RUNOFF (AC-FT)	1231000
10 PERCENT EXCEEDS	2670
50 PERCENT EXCEEDS	1270
90 PERCENT EXCEEDS	928

a from rating curve extended above 6,400 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	306	584	865	1505	1498	1657	955	690	439	323	284	289
MAX	468	4068	3681	6043	5118	5825	2794	1930	1379	540	409	366
(WY)	1990	1974	1997	1970	1986	1983	1982	1983	1998	1998	1998	1998
MIN	206	227	235	222	232	248	226	232	215	200	192	200
(WY)	1992	1992	1977	1991	1977	1977	1977	1977	1977	1977	1991	1991

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1967 - 1998

ANNUAL TOTAL	307524	522326	
ANNUAL MEAN	843	1431	780
HIGHEST ANNUAL MEAN			1720
LOWEST ANNUAL MEAN			230
HIGHEST DAILY MEAN	45000	Jan 1	45000
LOWEST DAILY MEAN	288	Aug 16	109
ANNUAL SEVEN-DAY MINIMUM	290	Aug 13	113
INSTANTANEOUS PEAK FLOW			51300
INSTANTANEOUS PEAK STAGE			20.77
ANNUAL RUNOFF (AC-FT)	610000	1036000	565000
10 PERCENT EXCEEDS	1110	3130	1530
50 PERCENT EXCEEDS	393	937	361
90 PERCENT EXCEEDS	299	313	247

## 11370000 SHASTA LAKE NEAR REDDING, CA

LOCATION.—Lat 40°43'08", long 122°25'12", in SE 1/4 NW 1/4 sec.15, T.33 N., R.5 W., Shasta County, Hydrologic Unit 18020005, in Shasta Dam on Sacramento River near right bank, 2 mi downstream from Squaw Creek, and 9.5 mi north of Redding.

DRAINAGE AREA.—6,421 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—November 1942 to current year. Prior to 1950, published as Shasta Reservoir near Redding.

CHEMICAL DATA: Water years 1978–80.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by U.S. Bureau of Reclamation). Prior to July 10, 1944, nonrecording gage at various sites near dam at same datum. Contents based on capacity table dated May 8, 1967, provided by U.S. Bureau of Reclamation.

REMARKS.—Lake is formed by concrete gravity-type dam completed in 1949; regulation began Dec. 30, 1943. Usable capacity, 4,436,400 acre-ft between elevations 737.75 ft, invert of lowest set of river outlets, and 1,067.0 ft, top of flashboard gates on drum-type spillway gates. Operating pool from elevation, 840.0 ft, capacity, 587,127 acre-ft to 1,067.0 ft, capacity, 4,552,090 acre-ft. Dead storage, 115,800 acre-ft. Installation of flashboard gates on top of drum gates completed Nov. 12, 1964. All water passes down the Sacramento River, most of which is through powerplant at dam. Figures given represent total contents at 2400 hours. Lake is used for flood control, power generation, irrigation, and recreation. See schematic diagram of Pit and McCloud River Basins.

COOPERATION.—Records were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.—Maximum contents, 4,550,300 acre-ft, May 19, 1967, elevation, 1,066.94 ft; minimum since first filling, 562,600 acre-ft, Sept. 13, 1977, elevation, 836.68 ft.

EXTREMES (AT 2400) FOR CURRENT YEAR.—Maximum contents, 4,527,703 acre-ft, June. 19, elevation, 1,066.18 ft; minimum, 2,288,338 acre-ft, Oct. 13, elevation, 973.34 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by U.S. Bureau of Reclamation, dated May 8, 1967)

830	515,543	870	843,589	910	1,291,854	950	1,876,996	990	2,616,622	1,030	3,533,478
840	587,127	880	943,929	920	1,424,780	960	2,046,829	1,000	2,828,544	1,050	4,063,108
850	665,511	890	1,051,713	930	1,566,238	970	2,226,093	1,010	3,051,750	1,067	4,552,090
860	751,027	900	1,167,888	940	1,717,255	980	2,416,019	1,020	3,286,929		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2304552	2318375	2541953	2739845	3431642	3513810	3535504	4080045	4455642	4478006	4133068	3694202
2	2300200	2320272	2547440	2757349	3503498	3469942	3529695	4097290	4457988	4472408	4115705	3681442
3	2297188	2324843	2555773	2789987	3624535	3437843	3528184	4115425	4460044	4462977	4103986	3670532
4	2295305	2327129	2563262	2823116	3643610	3408903	3525913	4131665	4457111	4457111	4091991	3657047
5	2290032	2328652	2571155	2843580	3728990	3387506	3535758	4147084	4453297	4448895	4079767	3644383
6	2289656	2328462	2576425	2863480	3835021	3370850	3550711	4165106	4454468	4440387	4065884	3631222
7	2288526	2329796	2595854	2880614	3941958	3358864	3563655	4184013	4450654	4431890	4052883	3618877
8	2289656	2332652	2610248	2895598	3990723	3352292	3584795	4207519	4454468	4421085	4037683	3607573
9	2290598	2332271	2620551	2909547	3964519	3352536	3607829	4231114	4457698	4411737	4023645	3598616
10	2293233	2333985	2627168	2919750	3934097	3347667	3634051	4255097	4465332	4400949	4008520	3589400
11	2290785	2337032	2630682	2950309	3899518	3348884	3667415	4278891	4480363	4391939	3994830	3578427
12	2289468	2338366	2636059	3016846	3869451	3351318	3700466	4295563	4490386	4382053	3981690	3569260
13	2288338	2341429	2643328	3070588	3841139	3365222	3733712	4309976	4497776	4370737	3966698	3559838
14	2288903	2344111	2653723	3140864	3849405	3384062	3765045	4324419	4505474	4361188	3951990	3550711
15	2288526	2350238	2662480	3213201	3828903	3405704	3795501	4339478	4518795	4350769	3937350	3542854
16	2289280	2364642	2668332	3260946	3787821	3433371	3823051	4361477	4525619	4338608	3920567	3535000
17	2294363	2371769	2678576	3330164	3740799	3460956	3847533	4378274	4526214	4326448	3904107	3526922
18	2297188	2376200	2684038	3407670	3692896	3486937	3865173	4391939	4527107	4313435	3888504	3519609
19	2299824	2397900	2688872	3471941	3739219	3503746	3876419	4403855	4527703	4302481	3872123	3509778
20	2306824	2415434	2693918	3510533	3739744	3495216	3807609	4411152	4527107	4291239	3857157	3499232
21	2309286	2421887	2700013	3507008	3798943	3474687	3908422	4416119	4521458	4278604	3845397	3493964
22	2310422	2428146	2705296	3486686	3777227	3511290	3924612	4418454	4517906	4267412	3832628	3488692
23	2320272	2434014	2709735	3456224	3787559	3615276	3942229	4413199	4515242	4254243	3817735	3484429
24	2326177	2446989	2714595	3423979	3758720	3666375	3960432	4410860	4511690	4244532	3805030	3482673
25	2321224	2462174	2717765	3401768	3711691	3667155	3976234	4413199	4507841	4231969	3790737	3475683
26	2315156	2485376	2721146	3400048	3658599	3646194	3992093	4414072	4504289	4219742	3776962	3462705
27	2312694	2505126	2721359	3410140	3618877	3616563	4009346	4414949	4503103	4204677	3762674	3451503
28	2312505	2515532	2723909	3399556	3567220	3598104	4026673	4406771	4495702	4191936	3748968	3445045
29	2314209	2525387	2727308	3417800	---	3578936	4043488	4423712	4488321	4178639	3735022	3442561
30	2315723	2535041	2729646	3408903	---	3569005	4061175	4442736	4482133	4164824	3719811	3441073
31	2317049	---	2734108	3390210	---	3552990	---	4453590	---	4147366	3705166	---
MAX	2326177	2535041	2734108	3510533	3990723	3667155	4061175	4453590	4527703	4478006	4133068	3694202
MIN	2288338	2318375	2541953	2739845	3431642	3347667	3525913	4080045	4450654	4147366	3705166	3441073
a	974.86	986.00	995.61	1024.25	1031.33	1030.77	1049.93	1063.67	1064.64	1053.02	1036.68	1026.31
b	+8709	+217992	+199067	+656102	+177010	-14230	+508185	+392415	+285543	-334767	-442200	-264093

CAL YR 1997 b -1106502

WTR YR 1998 b +1132733

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

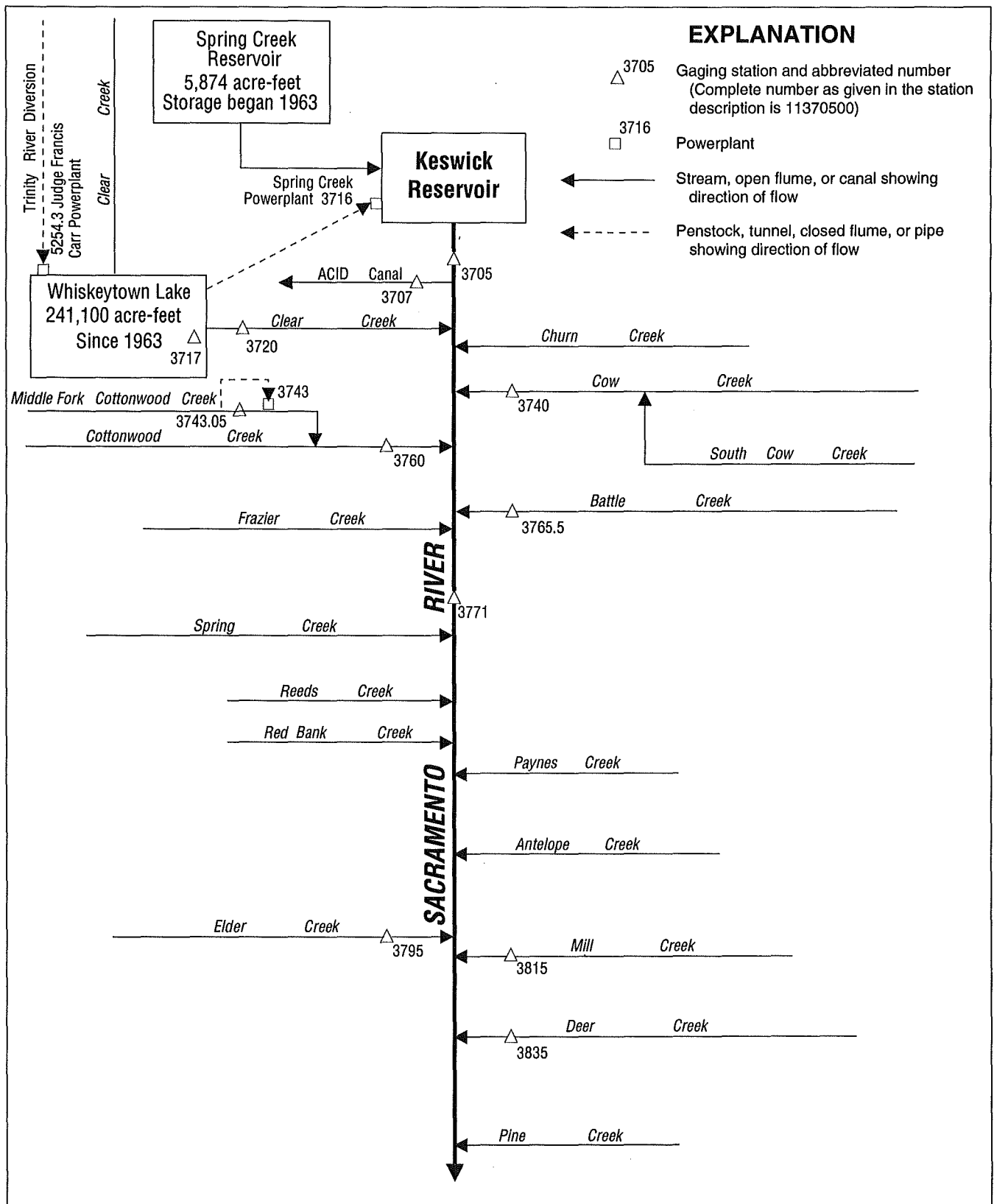


Figure 25. Diversions and storage in upper Sacramento River Basin.

## 11370500 SACRAMENTO RIVER AT KESWICK, CA

LOCATION.—Lat 40°36'04", long 122°26'36", in SW 1/4 NW 1/4 sec.28, T.32 N., R.5 W., Shasta County, Hydrologic Unit 18020101, on right bank 0.4 mi upstream from Middle Creek, 0.8 mi downstream from Keswick Dam, 1.6 mi downstream from Keswick, and 10 mi downstream from Shasta Dam.

DRAINAGE AREA.—6,468 mi<sup>2</sup>, excluding Goose Lake Basin.

PERIOD OF RECORD.—October 1938 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1951–94. Published as "near Keswick" in 1951 and 1953, and as "at Keswick Dam, near Keswick" in 1968–69.

BIOLOGICAL DATA: Water years 1979–81.

SPECIFIC CONDUCTANCE: Water years 1978–94.

WATER TEMPERATURE: Water years 1978–94.

SEDIMENT DATA: Water years 1978–94.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 479.81 ft above sea level. Prior to Oct. 1, 1939, at site 1.5 mi upstream at datum 20.2 ft higher and Oct. 1, 1939, to Apr. 30, 1942, at site 1.5 mi upstream at datum 15.2 ft higher. Aug. 20, 1960, to July 3, 1973, auxiliary water-stage recorder at city of Redding pumping plant 2.1 mi downstream.

REMARKS.—Records good. Flow completely regulated by Shasta Lake (station 11370000) beginning Dec. 30, 1943. Minor regulation by Keswick Reservoir since 1950, total capacity, 23,800 acre-ft, operational capacity, 4,170 acre-ft, between normal operating elevations of 579.0 ft and 586.0 ft. No diversion between Shasta Dam and station at Keswick. Since December 1963, water is released from Whiskeytown Lake (station 11371700), through a tunnel to Spring Creek Powerplant (station 11371600), and then into Keswick Reservoir. See schematic diagrams of upper Sacramento River Basin and Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 186,000 ft<sup>3</sup>/s, Feb. 23, 1940, gage height, 47.2 ft, site and datum then in use, from rating curve extended above 75,000 ft<sup>3</sup>/s on basis of peak discharge at Kennet plus 4,000 ft<sup>3</sup>/s estimated inflow; minimum observed, 2,730 ft<sup>3</sup>/s, Aug. 22, 1939. Since regulation by Shasta Dam in 1943, maximum discharge, 81,400 ft<sup>3</sup>/s, Apr. 1, 1974, gage height, 31.92 ft; maximum gage height, 32.71 ft, Jan. 4, 1997; minimum discharge, 154 ft<sup>3</sup>/s, May 15, 1948.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6190	e4560	4340	4390	23300	45700	29500	10700	20000	14400	15000	13600
2	5940	e4580	4160	4420	14400	42300	25200	10700	20000	14500	14800	13500
3	5710	e4570	4120	4410	22000	37100	21900	10700	20200	14200	14900	13800
4	5480	e4640	4090	4380	52300	32900	21600	10700	20100	14700	14900	13600
5	5290	4620	4110	4380	23800	29100	18100	10700	19400	14900	15000	13300
6	5280	4640	4120	4330	23100	25000	15200	9980	18200	15300	14700	13200
7	4990	4720	4240	4280	30400	21400	13200	9810	17800	15400	14700	12600
8	4660	4740	4260	4270	42600	18100	10600	9820	16200	15300	14700	12700
9	4580	4720	4310	4360	55800	15500	10600	9810	14100	15400	14700	12200
10	4670	4730	4340	4380	51300	15100	9220	9850	13200	15000	14800	11700
11	4400	4770	4330	4450	48200	13000	8070	10800	12100	14900	14900	11800
12	4390	4720	4320	4720	49800	11300	7690	13700	13900	14900	15000	11300
13	4520	4760	4330	5250	51100	10600	6500	12100	14200	14700	14700	11300
14	4470	4760	4350	6810	43700	8660	6150	13200	13800	14800	14900	11300
15	4450	4810	4330	7700	47800	7450	6130	13700	14300	14700	15000	11200
16	4350	4830	4400	14400	54100	6360	e6080	13700	14900	14600	15100	11000
17	4330	4710	4390	16300	54100	6000	e5910	14200	14700	14900	15300	11000
18	4350	4760	4380	19500	52300	7010	8650	14900	14800	14600	15100	10700
19	4290	4870	4380	19400	25000	11600	9910	14700	14900	15000	14900	10200
20	4270	4740	4390	21600	38500	23000	9980	14900	14700	14900	15000	10200
21	4360	4710	4390	31200	19200	31000	9870	14800	14800	14800	14900	10200
22	4230	4770	4380	35100	47400	24600	9750	16700	15000	14900	14900	10100
23	4310	4400	4390	35000	29700	19700	9790	17800	14800	14600	14900	9570
24	4260	4310	4370	35000	45300	38800	9810	18000	14800	14900	14900	9470
25	4310	4350	4360	30900	50300	43500	9760	17700	14600	14600	14100	9550
26	4350	4520	4380	30300	49400	45600	9700	18100	14500	14700	14100	9150
27	4340	4350	4390	30800	41800	44200	9780	18000	14400	14800	14000	9110
28	4310	4360	4370	33300	45100	37300	10100	30800	14400	14900	13900	8680
29	4460	4380	4390	28600	---	33500	10300	25700	14400	14800	13900	8610
30	e4630	4410	4390	36400	---	29200	10600	22300	14500	15000	13900	8600
31	e4640	---	4360	36900	---	29000	---	19200	---	15000	14000	---
TOTAL	144810	138810	133860	527230	1131800	763580	349650	457770	467700	460100	455600	333240
MEAN	4671	4627	4318	17010	40420	24630	11660	14770	15590	14840	14700	11110
MAX	6190	4870	4400	36900	55800	45700	29500	30800	20200	15400	15300	13800
MIN	4230	4310	4090	4270	14400	6000	5910	9810	12100	14200	13900	8600
AC-FT	287200	275300	265500	1046000	2245000	1515000	693500	908000	927700	912600	903700	661000

e Estimated.

## 11370500 SACRAMENTO RIVER AT KESWICK, CA Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1962, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	5992	5603	6611	10610	11700	6564	6714	8212	8564	9951	10030	7331
MAX	8572	8970	16680	32870	44170	14490	21180	13400	10300	11810	11870	10030
(WY)	1959	1958	1951	1953	1958	1957	1958	1948	1948	1951	1958	1958
MIN	4785	4064	3726	3234	3060	2546	2830	5247	6437	7480	7057	5239
(WY)	1948	1952	1960	1962	1950	1950	1950	1951	1947	1947	1947	1947

## SUMMARY STATISTICS

## WATER YEARS 1946 - 1962

ANNUAL MEAN	8141
HIGHEST ANNUAL MEAN	13910
LOWEST ANNUAL MEAN	5364
HIGHEST DAILY MEAN	75800
LOWEST DAILY MEAN	2360
ANNUAL SEVEN-DAY MINIMUM	2440
INSTANTANEOUS PEAK FLOW	78800
INSTANTANEOUS PEAK STAGE	31.55
INSTANTANEOUS LOW FLOW	154
ANNUAL RUNOFF (AC-FT)	5898000
10 PERCENT EXCEEDS	11600
50 PERCENT EXCEEDS	7000
90 PERCENT EXCEEDS	3720

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6176	7182	9884	11830	13500	11410	9035	10590	11450	12610	11670	8295
MAX	10290	23430	27340	41600	40420	47170	26840	17410	15590	14870	14700	11800
(WY)	1984	1974	1974	1997	1998	1983	1974	1995	1998	1997	1998	1971
MIN	3431	3182	2847	3258	3268	2869	3096	6953	7342	7754	8070	4564
(WY)	1978	1993	1978	1993	1990	1991	1991	1992	1992	1992	1992	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1964 - 1998

ANNUAL TOTAL	4129660	5364150	
ANNUAL MEAN	11310	14700	10290
HIGHEST ANNUAL MEAN			18230
LOWEST ANNUAL MEAN			5390
HIGHEST DAILY MEAN	77900	Jan 4	79700
LOWEST DAILY MEAN	4090	Dec 4	2360
ANNUAL SEVEN-DAY MINIMUM	4160	Dec 2	2460
INSTANTANEOUS PEAK FLOW			81400
INSTANTANEOUS PEAK STAGE			29.01
INSTANTANEOUS LOW FLOW			32.71
ANNUAL RUNOFF (AC-FT)	8191000	10640000	154
10 PERCENT EXCEEDS	21500	31100	7458000
50 PERCENT EXCEEDS	7810	13600	15000
90 PERCENT EXCEEDS	4380	4360	8560
			3980

## 11370700 ANDERSON-COTTONWOOD IRRIGATION DISTRICT CANAL AT SHARON STREET, AT REDDING, CA

LOCATION.—Lat 40°34'08", long 122°22'49", unsurveyed, Shasta County, Hydrologic Unit 18020101, on right bank of canal 10 ft upstream from Sharon Street, 900 ft downstream from Parkview Avenue, and 0.75 mi southwest of Mercy Hospital.

PERIOD OF RECORD.—April to September 1989, April 1991 to current year (beginning October 1994, irrigation season only).

GAGE.—Water-stage recorder and acoustic-velocity meter. Elevation of gage is 480 ft above sea level, from topographic map.

REMARKS.—Records good. Canal diverts from Sacramento River 0.3 mi downstream from Southern Pacific Railroad bridge and 0.1 mi upstream from Highway 273; water is used for irrigation. See schematic diagrams for upper Sacramento River Basin and Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 370 ft<sup>3</sup>/s, June 9, 1989; no flow at times each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	239	---	---	---	---	---	---	233	232	285	297	278
2	246	---	---	---	---	---	---	233	241	291	291	278
3	241	---	---	---	---	---	---	231	248	295	283	280
4	239	---	---	---	---	---	---	256	245	296	280	285
5	234	---	---	---	---	---	---	282	248	297	284	284
6	232	---	---	---	---	---	---	274	251	293	284	283
7	227	---	---	---	---	---	---	281	250	298	286	277
8	218	---	---	---	---	---	---	270	246	297	283	276
9	148	---	---	---	---	---	---	265	245	113	281	272
10	e84	---	---	---	---	---	---	258	248	260	283	264
11	---	---	---	---	---	---	---	257	252	290	294	263
12	---	---	---	---	---	---	---	280	277	292	297	269
13	---	---	---	---	---	---	---	269	277	293	292	268
14	---	---	---	---	---	---	---	276	276	292	294	261
15	---	---	---	---	---	---	---	276	278	290	293	261
16	---	---	---	---	---	---	---	275	280	291	291	263
17	---	---	---	---	---	---	---	277	288	301	280	263
18	---	---	---	---	---	---	---	282	307	303	276	262
19	---	---	---	---	---	---	---	285	308	305	276	257
20	---	---	---	---	---	---	---	274	304	246	282	252
21	---	---	---	---	---	---	---	256	303	91	285	253
22	---	---	---	---	---	---	---	260	298	288	286	252
23	---	---	---	---	---	---	---	266	296	287	286	246
24	---	---	---	---	---	---	---	271	297	285	286	248
25	---	---	---	---	---	---	---	269	294	283	281	250
26	---	---	---	---	---	---	---	271	292	286	278	248
27	---	---	---	---	---	---	e56	255	289	281	280	246
28	---	---	---	---	---	---	197	250	285	282	284	241
29	---	---	---	---	---	---	232	211	284	280	284	243
30	---	---	---	---	---	---	231	206	282	286	282	245
31	---	---	---	---	---	---	---	226	---	296	277	---
TOTAL	---	---	---	---	---	---	---	8075	8221	8573	8836	7868
MEAN	---	---	---	---	---	---	---	260	274	277	285	262
MAX	---	---	---	---	---	---	---	285	308	305	297	285
MIN	---	---	---	---	---	---	---	206	232	91	276	241
AC-FT	---	---	---	---	---	---	---	16020	16310	17000	17530	15610

e Estimated.

## 11525430 JUDGE FRANCIS CARR POWERPLANT NEAR FRENCH GULCH, CA

LOCATION.—Lat 40°38'49", long 122°37'34", Shasta County, Hydrologic Unit 18010212, at powerplant 1.6 mi downstream from Mill Creek and 3.8 mi south of French Gulch.

PERIOD OF RECORD.—April 1963 to current year.

GAGE.—Recorded powerplant output.

REMARKS.—Water is diverted from Trinity River at NW 1/4 SE 1/4 sec.8, T.33 N., R.8 W., through a tunnel to powerplant and then into Whiskeytown Lake (station 11371700). See schematic diagram of upper Sacramento and Pit and McCloud River Basins.

COOPERATION.—Records were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 4,000 ft<sup>3</sup>/s, Oct. 18, 1987; no flow for many days most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	1547	0	0	133	141	750	3320	0	1585	3173	2629
2	250	1474	0	857	112	34	1112	3294	6	2167	3116	2563
3	247	0	0	431	83	110	1225	3198	0	2453	2967	2323
4	248	0	0	0	0	168	1563	3204	0	2444	2956	2148
5	250	0	539	0	0	314	1664	3199	0	2818	2974	1881
6	282	302	135	0	0	392	1675	3189	0	2958	3148	1928
7	281	0	0	0	0	278	1930	3175	0	3159	2928	1905
8	229	0	0	0	0	179	2521	3274	0	3096	2867	1921
9	427	0	0	0	0	129	2725	3314	0	3173	2983	1921
10	398	117	0	0	43	415	2688	3377	37	3145	3060	1782
11	346	434	0	0	34	361	2453	3351	51	3132	3028	1379
12	353	486	0	0	0	586	2183	1941	21	3114	3008	1815
13	493	404	0	22	0	504	1777	1392	22	3023	3009	1730
14	989	0	0	0	0	525	2725	1678	171	3121	2994	1725
15	520	0	0	0	251	503	2780	1613	7	2882	3190	1844
16	411	0	452	42	149	547	2780	1842	1	2773	2980	1672
17	842	0	0	175	223	1389	2958	2049	2	2837	3016	1684
18	795	0	0	137	225	1649	3211	2419	136	2813	2910	1680
19	607	0	0	1482	220	1606	3241	532	222	2809	3004	1448
20	790	154	0	414	172	1388	3121	541	0	3133	3010	1403
21	1360	0	802	419	181	2555	3230	591	198	3134	3017	1453
22	1567	0	0	123	368	1755	3257	530	491	2972	3008	1359
23	1145	175	0	135	262	661	3133	450	823	2281	3111	1125
24	845	220	0	130	163	593	3121	512	922	3008	3111	1313
25	893	268	595	129	216	623	2880	205	952	3053	2616	1315
26	0	0	0	131	98	665	3144	571	1280	2940	2648	1193
27	224	0	407	103	113	705	3257	449	1442	2997	2619	1125
28	225	0	392	126	163	504	3402	0	1398	2834	2614	1387
29	796	150	472	81	---	630	3400	7	2134	2902	2632	1234
30	778	381	0	126	---	1203	3320	35	1639	2980	2602	1182
31	1447	---	0	120	---	552	---	0	---	3016	2399	---
TOTAL	18285	6112	3794	5183	3209	21664	77226	53252	11955	88752	90698	50067
MEAN	590	204	122	167	115	699	2574	1718	399	2863	2926	1669
MAX	1567	1547	802	1482	368	2555	3402	3377	2134	3173	3190	2629
MIN	0	0	0	0	0	34	750	0	0	1585	2399	1125
AC-FT	36270	12120	7530	10280	6370	42970	153200	105600	23710	176000	179900	99310

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1336	821	672	583	800	859	1188	1340	1832	2372	2246	2084
MAX	3363	2158	2891	2755	3225	3115	3220	3515	3662	3589	3236	3504
(WY)	1988	1967	1979	1982	1974	1974	1970	1974	1969	1968	1977	1988
MIN	166	18.0	.16	.000	.34	.000	.000	.097	.63	253	507	415
(WY)	1994	1997	1993	1986	1988	1988	1978	1991	1993	1978	1992	1997

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1963 - 1998

ANNUAL TOTAL	408960	430197	
ANNUAL MEAN	1120	1179	1359
HIGHEST ANNUAL MEAN			2486
LOWEST ANNUAL MEAN			301
HIGHEST DAILY MEAN	3224	Jul 8	4000
LOWEST DAILY MEAN	0	Mar 15	0
ANNUAL SEVEN-DAY MINIMUM	.00	Mar 15	.00
ANNUAL RUNOFF (AC-FT)	811200	853300	984600
10 PERCENT EXCEEDS	2980	3110	3140
50 PERCENT EXCEEDS	778	571	1090
90 PERCENT EXCEEDS	.00	.00	.00

## 11371600 SPRING CREEK POWERPLANT AT KESWICK, CA

LOCATION.—Lat 40°37'41", long 122°27'59", in NE 1/4 SE 1/4 sec.18, T.32 N., R.5 W., Shasta County, Hydrologic Unit 18020112, at powerplant on Spring Creek, 0.4 mi northwest of Keswick, and 4.9 mi northwest of Redding.

PERIOD OF RECORD.—December 1963 to current year.

GAGE.—Discharge computed from powerplant output.

REMARKS.—Water is released from Whiskeytown Lake (station 11371700) through a tunnel to powerplant and then into Keswick Reservoir. Spring Creek Reservoir releases into Keswick Reservoir at Spring Creek Powerplant. See schematic diagrams of upper Sacramento River and Pit and McCloud River Basins.

COOPERATION.—Records were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 4,800 ft<sup>3</sup>/s, May 2, 1983; no flow for many days most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	268	1420	638	263	2345	4102	2868	3841	1814	2430	3254	2716
2	271	1388	267	264	4095	4266	1495	3573	771	2503	3258	2868
3	262	1421	272	381	3702	4102	961	4204	762	2640	3226	2570
4	269	1424	364	974	4109	1413	1314	4166	362	3237	3273	2161
5	297	1027	271	608	3830	1257	3789	4213	1137	3507	3252	1995
6	358	1013	250	754	3998	284	3236	4189	1605	3260	3035	1963
7	253	1069	508	605	3950	279	3030	3902	273	3178	3428	1910
8	258	835	256	710	3965	1165	3240	4045	902	3253	3282	2370
9	267	788	315	747	3946	2153	2914	4170	500	3683	2942	1970
10	405	746	499	425	4000	950	2428	4073	932	3573	3040	1668
11	509	808	262	1019	4004	273	4041	4046	912	3572	3036	1669
12	510	767	271	1215	4017	940	4047	2979	675	3575	3041	1685
13	511	268	259	1225	4016	1128	3744	2270	756	3573	3091	1644
14	906	269	427	1764	4022	2838	4135	1927	551	3585	3034	1930
15	1389	274	255	3549	4018	2569	4094	2001	489	3179	3043	1929
16	1091	262	270	2166	4024	2366	4032	2859	789	3005	3066	1968
17	978	271	262	1420	3972	2520	3736	2404	568	2865	3025	1855
18	991	263	158	3210	3950	3411	3022	2844	484	2866	3094	1816
19	997	112	264	3550	4148	3475	2418	935	668	3666	3100	1587
20	994	1624	268	4035	3964	2928	4014	1312	256	3449	3135	1474
21	1521	480	889	3156	4148	3667	3929	664	725	3116	3110	1493
22	1487	477	262	1667	4148	4097	3447	1562	522	3141	3097	1475
23	1341	473	261	1037	3928	4101	3916	576	1026	2480	3789	1176
24	1037	259	248	1268	3942	3913	4070	585	1544	3314	3493	999
25	1014	553	268	1268	4149	3986	4072	1464	1535	3142	2900	1223
26	1031	1539	531	1354	4064	4052	4067	1339	1941	3309	2817	1210
27	999	1412	265	3158	4102	4056	4060	357	1540	3431	2717	1290
28	953	653	457	2655	4126	4077	3914	368	1620	3180	2726	1672
29	1150	279	264	1909	---	3654	4041	2227	1978	3061	2585	1262
30	1363	262	264	2080	---	3662	3808	4162	2025	3135	2428	1385
31	1434	---	260	1730	---	1060	---	2178	---	2867	2718	---
TOTAL	25114	22436	10305	50166	110682	82744	101882	79435	29662	98775	95035	52933
MEAN	810	748	332	1618	3953	2669	3396	2562	989	3186	3066	1764
MAX	1521	1624	889	4035	4149	4266	4135	4213	2025	3683	3789	2868
MIN	253	112	158	263	2345	273	961	357	256	2430	2428	999
AC-FT	49810	44500	20440	99500	219500	164100	202100	157600	58830	195900	188500	105000
a	1410	649	2640	6340	20730	5400	2740	2530	2000	1200	377	282

a Discharge, in acre-feet, from Spring Creek Reservoir, provided by U.S. Bureau of Reclamation.



## 11371600 SPRING CREEK POWERPLANT AT KESWICK, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1619	1259	1107	1365	1636	1634	1403	1572	1996	2438	2332	2227
MAX	3691	3175	4033	4533	4499	4364	4405	4265	3866	3886	3654	3526
(WY)	1989	1967	1974	1974	1974	1983	1983	1983	1969	1968	1977	1988
MIN	265	.87	1.55	2.10	3.36	86.6	5.23	5.45	158	250	467	416
(WY)	1978	1992	1992	1991	1991	1988	1987	1991	1989	1978	1992	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1964 - 1998			
ANNUAL TOTAL	492816				759169							
ANNUAL MEAN	1350				2080				1716			
HIGHEST ANNUAL MEAN									3390			
LOWEST ANNUAL MEAN									748			
HIGHEST DAILY MEAN	3960				Jan 4				4800			
LOWEST DAILY MEAN	0				Apr 12				0			
ANNUAL SEVEN-DAY MINIMUM	44				Apr 9				.00			
ANNUAL RUNOFF (AC-FT)	977500				1506000				1243000			
10 PERCENT EXCEEDS	2940				4030				3510			
50 PERCENT EXCEEDS	1080				1910				1580			
90 PERCENT EXCEEDS	259				271				22			

## 11371700 WHISKEYTOWN LAKE NEAR IGO, CA

LOCATION.—Lat 40°37'03", long 122°31'31", unsurveyed, Shasta County, Hydrologic Unit 18010112, Whiskeytown-Shasta-Trinity National Recreation Area, at outlet works to Spring Creek Powerplant on Clear Creek, 1.8 mi downstream from Whiskey Creek, and 7.8 mi northeast of Igo.

DRAINAGE AREA.—200 mi<sup>2</sup>.

PERIOD OF RECORD.—May 1963 to current year. Prior to October 1964 published as Whiskeytown Reservoir near Igo.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by U.S. Bureau of Reclamation). Contents based on capacity table dated April 1962 provided by U.S. Bureau of Reclamation.

REMARKS.—Lake is formed by earth and rockfill dam. Storage began in May 1963. Usable capacity, 241,088 acre-ft between elevations 972.0 ft, invert of sluice pipe, and 1,210.00 ft, crest of glory hole spillway. Dead storage 8 acre-ft. Normal operating pool is from elevation 1,197.0 ft, capacity, 201,288 acre-ft, to 1,210.0 ft, capacity, 241,096 acre-ft. Transbasin water enters the reservoir through Judge Francis Carr Powerplant (station 11525430) and is released through Spring Creek Tunnel to Spring Creek Powerplant (station 11371600) and Keswick Reservoir. Figures given represent total contents at 2400 hours. Lake is used for power generation and recreation. See schematic diagrams of upper Sacramento River and Pit and McCloud River Basins.

COOPERATION.—Records were provided by U.S. Bureau of Reclamation, not rounded to U.S. Geological Survey standards.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.—Maximum contents, 258,600 acre-ft, Mar. 2, 1983, elevation, 1,215.34 ft; minimum since first filling, 145,562 acre-ft, Dec. 27, 1992, elevation, 1,176.05 ft.

EXTREMES (AT 2400) FOR CURRENT YEAR.—Maximum contents, 253,869 acre-ft, Feb. 7, elevation, 1,213.92 ft; minimum, 204,151 acre-ft, Nov. 28, elevation, 1,197.98 ft.

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

1,015	714	1,040	3,055	1,080	15,076	1,140	73,960
1,020	994	1,050	4,898	1,100	27,542	1,180	155,276
1,030	1,797	1,060	7,418	1,120	46,701	1,220	274,389

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	238279	223565	205358	204563	209026	214869	204621	234939	236179	238599	238503	237800
2	238279	223719	205181	206448	208670	209917	206389	237132	236783	238599	238727	237609
3	238279	220768	205063	207898	217868	204828	210574	237291	237386	239143	238599	237323
4	238279	217777	204710	207719	222824	204533	214386	237355	238567	238311	238375	237514
5	238215	215533	205741	207541	232035	204651	213934	237228	238215	237609	238183	237514
6	238151	214205	205829	207155	247470	206507	213541	236973	237005	237863	238791	237800
7	238087	212041	206242	206772	253869	208165	213843	237196	237991	238663	237831	237863
8	238279	210245	206566	206094	249955	207957	214507	237323	237800	239047	237005	237291
9	238503	208462	206477	205446	245587	205329	216713	237132	238439	238823	237196	237386
10	238471	207155	205918	205505	242966	205653	221043	237260	238055	238695	237260	238087
11	237959	206477	205682	205034	240360	207067	221227	237577	237863	238503	237386	237673
12	237545	205918	205417	205711	238279	208284	220768	237101	238055	238343	237641	238183
13	237291	206477	205122	206242	235416	210903	219512	236656	237927	238023	237641	238599
14	237355	206153	205152	208670	235575	209709	219236	237386	238439	237768	237641	238439
15	235448	206625	204887	206919	233928	208670	219053	237800	238567	237673	237704	238311
16	233991	207927	205623	206978	232004	208046	218810	237196	238023	237831	237704	237927
17	233581	207898	205653	210095	229527	208610	219818	237514	237768	238311	238247	237831
18	233013	208403	205741	210574	227064	207571	222886	237991	237991	238599	238055	237641
19	232130	209561	205564	212670	232319	206124	226846	238343	237959	237260	238119	237609
20	231562	206978	205476	209383	233297	205387	227188	237863	238023	237132	238247	237609
21	231343	206212	205623	206831	237386	206448	227871	238855	238087	237704	238375	237800
22	231499	205387	205358	206065	237260	209650	229965	237863	238695	237927	238503	237609
23	231030	205063	205063	206242	236751	215955	231468	238503	239111	238087	237545	237545
24	230591	205417	204739	205711	235289	218628	231941	239367	238727	237800	237164	238279
25	230310	205329	205564	205387	232477	218203	231092	237831	238119	237991	236910	238663
26	228089	206242	204680	207096	228713	216562	231312	237418	237545	237577	237101	238855
27	226473	204828	205093	206036	224675	213813	231846	238567	238183	237291	237132	238663
28	224860	204151	205093	204739	219787	210305	232761	241064	238375	237069	237355	238343
29	224212	204857	205682	205829	---	207333	233234	242160	239399	237386	237704	238503
30	223040	206006	205299	205594	---	205004	233802	238343	239367	237386	238183	238311
31	223195	---	204857	205888	---	206654	---	237228	---	238311	237673	---
MAX	238503	223719	206566	212670	253869	218628	233802	242160	239399	239143	238791	238855
MIN	223040	204151	204680	204563	208670	204533	204621	234939	236179	237069	236910	237291
a	1204.31	1198.61	1198.22	1198.57	1203.20	1198.83	1207.71	1208.79	1209.46	1209.13	1208.93	1209.13
b	-15084	-17189	-1149	+1031	+13899	-13133	+27148	+3426	+2139	-1056	-638	+638

CAL YR b -35471

WTR YR b +32

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11372000 CLEAR CREEK NEAR IGO, CA

LOCATION.—Lat 40°30'48", long 122°31'23", unsurveyed, Shasta County, Hydrologic Unit 18020112, on left bank at old highway bridge on Redding-Igo Road 1.0 mi northeast of Igo, 7.0 mi downstream from Whiskeytown Dam, 8.3 mi southwest of Redding, and 10.4 mi upstream from mouth.

DRAINAGE AREA.—228 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1940 to current year.

CHEMICAL DATA: Water years 1958–79.

WATER TEMPERATURE: Water years 1965–79.

REVISED RECORDS.—WSP 1345: Drainage area. WSP 1395: 1941(M).

GAGE.—Water-stage recorder. Datum of gage is 672.99 ft above sea level.

REMARKS.—Records good. Low flow completely regulated by Whiskeytown Lake (station 11371700) since May 1963. Transbasin diversion from Trinity River through Judge Francis Carr Powerplant (station 11525430) to Whiskeytown Lake began in April 1963. Diversions from Whiskeytown Lake to Spring Creek Powerplant (station 11371600) began in December 1963. See schematic diagrams of upper Sacramento River and Pit and McCloud River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 24,500 ft<sup>3</sup>/s, Dec. 21, 1955, gage height, 13.75 ft; minimum daily, 9.0 ft<sup>3</sup>/s, Sept. 4–7, 1950. Since completion of Whiskeytown Dam in 1963, maximum discharge, 19,200 ft<sup>3</sup>/s, Mar. 3, 1983, gage height, 12.73 ft, from rating curve extended above 12,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 30 ft<sup>3</sup>/s, Oct. 10, 11, 1977.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	142	207	166	945	356	418	240	385	82	57	51
2	60	142	189	229	814	348	429	263	343	80	57	51
3	59	143	183	274	1840	329	656	247	337	79	57	51
4	59	148	181	282	1400	311	544	239	298	78	55	51
5	59	148	181	228	1490	297	478	239	233	76	55	51
6	59	153	181	223	1950	285	448	238	202	73	99	51
7	95	155	360	245	7380	278	417	236	187	71	207	51
8	151	155	245	251	8150	291	386	234	174	70	259	51
9	150	155	207	242	3600	272	416	230	155	69	261	51
10	145	155	192	241	1610	264	410	227	145	69	261	51
11	144	156	185	344	855	260	379	248	152	69	234	51
12	143	155	180	712	1060	268	359	368	141	68	214	51
13	142	170	177	436	979	318	346	301	135	67	207	50
14	142	169	220	1610	1020	297	325	297	128	66	223	50
15	142	188	222	880	732	288	311	293	121	65	207	50
16	142	245	203	587	730	282	297	288	117	64	172	51
17	142	184	201	680	823	274	285	275	114	63	169	51
18	142	197	193	639	663	264	277	262	111	63	166	51
19	142	305	186	553	1780	257	270	258	108	62	144	50
20	142	188	184	431	959	262	264	256	105	61	105	50
21	142	173	180	358	1860	355	258	245	103	61	104	50
22	142	168	176	321	919	1370	254	238	100	61	104	50
23	142	171	174	300	877	1940	285	234	98	63	104	51
24	142	186	173	283	778	1030	282	237	97	62	83	51
25	142	188	172	301	613	714	260	241	97	61	52	51
26	142	497	170	543	508	570	251	250	95	61	52	52
27	142	274	170	549	423	496	245	256	88	61	51	51
28	142	203	168	417	381	438	195	555	86	60	51	51
29	142	222	167	559	---	413	232	1240	84	60	51	51
30	140	276	167	459	---	390	229	755	83	60	51	51
31	142	---	166	417	---	455	---	474	---	60	51	---
TOTAL	3878	5811	5960	13760	45139	13972	10206	9964	4622	2065	3963	1524
MEAN	125	194	192	444	1612	451	340	321	154	66.6	128	50.8
MAX	151	497	360	1610	8150	1940	656	1240	385	82	261	52
MIN	58	142	166	166	381	257	195	227	83	60	51	50
AC-FT	7690	11530	11820	27290	89530	27710	20240	19760	9170	4100	7860	3020

## SACRAMENTO RIVER BASIN

## 11372000 CLEAR CREEK NEAR IGO, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1962, BY WATER YEAR (WY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	76.7	150	597	807	1226	834	676	347	161	63.4	35.1	32.8
MAX	373	427	2336	2513	5753	2595	2431	773	289	126	64.6	89.7
(WY)	1951	1951	1956	1941	1958	1941	1941	1957	1953	1941	1941	1957
MIN	25.8	39.0	47.0	65.5	142	168	172	87.6	66.5	24.3	14.3	13.4
(WY)	1950	1960	1950	1947	1948	1955	1944	1947	1950	1950	1950	1944

## SUMMARY STATISTICS

## WATER YEARS 1941 - 1962

ANNUAL MEAN	413	
HIGHEST ANNUAL MEAN	1092	1941
LOWEST ANNUAL MEAN	128	1944
HIGHEST DAILY MEAN	15100	Mar 1 1941
LOWEST DAILY MEAN	9.0	Sep 4 1950
ANNUAL SEVEN-DAY MINIMUM	9.5	Sep 1 1950
INSTANTANEOUS PEAK FLOW	24500	Dec 21 1955
INSTANTANEOUS PEAK STAGE	13.75	Dec 21 1955
ANNUAL RUNOFF (AC-FT)	299000	
10 PERCENT EXCEEDS	929	
50 PERCENT EXCEEDS	133	
90 PERCENT EXCEEDS	27	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	70.0	141	201	304	300	338	159	98.4	69.3	57.0	54.6	52.1
MAX	317	299	625	1358	1612	3437	668	419	249	117	128	71.6
(WY)	1993	1974	1965	1970	1998	1983	1974	1982	1993	1982	1998	1995
MIN	38.8	70.7	94.2	54.3	49.8	51.3	50.7	48.6	42.9	39.2	37.9	37.9
(WY)	1978	1969	1977	1977	1977	1977	1977	1966	1966	1966	1966	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1965 - 1998

ANNUAL TOTAL	77557	120864	
ANNUAL MEAN	212	331	154
HIGHEST ANNUAL MEAN			570
LOWEST ANNUAL MEAN			57.9
HIGHEST DAILY MEAN	8590	Jan 1	8150
LOWEST DAILY MEAN	55	Aug 26	50
ANNUAL SEVEN-DAY MINIMUM	57	Aug 26	50
INSTANTANEOUS PEAK FLOW			11300
INSTANTANEOUS PEAK STAGE			11.13
ANNUAL RUNOFF (AC-FT)	153800	239700	111900
10 PERCENT EXCEEDS	242	623	242
50 PERCENT EXCEEDS	148	192	71
90 PERCENT EXCEEDS	59	52	49

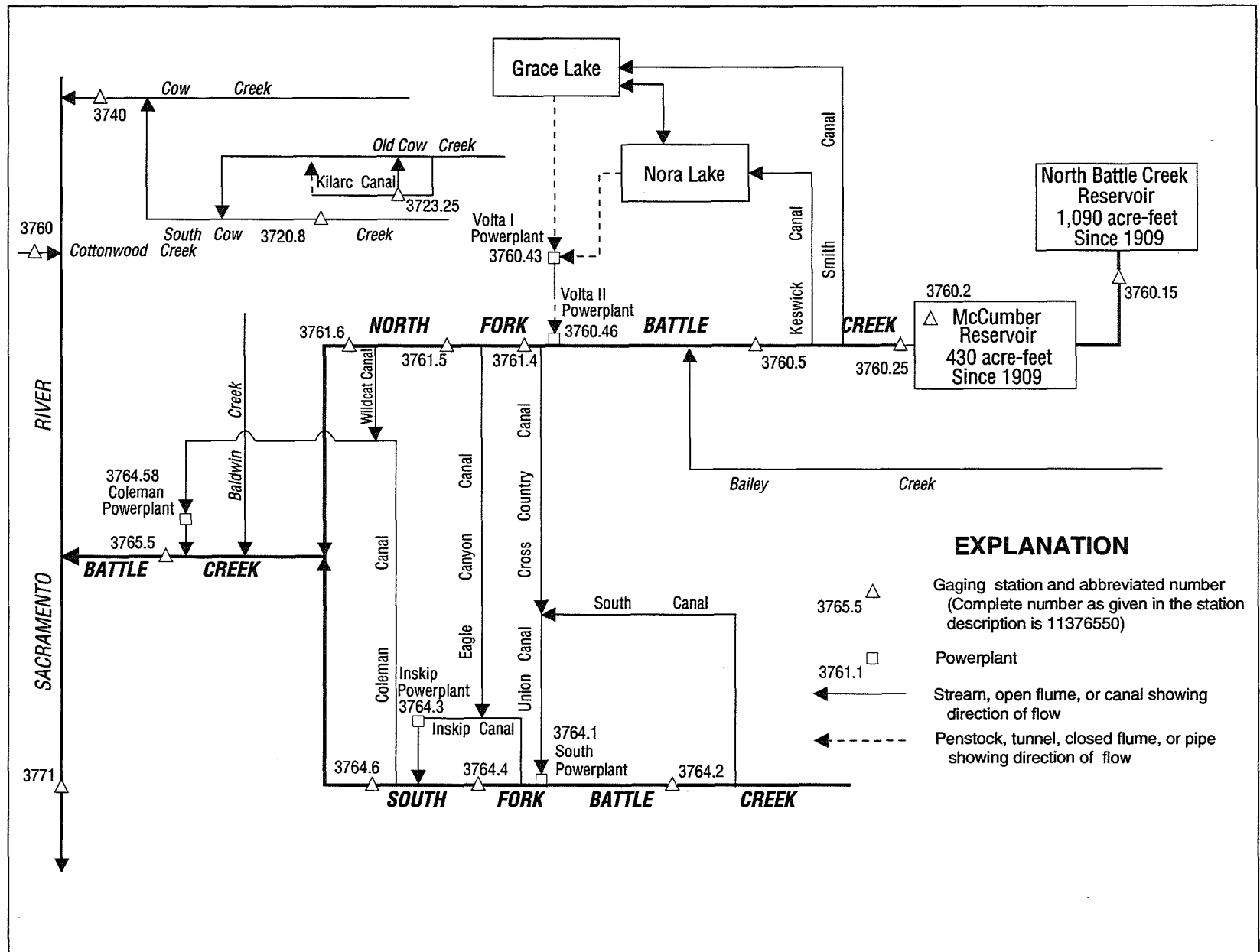


Figure 26. Diversions and storage in Battle Creek Basin.

## 11372080 SOUTH COW CREEK CANAL DIVERSION TO SOUTH COW CREEK, NEAR WHITMORE, CA

LOCATION.—Lat 40°35'35", long 121°58'53", in NE 1/4 NW 1/4 sec.33, T.32 N., R.1 W., Shasta County, Hydrologic Unit 18020118, on left bank 2.5 mi northeast of Cow Creek Powerplant and 4.3 mi southwest of Whitmore.

PERIOD OF RECORD.—October 1986 to current year (operated as a low-flow station only). Unpublished records for water years 1984–86 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Elevation of gage is 1,560 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirements are 2.0 ft<sup>3</sup>/s during dry years and 4.0 ft<sup>3</sup>/s during normal years. Flow is computed to 7.8 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	4.9	5.3	5.4	5.7	5.6	6.0	7.4	6.6	6.4	5.4	5.5
2	4.8	4.9	5.3	---	5.4	---	6.1	7.4	6.6	6.3	5.4	5.5
3	4.8	4.9	5.3	5.6	---	6.8	6.7	7.1	---	6.3	5.3	5.5
4	4.8	4.9	5.4	---	5.4	6.3	6.6	---	5.9	6.2	5.3	5.5
5	4.8	4.9	5.4	5.4	5.4	6.2	6.6	---	6.2	6.1	5.3	5.5
6	4.8	4.9	5.4	5.4	5.4	6.1	6.8	---	6.1	6.0	5.3	5.5
7	4.8	4.9	---	5.3	5.4	6.1	7.1	7.1	6.1	6.0	5.3	5.5
8	4.8	4.9	5.6	5.3	6.0	6.1	6.7	---	6.1	5.9	5.3	5.5
9	4.9	4.9	5.4	5.4	6.3	6.0	6.6	---	6.0	5.9	5.3	5.4
10	5.1	4.9	5.4	5.7	6.1	5.8	6.6	---	6.1	6.0	5.3	5.5
11	4.8	4.9	5.4	6.9	6.0	5.7	6.5	6.4	6.5	6.2	5.3	5.5
12	4.8	4.9	5.3	---	5.5	5.7	6.5	6.4	6.4	6.2	5.3	5.5
13	4.8	---	5.3	6.4	5.4	6.5	6.7	6.1	5.4	6.1	5.3	5.5
14	4.8	4.9	5.4	---	5.7	6.4	6.5	6.1	6.2	6.0	5.3	5.5
15	4.8	4.9	---	6.8	5.4	6.3	6.4	6.2	6.0	6.0	5.3	5.5
16	4.8	4.9	7.1	---	5.6	6.7	6.7	---	6.0	6.0	5.3	5.5
17	4.8	---	---	---	5.6	6.5	6.8	7.0	5.7	6.0	5.3	5.5
18	4.8	6.6	---	---	5.6	6.2	6.8	6.6	6.1	5.9	5.4	5.5
19	4.8	6.0	7.0	6.0	---	6.0	6.7	6.4	6.5	5.9	5.4	5.5
20	4.8	6.1	6.8	6.4	6.7	6.0	6.7	6.4	6.5	5.8	5.4	5.5
21	4.9	6.0	6.7	6.9	---	5.8	7.0	6.1	6.4	5.8	5.4	5.5
22	4.9	6.0	5.7	6.7	---	5.9	7.3	6.0	6.4	5.6	5.4	5.5
23	4.9	6.4	5.3	6.3	6.1	6.2	7.3	5.9	6.3	5.7	5.4	5.5
24	4.9	6.3	5.3	6.0	5.8	7.0	7.5	5.9	6.1	5.7	5.4	5.5
25	4.9	5.6	5.3	---	5.6	6.9	7.4	---	6.0	5.7	5.4	5.5
26	4.9	5.5	5.3	---	5.6	6.4	7.2	6.9	6.0	6.1	5.5	5.7
27	4.9	5.4	5.3	6.5	5.6	6.0	7.2	6.9	5.9	6.0	5.5	5.4
28	4.9	5.4	5.3	5.8	5.5	5.8	7.3	6.6	5.9	5.9	5.5	5.5
29	4.9	5.4	5.3	---	---	5.6	7.3	5.6	6.1	5.7	5.5	5.5
30	4.9	5.7	5.3	6.6	---	5.7	7.4	6.1	6.5	5.5	5.5	5.5
31	4.9	---	5.3	6.1	---	5.8	---	6.9	---	5.6	5.5	---
TOTAL	150.3	---	---	---	---	---	205.0	---	---	184.5	166.5	165.0
MEAN	4.85	---	---	---	---	---	6.83	---	---	5.95	5.37	5.50
MAX	5.1	---	---	---	---	---	7.5	---	---	6.4	5.5	5.7
MIN	4.8	---	---	---	---	---	6.0	---	---	5.5	5.3	5.4
AC-FT	298	---	---	---	---	---	407	---	---	366	330	327

NOTE: Canal out of service May 4–6 and all flow remained in the natural channel.

## 11372325 KILARC CANAL DIVERSION TO OLD COW CREEK, NEAR WHITMORE, CA

LOCATION.—Lat 40°41'13", long 121°48'27", in SW 1/4 NE 1/4 sec.25, T.32 N., R.1 E., Shasta County, Hydrologic Unit 18020118, on right bank of Kilarc Canal 3.6 mi upstream of Kilarc Powerplant and 6.9 mi northeast of Whitmore.

PERIOD OF RECORD.—October 1986 to current year (operated as a low-flow station only). Unpublished records for water years 1983–86 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and Cipolletti weir. Elevation of gage is 3,840 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirement is 2.0 ft<sup>3</sup>/s during dry or normal years. Flow is computed to 5.0 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	2.9	3.0	2.9	e4.0	e4.2	3.5	3.7	4.0	3.8	3.1	2.9
2	3.3	2.9	3.0	3.0	e4.0	e4.2	3.5	3.7	4.0	3.8	3.1	2.9
3	2.9	2.9	3.0	3.0	e4.3	e4.2	3.5	3.7	4.0	4.0	3.1	2.9
4	3.0	2.9	2.9	3.0	e4.3	e4.2	3.4	3.8	4.0	3.6	3.0	2.9
5	3.0	2.9	2.9	2.9	e4.2	e4.2	3.3	3.8	3.9	3.6	3.0	2.9
6	3.0	3.0	2.9	2.9	e4.3	e4.2	3.3	3.7	3.9	3.6	3.0	2.9
7	3.0	2.9	3.0	2.9	e4.3	e4.2	3.3	3.7	3.9	3.5	3.0	2.9
8	3.0	2.9	2.9	2.9	e4.3	e4.3	3.3	3.8	3.8	3.4	3.0	2.9
9	3.1	2.9	2.9	2.9	e4.1	e4.2	3.3	3.8	3.7	3.4	3.0	2.9
10	3.2	2.9	2.9	2.9	e4.1	e4.2	3.4	3.8	3.8	3.5	3.0	2.9
11	3.0	2.9	2.9	3.0	e4.2	e4.3	3.3	3.8	3.8	3.4	3.0	2.9
12	3.0	2.9	2.9	3.2	e4.2	e4.2	3.4	3.6	3.8	3.2	3.0	2.9
13	3.0	2.9	2.9	3.2	e4.3	e4.2	3.3	3.5	3.8	3.4	3.0	2.9
14	3.0	2.9	2.9	3.0	e4.3	e4.1	3.4	3.5	3.7	3.5	3.0	2.9
15	3.0	2.9	2.9	3.1	e4.2	4.1	3.6	3.6	3.7	3.3	3.0	2.9
16	3.0	2.9	2.9	3.1	e4.2	4.1	3.7	3.6	3.4	3.5	3.0	2.9
17	3.0	3.0	2.9	3.0	e4.2	4.1	3.8	3.6	3.5	3.7	3.0	2.9
18	3.0	3.0	2.9	3.0	e4.2	4.3	3.9	3.5	3.7	3.7	3.0	2.9
19	3.0	3.0	2.9	3.1	e4.2	3.8	3.9	3.5	3.7	3.7	3.0	2.9
20	---	3.0	2.9	3.7	e4.2	3.7	3.9	3.5	3.6	3.6	3.0	2.9
21	---	3.0	2.9	e3.6	e4.2	3.8	4.0	3.5	3.6	3.6	3.0	2.9
22	---	2.9	2.9	e3.5	e4.2	4.4	3.8	3.5	3.6	3.6	3.0	2.9
23	---	3.0	2.9	e3.7	e4.2	3.3	3.5	3.5	3.7	3.6	3.0	2.9
24	2.9	3.0	2.9	e3.7	e4.2	3.8	3.6	3.5	3.8	3.4	3.0	2.9
25	2.9	3.0	2.9	e3.7	e4.1	3.7	3.6	3.6	3.8	3.1	3.0	2.9
26	2.9	3.0	2.9	e3.9	e4.2	3.6	3.6	3.6	3.7	3.1	3.0	3.0
27	2.9	2.9	2.9	e3.9	e4.0	3.5	3.6	3.5	3.7	3.1	3.0	2.9
28	2.9	2.9	2.9	e4.0	e4.1	3.4	3.6	3.6	3.7	3.3	3.0	2.9
29	2.9	2.9	2.9	e3.9	---	3.3	3.7	3.5	3.6	3.3	2.9	2.9
30	2.9	2.9	2.9	e4.0	---	3.3	3.7	3.5	3.7	3.3	2.9	2.9
31	2.9	---	2.9	e4.0	---	3.2	---	3.7	---	3.2	2.9	---
TOTAL	---	88.0	90.3	102.6	117.3	122.3	106.7	112.2	112.6	107.8	93.0	87.1
MEAN	---	2.93	2.91	3.31	4.19	3.95	3.56	3.62	3.75	3.48	3.00	2.90
MAX	---	3.0	3.0	4.0	4.3	4.4	4.0	3.8	4.0	4.0	3.1	3.0
MIN	---	2.9	2.9	2.9	4.0	3.2	3.3	3.5	3.4	3.1	2.9	2.9
AC-FT	---	175	179	204	233	243	212	223	223	214	184	173

e Estimated.

NOTE: Canal out of service Oct. 20-23 and all flow remained in the natural channel.

## 11374000 COW CREEK NEAR MILLVILLE, CA

LOCATION.—Lat 40°30'19", long 122°13'56", in NE 1/4 NW 1/4 sec.32, T.31 N., R.3 W., Shasta County, Hydrologic Unit 18020101, on right bank 2.9 mi upstream from mouth, 4.2 mi southwest of Millville, and 4.3 mi downstream from Little Cow Creek.

DRAINAGE AREA.—425 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1949 to current year.

CHEMICAL DATA: Water years 1959–66.

WATER TEMPERATURE: Water years 1966–71, 1973–76, 1978–79.

SEDIMENT DATA: Water year 1978.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 385.7 ft above sea level. Prior to June 11, 1987, at datum 3.00 ft higher.

REMARKS.—Records good. Numerous small diversions upstream from station for irrigation. See schematic diagrams of upper Sacramento River and Battle Creek Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 48,700 ft<sup>3</sup>/s, Nov. 16, 1981, gage height, 24.22 ft, present datum; maximum gage height, 24.55 ft, Dec. 27, 1951, present datum; minimum daily, 0.02 ft<sup>3</sup>/s, July 29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of 1937 or 1940 reached a stage of 26.8 ft from floodmarks, present datum; probable backwater effect from high flows on the Sacramento River.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 13,900 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	1615	20,300	16.53	Feb. 14	1100	24,200	17.61
Jan. 26	2315	18,300	15.79	Mar. 22	0915	14,200	13.80
Feb. 3	0315	30,300	19.59				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	100	1000	232	7910	1430	1780	1070	2030	526	197	119
2	77	97	659	1410	6540	1580	1570	1530	1830	510	193	117
3	88	100	461	1910	18500	1910	1900	1390	3970	491	200	118
4	70	98	350	3680	5530	1410	2200	1340	2280	484	173	112
5	70	97	327	1430	6100	1290	2290	1310	1850	435	152	112
6	73	101	436	1370	8560	1260	2560	1240	1640	e420	162	122
7	81	117	3140	2120	6170	1230	3520	1150	1570	e410	166	124
8	99	121	2440	1400	4140	1410	2330	1340	1500	e400	154	128
9	435	119	1210	1180	2740	1240	2420	1960	1530	e390	154	119
10	449	118	682	2780	4040	1100	2230	1610	1420	e380	155	130
11	239	135	510	7620	4390	1030	1820	1380	2840	e365	146	124
12	156	154	434	11300	4230	1000	1610	1630	1890	e355	149	113
13	130	149	379	4710	4130	1840	2710	1510	1860	e345	146	115
14	117	227	1630	7790	13100	1380	2100	1640	1540	e330	127	111
15	111	211	2030	9100	5410	1210	1800	2220	1350	e320	129	109
16	108	320	962	8580	4140	1470	1470	6870	1220	e310	138	107
17	106	1060	1710	12000	4980	1320	1340	3200	1110	e300	139	104
18	104	387	1230	10300	3410	1180	1240	2260	1040	e290	147	106
19	102	1260	731	7060	8040	1080	1160	1870	1000	e275	145	108
20	100	789	576	4600	6100	1040	1060	2040	946	e260	149	104
21	96	347	589	2790	6680	1240	1110	1610	892	e250	153	113
22	96	270	483	2030	5420	9200	1070	1420	843	e240	136	112
23	94	442	399	1700	4740	4700	1080	1300	803	e230	135	114
24	97	1010	372	1790	4420	3750	1720	1250	755	235	134	116
25	94	2680	317	1760	2780	5620	1130	4230	746	226	135	117
26	95	2310	298	9660	2180	3250	961	3220	730	220	134	144
27	96	1350	278	7200	1840	2540	937	4390	660	219	133	153
28	97	734	254	3050	1590	2250	959	6280	615	203	126	156
29	98	637	251	5620	---	1890	981	5580	582	204	130	143
30	101	3090	267	4130	---	1640	1020	3350	551	202	126	137
31	100	---	259	3060	---	1930	---	2450	---	208	116	---
TOTAL	3830	18630	24664	143362	157810	64420	50078	73640	41593	10033	4579	3607
MEAN	124	621	796	4625	5636	2078	1669	2375	1386	324	148	120
MAX	449	3090	3140	12000	18500	9200	3520	6870	3970	526	200	156
MIN	51	97	251	232	1590	1000	937	1070	551	202	116	104
AC-FT	7600	36950	48920	284400	313000	127800	99330	146100	82500	19900	9080	7150

e Estimated.



## 11374000 COW CREEK NEAR MILLVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	126	475	1140	1779	1655	1384	865	561	237	64.9	38.4	48.3
MAX	1057	2539	3929	5593	5636	5275	3012	2375	1386	324	148	130
(WY)	1963	1982	1984	1970	1998	1983	1963	1998	1998	1998	1998	1983
MIN	19.4	58.3	76.1	80.7	103	118	63.0	54.1	13.5	.63	.74	3.19
(WY)	1992	1992	1991	1991	1977	1977	1977	1992	1992	1977	1977	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1950 - 1998			
ANNUAL TOTAL	226756				596246							
ANNUAL MEAN	621				1634				694			
HIGHEST ANNUAL MEAN									1634			
LOWEST ANNUAL MEAN									66.8			
HIGHEST DAILY MEAN	15900				18500				32500			
LOWEST DAILY MEAN	25				51				.02			
ANNUAL SEVEN-DAY MINIMUM	28				73				.09			
INSTANTANEOUS PEAK FLOW					30300				48700			
INSTANTANEOUS PEAK STAGE					19.59				24.55			
ANNUAL RUNOFF (AC-FT)	449800				1183000				502700			
10 PERCENT EXCEEDS	1200				4390				1640			
50 PERCENT EXCEEDS	213				961				190			
90 PERCENT EXCEEDS	42				110				25			

11374305 MIDDLE FORK COTTONWOOD CREEK BELOW DIVERSION TO ARBUCKLE MOUNTAIN POWERPLANT, NEAR PLATINA, CA

LOCATION.—Lat 40°24'35", long 122°52'52", in NW 1/4 SE 1/4 sec.4, T.29 N., R.9 W., Shasta County, Hydrologic Unit 18020113, on left bank 1.2 mi downstream from Cow Gulch, 1.0 mi upstream from Knob Gulch, and 2.4 mi northeast of the town of Platina.

DRAINAGE AREA.—46.0 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1997 to September 1998 (low-flow records only, collected only seasonally during period of upstream diversion for power generation).

GAGE.—Water-stage recorder and V-notched weir. Elevation of gage is 2,050 ft above sea level, from topographic map.

REMARKS.—No records computed above 32 ft<sup>3</sup>/s. Record is only collected during the part of the year when flow is generally high enough to allow for upstream diversion of water to Arbuckle Mountain Powerplant (station 11374300). This year, record was collected Nov. 23, 1997, to July 14, 1998. Flow was above 32 ft<sup>3</sup>/s for many days during this period. During times of powerplant operation, the minimum release requirement is 5.0 ft<sup>3</sup>/s. See schematic diagram of upper Sacramento River Basin.

COOPERATION.—Records were collected by Arbuckle Mountain Hydro, LLC, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission Project.

# DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	7.0	12	---	---	---	30	---	---	---	---
2	---	---	7.0	19	---	---	---	29	---	---	---	---
3	---	---	7.0	7.0	---	---	---	29	---	25	---	---
4	---	---	7.0	7.0	---	---	---	---	---	---	---	---
5	---	---	15	7.0	---	---	---	---	---	32	---	---
6	---	---	17	16	---	---	---	30	---	31	---	---
7	---	---	14	31	---	---	---	28	---	30	---	---
8	---	---	10	11	---	---	---	28	---	29	---	---
9	---	---	7.0	8.0	---	---	---	27	---	17	---	---
10	---	---	7.0	8.0	---	---	---	25	---	11	---	---
11	---	---	7.0	---	---	---	---	25	---	11	---	---
12	---	---	7.0	---	---	---	---	24	---	11	---	---
13	---	---	7.0	---	---	---	---	24	---	11	---	---
14	---	---	7.0	---	---	---	---	24	---	10	---	---
15	---	---	7.0	---	---	---	---	27	24	---	---	---
16	---	---	7.0	---	---	---	---	---	24	---	---	---
17	---	---	7.0	---	---	---	---	---	24	---	---	---
18	---	---	7.0	---	---	---	---	---	24	---	---	---
19	---	---	7.0	---	---	---	---	28	24	---	---	---
20	---	---	7.0	---	---	---	---	24	---	---	---	---
21	---	---	7.0	---	---	---	---	24	---	---	---	---
22	---	---	7.0	---	---	---	---	25	---	---	---	---
23	---	13	7.0	---	---	---	---	25	---	---	---	---
24	---	10	7.0	---	---	---	---	25	---	---	---	---
25	---	19	18	---	---	---	---	24	---	---	---	---
26	---	28	17	---	---	---	---	25	---	---	---	---
27	---	---	15	---	---	---	---	26	28	---	---	---
28	---	11	14	---	---	---	32	---	10	---	---	---
29	---	7.0	13	---	---	---	29	---	10	---	---	---
30	---	7.0	13	---	---	---	28	---	27	---	---	---
31	---	---	12	---	---	---	---	---	---	---	---	---
TOTAL	---	---	298.0	---	---	---	---	---	---	---	---	---
MEAN	---	---	9.61	---	---	---	---	---	---	---	---	---
MAX	---	---	18	---	---	---	---	---	---	---	---	---
MIN	---	---	7.0	---	---	---	---	---	---	---	---	---
AC-FT	---	---	591	---	---	---	---	---	---	---	---	---
a	---	250	1080	2540	2800	2930	2950	2670	1340	212	---	---

a Discharge, in acre-feet, for Arbuckle Mountain Powerplant (station 11374300), provided by Arbuckle Mountain Hydro, LLC.

## 11376000 COTTONWOOD CREEK NEAR COTTONWOOD, CA

LOCATION.—Lat 40°23'14", long 122°14'15", in NE 1/4 NE 1/4 sec.7, T.29 N., R.3 W., Shasta County, Hydrologic Unit 18020102, on left bank 2.2 mi east of Cottonwood and 2.5 mi upstream from mouth.

DRAINAGE AREA.—927 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1940 to current year.

CHEMICAL DATA: Water years 1982–85.

WATER TEMPERATURE: Water years 1963–67, 1977–85.

SEDIMENT DATA: Water years 1957–67, 1977–85.

REVISED RECORDS.—WSP 1345: 1943, 1944(M), 1946–47, 1949(M), 1951–52. WSP 1931: Drainage area.

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 363.80 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to July 26, 1963, on right bank at datum 3.59 ft higher. July 26, 1963, to Sept. 13, 1972, at site 250 ft downstream on right bank at present datum. Sept. 21, 1967, to Jan. 14, 1968, supplementary gage at a site 1,450 ft downstream on right bank at datum 2.35 ft higher.

REMARKS.—Records fair. Small diversions for irrigation upstream from station. At times during irrigation season, Cottonwood Creek receives water from the Sacramento River by way of Anderson–Cottonwood Irrigation District Canal. See schematic diagrams of upper Sacramento River and Battle Creek Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 86,000 ft<sup>3</sup>/s, Mar. 1, 1983, gage height, 21.59 ft from rating curve extended above 34,000 ft<sup>3</sup>/s on basis of runoff comparisons with upstream stations then in use; minimum, 15 ft<sup>3</sup>/s several days during September 1945.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 11,000 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	2015	19,300	12.43	Feb. 21	1400	32,700	15.39
Jan. 26	2015	18,900	12.37	Mar. 22	1830	21,700	13.02
Feb. 3	0630	46,500	17.43	May 28	2045	14,400	11.34

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	71	945	283	8290	3390	2800	2160	e5800	836	264	131
2	61	71	640	316	9340	3270	e2230	2580	e4800	814	258	115
3	61	71	504	513	32900	3270	2590	2480	4150	808	245	109
4	66	68	491	804	13400	3130	2920	2510	3380	778	240	103
5	61	67	493	802	13500	3020	2710	2520	2930	755	220	103
6	65	67	900	683	27300	2920	2880	2220	2600	721	215	118
7	72	68	1620	1270	26800	2810	3000	2120	2730	e690	203	115
8	84	73	2350	1570	18300	2880	2220	2020	2750	e650	196	119
9	180	79	1120	1330	10500	2750	2150	1960	2810	e625	186	145
10	172	77	771	1550	9750	2700	2300	1820	2360	e600	179	155
11	135	77	611	2200	9360	2650	2130	1690	2420	e570	178	143
12	102	78	515	e8640	8940	2680	1980	2190	2180	e545	173	137
13	87	90	445	7370	9510	5360	1970	1790	2040	e520	167	129
14	81	117	1450	5240	10600	3870	1950	1680	1890	e500	160	118
15	77	138	1910	e1030	8480	3360	1930	1620	1740	e475	163	112
16	75	315	907	8970	9520	3350	1900	1660	1640	e455	162	106
17	73	392	907	12300	11000	3300	1880	1570	1520	e435	163	106
18	71	339	1090	11200	7070	3140	1850	1430	1430	e420	172	107
19	69	481	833	9830	14200	2990	1840	1360	1400	e405	176	100
20	68	523	681	6280	11900	2920	1840	1380	1340	e385	165	109
21	67	350	610	3800	19100	2920	1840	1300	1280	e370	158	121
22	69	274	523	3130	11800	15700	1870	1210	1210	e355	154	125
23	67	256	460	2740	15400	14800	1910	1170	1170	333	149	133
24	65	371	420	2690	10700	11300	2020	1180	1120	317	147	130
25	63	400	383	2500	6900	8290	1990	1400	1080	309	147	124
26	63	2020	353	9700	5340	4920	1870	1250	1040	305	152	124
27	65	2950	325	9760	4350	3520	1830	1370	971	288	149	122
28	65	1010	306	4910	3720	2940	1830	6330	928	283	143	129
29	67	683	295	6640	---	2440	2210	e7400	894	273	148	145
30	68	1530	287	4700	---	2090	2140	e7000	865	263	144	128
31	71	---	286	4100	---	2800	---	e6800	---	255	140	---
TOTAL	2445	13106	23431	136851	347970	135480	64580	75170	62468	15338	5516	3661
MEAN	78.9	437	756	4415	12430	4370	2153	2425	2082	495	178	122
MAX	180	2950	2350	12300	32900	15700	3000	7400	5800	836	264	155
MIN	55	67	286	283	3720	2090	1830	1170	865	255	140	100
AC-FT	4850	26000	46480	271400	690200	268700	128100	149100	123900	30420	10940	7260

e Estimated.

## 11376000 COTTONWOOD CREEK NEAR COTTONWOOD, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	129	348	1221	2207	2452	1944	1175	650	327	120	71.1	77.6
MAX	805	1829	5428	9193	12430	10770	4270	2447	2082	495	178	164
(WY)	1958	1985	1984	1995	1998	1983	1941	1983	1998	1998	1998	1983
MIN	50.6	52.2	49.8	60.3	76.3	146	136	165	74.5	36.8	26.4	30.8
(WY)	1995	1991	1991	1991	1977	1977	1977	1977	1977	1994	1945	1945

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1941 - 1998			
ANNUAL TOTAL	299948				886016							
ANNUAL MEAN	822				2427				886			
HIGHEST ANNUAL MEAN									2714			
LOWEST ANNUAL MEAN									94.4			
HIGHEST DAILY MEAN	32300				32900				54300			
LOWEST DAILY MEAN	44				55				15			
ANNUAL SEVEN-DAY MINIMUM	48				63				16			
INSTANTANEOUS PEAK FLOW					46500				86000			
INSTANTANEOUS PEAK STAGE					17.43				21.59			
ANNUAL RUNOFF (AC-FT)	594900				1757000				642100			
10 PERCENT EXCEEDS	1840				7190				2080			
50 PERCENT EXCEEDS	288				945				226			
90 PERCENT EXCEEDS	61				80				57			

## 11376015 NORTH FORK BATTLE CREEK BELOW NORTH BATTLE CREEK DAM, NEAR MANZANITA LAKE, CA

LOCATION.—Lat 40°36'10", long 121°39'17", in SE 1/4 SE 1/4 sec.20, T.32 N., R.3 E., Shasta County, Hydrologic Unit 18020118, Lassen National Forest, on left bank 300 ft downstream from North Battle Creek Dam and 6.7 mi northwest of Manzanita Lake.

DRAINAGE AREA.—6.40 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978–87 available in files of the U.S. Geological Survey. Fragmentary records for water years 1920–77 in files of the Pacific Gas & Electric Co.

GAGE.—Water-stage recorder and a compound weir consisting of a 5-ft rectangular and V-notch weir. Elevation of gage is 5,560 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirement is 0.30 ft<sup>3</sup>/s Oct. 1–31 and Apr. 1 to Sept. 30. No license requirement Nov. 1 to Mar. 31, records not computed. Each fall, North Battle Creek Reservoir is drafted and flows may exceed the rated limits of the weirs; flow is computed to 60 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	---	---	---	---	---	9.6	25	29	4.9	3.3	1.5
2	10	---	---	---	---	---	9.5	32	35	4.9	2.2	1.5
3	10	---	---	---	---	---	10	31	39	5.1	1.3	1.4
4	10	---	---	---	---	---	8.6	29	38	5.5	1.2	1.4
5	10	---	---	---	---	---	8.0	28	39	8.9	1.4	1.4
6	10	---	---	---	---	---	8.6	29	42	12	1.6	1.4
7	10	---	---	---	---	---	7.5	28	43	13	1.5	1.3
8	10	---	---	---	---	---	6.6	36	43	13	1.5	1.2
9	10	---	---	---	---	---	6.8	57	43	12	1.4	1.3
10	10	---	---	---	---	---	6.6	45	49	12	1.4	1.3
11	9.9	---	---	---	---	---	6.1	37	52	12	1.4	1.2
12	9.9	---	---	---	---	---	6.1	33	51	9.8	1.3	1.1
13	9.8	---	---	---	---	---	7.2	29	51	6.1	1.3	1.1
14	11	---	---	---	---	---	6.1	33	50	4.6	1.6	1.1
15	12	---	---	---	---	---	5.3	35	50	4.6	1.6	2.0
16	12	---	---	---	---	---	4.9	36	49	4.6	1.5	2.6
17	12	---	---	---	---	---	5.0	28	46	4.6	1.5	2.5
18	12	---	---	---	---	---	5.2	25	45	4.6	1.5	2.4
19	12	---	---	---	---	---	5.7	24	44	4.0	1.4	2.4
20	12	---	---	---	---	---	6.5	25	42	3.7	1.3	2.5
21	11	---	---	---	---	---	7.6	22	39	4.3	1.4	2.6
22	11	---	---	---	---	---	9.2	21	37	4.4	1.4	2.3
23	11	---	---	---	---	---	11	22	17	4.2	1.2	2.3
24	11	---	---	---	---	---	17	24	5.0	4.1	1.1	2.3
25	11	---	---	---	---	---	15	45	11	4.1	1.3	1.9
26	11	---	---	---	---	---	13	39	14	4.1	1.3	1.9
27	11	---	---	---	---	---	14	30	14	3.6	1.2	1.9
28	9.8	---	---	---	---	---	17	28	15	3.3	1.1	1.9
29	9.0	---	---	---	---	---	20	25	15	3.2	1.1	1.8
30	6.0	---	---	---	---	---	23	24	8.7	3.2	1.4	1.7
31	3.9	---	---	---	---	---	---	26	---	3.2	1.6	---
TOTAL	318.3	---	---	---	---	---	286.7	951	1055.7	191.6	45.3	53.2
MEAN	10.3	---	---	---	---	---	9.56	30.7	35.2	6.18	1.46	1.77
MAX	12	---	---	---	---	---	23	57	52	13	3.3	2.6
MIN	3.9	---	---	---	---	---	4.9	21	5.0	3.2	1.1	1.1
AC-FT	631	---	---	---	---	---	569	1890	2090	380	90	106

## 11376025 NORTH FORK BATTLE CREEK BELOW MCCUMBER DAM, NEAR MANZANITA LAKE, CA

LOCATION.—Lat 40°32'15", long 121°43'53", in SW 1/4 SE 1/4 sec.15, T.31 N., R.2 E., Shasta County, Hydrologic Unit 18020118, on right bank 300 ft downstream from McCumber Dam, 3.0 mi northwest of Viola, and 9.0 mi west of Manzanita Lake.

DRAINAGE AREA.—27.6 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978–87 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and V-notch weir. Elevation of gage is 4,080 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. Prior to water year 1995 flow computed to 211 ft<sup>3</sup>/s. The minimum release requirement is 0.30 ft<sup>3</sup>/s at all times; flow is computed to 800 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	34	31	29	99	48	102	125	183	73	57	51
2	27	34	32	32	108	56	97	164	199	73	56	50
3	30	27	27	40	251	67	103	140	249	73	54	50
4	32	21	24	45	156	74	100	136	207	71	52	50
5	32	21	24	48	124	76	95	132	177	70	52	51
6	34	30	24	50	134	76	100	140	184	73	52	53
7	45	35	27	47	131	75	96	127	203	74	52	53
8	55	35	33	38	119	75	92	166	177	73	53	53
9	58	34	36	34	101	73	92	316	156	71	52	53
10	61	39	36	39	94	68	92	262	219	70	53	53
11	65	41	35	54	93	66	90	206	264	69	52	52
12	49	40	34	83	91	66	89	170	252	67	52	52
13	35	33	29	91	97	67	91	143	234	70	50	51
14	35	29	28	91	106	70	89	156	195	73	51	51
15	35	29	32	91	96	71	87	173	166	71	51	51
16	35	29	32	102	90	73	85	247	154	69	51	52
17	35	29	31	338	90	81	85	197	140	68	51	52
18	35	34	31	305	89	85	85	156	136	67	51	51
19	35	36	31	270	89	86	85	142	133	65	51	50
20	35	36	34	169	88	83	82	152	126	62	52	51
21	35	35	36	120	88	89	83	136	121	61	51	51
22	35	33	35	102	87	287	96	128	116	63	51	52
23	35	29	34	96	86	290	104	127	107	61	51	53
24	35	25	30	95	84	285	116	135	86	62	50	54
25	35	36	27	94	83	271	108	271	87	59	51	53
26	35	42	25	109	81	188	97	260	91	59	51	59
27	35	41	22	144	80	146	100	235	89	60	52	56
28	35	30	23	116	59	132	108	250	87	58	51	59
29	35	21	25	132	---	118	114	234	86	56	50	58
30	35	25	26	121	---	108	120	178	81	57	50	59
31	35	---	26	103	---	108	---	164	---	57	51	---
TOTAL	1180	963	920	3228	2894	3458	2883	5568	4705	2055	1604	1584
MEAN	38.1	32.1	29.7	104	103	112	96.1	180	157	66.3	51.7	52.8
MAX	65	42	36	338	251	290	120	316	264	74	57	59
MIN	27	21	22	29	59	48	82	125	81	56	50	50
AC-FT	2340	1910	1820	6400	5740	6860	5720	11040	9330	4080	3180	3140
a	229	110	96	436	143	436	445	445	428	436	436	420

a Contents, in acre-feet, at end of month for McCumber Reservoir (station 11376020), provided by Pacific Gas & Electric.

## POWERPLANTS IN BATTLE CREEK BASIN

- 11376043 VOLTA NO. 1 POWERPLANT NEAR MANTON, CA, in NW 1/4 NE 1/4 sec.16, T.30 N., R.1 E., Shasta County, Hydrologic Unit 18020118, 1.7 mi north of Manton. Powerplant consists of one unit with a total of 8,550 KW normal operating capacity. See schematic diagram of Battle Creek Basin.
- 11376046 VOLTA NO. 2 POWERPLANT NEAR MANTON, CA, in NE 1/4 SW 1/4 sec.16, T.30 N., R.1 E., Shasta County, Hydrologic Unit 18020118, 1.2 mi northeast of Manton. Powerplant consists of one unit with a total of 956 KW normal operating capacity. See schematic diagram of Battle Creek Basin.
- 11376410 SOUTH POWERPLANT NEAR MANTON, CA, in NE 1/4 SE 1/4 sec.5, T.29 N., R.1 E., Tehama County, Hydrologic Unit 18020118, 2.7 mi south of Manton. Powerplant consists of one unit with a total of 6,750 KW normal operating capacity. See schematic diagram of Battle Creek Basin.
- 11376430 INSKIP POWERPLANT NEAR MANTON, CA, in NE 1/4 NW 1/4 sec.3, T.29 N., R.1 W., Tehama County, Hydrologic Unit 18020118, 5.5 mi southwest of Manton. Powerplant consists of one unit with a total of 7,650 KW normal operating capacity. See schematic diagram of Battle Creek Basin.
- 11376458 COLEMAN POWERPLANT NEAR COTTONWOOD, CA, in SW 1/4 SW 1/4 sec.32, T.30 N., R.2 W., Shasta County, Hydrologic Unit 18020006, 8.5 mi east of Cottonwood. Powerplant consists of one unit with a total of 12,150 KW normal operating capacity. See schematic diagram of Battle Creek Basin.

## MONTHLY DISCHARGE, IN ACRE-FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Volta No. 1	Volta No. 2	South	Inskip	Coleman
Oct. ....	4,850	6,020	10,690	13,340	12,540
Nov. ....	4,560	5,580	11,960	13,570	14,810
Dec. ....	4,820	5,890	15,380	14,860	17,020
Jan. ....	6,610	7,200	12,940	15,790	19,350
Feb. ....	6,310	1,090	11,150	11,800	15,750
Mar. ....	6,930	4,970	3,590	16,740	19,980
Apr. ....	6,210	6,940	9,690	15,440	19,340
May ....	7,270	7,560	13,770	17,180	19,800
June ....	7,010	7,200	13,460	17,170	12,660
July ....	6,870	7,470	13,710	17,590	19,210
Aug. ....	6,440	7,500	13,710	17,440	18,780
Sept. ....	6,370	7,260	13,220	16,450	17,560

Note.—Records were provided by Pacific Gas & Electric Co., in connection with a Federal Energy Regulatory Commission project.

Unpublished records for water years 1979–86 available in files of U.S. Geological Survey. Fragmentary records prior to water year 1979 available in files of Pacific Gas & Electric.

## 11376050 NORTH FORK BATTLE CREEK BELOW DIVERSION TO KESWICK DITCH, NEAR MANTON, CA

LOCATION.—Lat 40°30'00", long 121°48'29", in NW 1/4 NE 1/4 sec.36, T.31 N., R.1 E., Shasta County, Hydrologic Unit 18020118, on right bank 4.2 mi east of Shingletown and 5.5 mi northeast of Manton.

PERIOD OF RECORD.—October 1986 to current year (operated as a low-flow station only). Unpublished records for water years 1978–86 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and Parshall flume. Elevation of gage is 3,600 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirement is 3.0 ft<sup>3</sup>/s at all times; flow is computed to 5.6 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	3.5	3.6	3.6	4.6	4.8	4.0	3.6	3.8	3.8	3.8	3.9
2	3.5	3.5	3.7	4.0	4.5	4.7	4.3	3.5	3.8	3.8	3.9	3.8
3	3.5	3.5	3.6	4.1	4.2	3.8	4.2	3.6	3.8	3.8	3.9	3.8
4	3.5	3.5	3.6	4.3	4.2	3.6	4.2	3.7	3.8	3.8	3.9	3.8
5	3.5	3.6	3.6	4.2	4.4	3.5	4.3	3.7	3.8	3.8	3.9	3.8
6	3.5	3.7	3.6	4.3	4.4	3.5	4.4	3.6	3.8	3.8	3.9	3.8
7	3.3	3.8	3.7	4.2	4.4	3.7	4.3	3.6	3.8	3.8	3.9	3.8
8	3.4	3.8	3.7	4.1	4.3	3.7	4.2	3.6	3.8	3.8	3.9	3.8
9	3.5	3.8	3.7	4.0	4.3	3.7	4.2	3.5	3.8	3.8	3.9	3.8
10	3.7	3.8	3.6	4.2	4.5	3.8	4.2	3.7	3.8	3.8	4.0	3.8
11	3.9	3.9	3.6	4.2	4.8	4.5	4.2	3.9	3.8	3.8	4.0	3.8
12	3.8	3.9	3.6	3.3	4.8	4.8	4.3	3.9	3.8	3.8	4.0	3.8
13	3.5	3.8	3.6	3.5	4.8	4.8	4.2	3.9	3.8	3.8	4.0	3.8
14	3.5	3.7	3.6	3.6	4.8	4.6	4.1	3.9	3.8	3.9	4.0	3.8
15	3.5	3.7	3.6	3.5	4.8	4.1	4.1	3.9	3.8	3.8	3.9	3.8
16	3.5	3.7	3.6	3.6	4.7	4.1	4.1	3.7	3.8	3.8	3.9	3.8
17	3.5	3.7	3.6	3.5	4.7	4.1	4.0	3.8	3.8	3.8	4.0	3.8
18	3.5	3.7	3.6	4.2	4.6	4.0	4.0	3.8	3.8	3.7	3.9	3.7
19	3.5	3.7	3.5	4.4	4.7	4.0	4.0	3.8	3.8	3.8	3.9	3.7
20	3.4	3.7	3.5	4.4	4.7	4.0	---	3.8	3.8	3.8	3.9	3.7
21	3.4	3.7	3.6	4.5	4.7	3.8	3.0	3.8	3.8	3.8	3.9	3.7
22	3.5	3.7	3.5	4.6	4.7	3.6	3.9	3.8	3.8	3.8	3.9	3.7
23	3.5	3.6	3.5	4.6	4.6	3.6	3.6	3.8	3.8	3.8	3.9	3.7
24	3.4	3.7	3.4	4.4	4.6	3.7	3.6	3.9	3.8	3.8	4.0	3.7
25	3.4	3.7	3.5	4.7	4.8	3.6	3.6	3.9	3.8	3.9	4.0	3.8
26	3.4	3.9	3.6	4.9	4.9	3.5	3.5	3.8	3.8	3.9	3.9	3.7
27	3.4	3.9	3.5	4.8	4.9	3.4	3.5	3.8	3.8	3.9	4.0	3.7
28	3.4	3.7	3.5	4.8	4.8	3.2	3.5	3.8	3.8	3.8	3.9	3.7
29	3.4	3.6	3.6	4.7	---	3.6	3.6	3.8	3.8	3.9	3.6	3.7
30	3.5	3.6	3.6	4.5	---	3.7	3.6	3.8	3.8	3.8	3.6	3.7
31	3.5	---	3.6	4.6	---	3.7	---	3.8	---	3.8	3.8	---
TOTAL	108.2	111.1	111.1	130.3	129.2	121.2	---	116.5	114.0	118.2	121.0	112.9
MEAN	3.49	3.70	3.58	4.20	4.61	3.91	---	3.76	3.80	3.81	3.90	3.76
MAX	3.9	3.9	3.7	4.9	4.9	4.8	---	3.9	3.8	3.9	4.0	3.9
MIN	3.3	3.5	3.4	3.3	4.2	3.2	---	3.5	3.8	3.7	3.6	3.7
AC-FT	215	220	220	258	256	240	---	231	226	234	240	224

NOTE: Canal was out of service Apr. 20 and all flow remained in the natural channel.



[illegible]

## 11376150 NORTH FORK BATTLE CREEK BELOW DIVERSION TO EAGLE CANYON CANAL, NEAR MANTON, CA

LOCATION.—Lat 40°25'26", long 121°55'09", in NW 1/4 SE 1/4 sec.25, T.30 N., R.1 W., Tehama County, Hydrologic Unit 18020118, on left bank at diversion dam to Eagle Canyon Canal and 2.8 mi southwest of Manton.

DRAINAGE AREA.—186 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978–87 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.—Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. Prior to water year 1996 flow computed to 7.2 ft<sup>3</sup>/s. The minimum release requirement is 3.0 ft<sup>3</sup>/s at all times; flow is computed to 50 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e30	e35	e31	e34	---	---	---	---	---	---	---	---
2	e38	e35	e26	---	---	---	---	---	---	---	---	---
3	e31	e33	e21	e40	---	---	---	---	---	---	---	---
4	e32	e31	e31	---	---	---	---	---	---	---	---	---
5	e32	e33	e31	---	---	---	---	---	---	---	---	---
6	e31	e33	e33	---	---	---	---	---	---	---	---	---
7	e32	e35	---	---	---	---	---	---	---	---	---	---
8	e33	e34	e50	e43	---	---	---	---	---	---	---	---
9	---	e34	e24	e36	---	---	---	---	---	---	---	---
10	e46	e34	e22	---	---	---	---	---	---	---	---	---
11	e39	e35	e34	---	---	---	---	---	---	---	---	---
12	e35	e34	e34	---	---	---	---	---	---	---	---	---
13	e33	e30	e34	---	---	---	---	---	---	---	---	---
14	e32	e27	e45	---	---	---	---	---	---	---	---	---
15	e32	e27	---	---	---	---	---	---	---	---	---	---
16	e32	e26	e39	---	---	---	---	---	---	---	---	---
17	e32	e28	---	---	---	---	---	---	---	---	---	---
18	e33	e29	e44	---	---	---	---	---	---	---	---	---
19	e33	e31	e32	---	---	---	---	---	---	---	---	---
20	e33	e31	e34	---	---	---	---	---	---	---	---	---
21	e33	e33	e34	---	---	---	---	---	---	---	---	---
22	e33	e33	e33	---	---	---	---	---	---	---	---	---
23	e32	e35	e32	---	---	---	---	---	---	---	---	---
24	e33	e40	e32	---	---	---	---	---	---	---	---	---
25	e36	e37	e32	---	---	---	---	---	---	---	---	---
26	e33	e34	e33	---	---	---	---	---	---	---	---	---
27	e35	e31	e33	---	---	---	---	---	---	---	---	---
28	e33	e30	e33	---	---	---	---	---	---	---	---	---
29	e35	e31	e33	---	---	---	---	---	---	---	---	---
30	e35	e39	e34	---	---	---	---	---	---	---	---	---
31	e35	---	e34	---	---	---	---	---	---	---	---	---
TOTAL	---	978	---	---	---	---	---	---	---	---	---	---
MEAN	---	32.6	---	---	---	---	---	---	---	---	---	---
MAX	---	40	---	---	---	---	---	---	---	---	---	---
MIN	---	26	---	---	---	---	---	---	---	---	---	---
AC-FT	---	1940	---	---	---	---	---	---	---	---	---	---

e Estimated.

## 11376160 NORTH FORK BATTLE CREEK BELOW DIVERSION TO WILDCAT CANAL, NEAR MANTON, CA

LOCATION.—Lat 40°25'14", long 121°57'36", in SE 1/4 SW 1/4 sec.27, T.30 N., R.1 W., Tehama County, Hydrologic Unit 18020118, on left bank at diversion dam to Wildcat Canal and 4.9 mi west of Manton.

DRAINAGE AREA.—189 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978–87 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.—Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 1,080 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirement is 3.0 ft<sup>3</sup>/s at all times; flow is computed to 60 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e33	e38	34	37	---	---	---	---	---	---	---	---
2	e41	e38	29	54	---	---	---	---	---	---	---	---
3	e34	e36	24	43	---	---	---	---	---	---	---	---
4	e35	e34	34	---	---	---	---	---	---	---	---	---
5	e35	36	34	---	---	---	---	---	---	---	---	---
6	e34	36	36	58	---	---	---	---	---	---	---	---
7	e35	38	---	59	---	---	---	---	---	---	---	---
8	e36	37	53	46	---	---	---	---	---	---	---	---
9	---	37	27	39	---	---	---	---	---	---	---	---
10	e49	37	25	---	---	---	---	---	---	---	---	---
11	e42	38	37	---	---	---	---	---	---	---	---	---
12	e38	37	37	---	---	---	---	---	---	---	---	---
13	e36	33	37	---	---	---	---	---	---	---	---	---
14	e35	30	48	---	---	---	---	---	---	---	---	---
15	e35	30	---	---	---	---	---	---	---	---	---	---
16	e35	29	42	---	---	---	---	---	---	---	---	---
17	e35	31	56	---	---	---	---	---	---	---	---	---
18	e36	32	47	---	---	---	---	---	---	---	---	---
19	e36	34	35	---	---	---	---	---	---	---	---	---
20	e36	34	37	---	---	---	---	---	---	---	---	---
21	e36	36	37	---	---	---	---	---	---	---	---	---
22	e36	36	36	---	---	---	---	---	---	---	---	---
23	e35	38	35	---	---	---	---	---	---	---	---	---
24	e36	43	35	---	---	---	---	---	---	---	---	---
25	e39	40	35	---	---	---	---	---	---	---	---	---
26	e36	37	36	---	---	---	---	---	---	---	---	---
27	e38	34	36	---	---	---	---	---	---	---	---	---
28	e36	33	36	---	---	---	---	---	---	---	---	---
29	e38	34	36	---	---	---	---	---	---	---	---	---
30	e38	42	37	---	---	---	---	---	---	---	---	---
31	e38	---	37	---	---	---	---	---	---	---	---	---
TOTAL	---	1068	---	---	---	---	---	---	---	---	---	---
MEAN	---	35.6	---	---	---	---	---	---	---	---	---	---
MAX	---	43	---	---	---	---	---	---	---	---	---	---
MIN	---	29	---	---	---	---	---	---	---	---	---	---
AC-FT	---	2120	---	---	---	---	---	---	---	---	---	---

e Estimated.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

[illegible]

## 11376440 SOUTH FORK BATTLE CREEK BELOW DIVERSION TO INSKIP CANAL, NEAR MANTON, CA

LOCATION.—Lat 40°23'43", long 121°52'57", in NW 1/4 SE 1/4 sec.5, T.29 N., R.1 E., Tehama County, Hydrologic Unit 18020118, on left bank at diversion dam to Inskip Canal and 2.8 mi south of Manton.

DRAINAGE AREA.—88.3 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978–87 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.—Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 1,440 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. The minimum release requirement is 5.0 ft<sup>3</sup>/s at all times. Prior to Feb. 6, 1998, flow computed to 12 ft<sup>3</sup>/s; flow computed to 60 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e10	11	---	---	---	---	---	---	---	---	---	42
2	e11	11	---	---	---	---	---	---	---	---	---	31
3	e12	11	---	---	---	---	---	---	---	---	---	23
4	e10	11	---	---	---	---	---	---	---	---	---	23
5	e10	11	---	---	---	---	---	---	---	---	---	23
6	e10	11	---	---	---	---	---	---	---	---	---	24
7	---	---	---	---	---	---	---	---	---	---	---	25
8	e12	---	---	---	---	---	---	---	---	---	---	27
9	---	12	---	---	---	---	---	---	---	---	---	28
10	---	---	---	---	---	---	---	---	---	---	---	28
11	---	---	---	---	---	---	---	---	---	---	54	28
12	---	---	---	---	---	---	---	---	---	---	47	27
13	---	---	---	---	---	---	---	---	---	---	45	27
14	12	---	---	---	---	---	---	---	---	---	43	27
15	12	---	---	---	---	---	---	---	---	---	41	27
16	12	---	---	---	---	---	---	---	---	---	42	26
17	11	---	---	---	---	---	---	---	---	---	39	26
18	11	---	---	---	---	---	---	---	---	---	37	26
19	11	---	---	---	---	---	---	---	---	---	37	26
20	11	---	---	---	---	---	---	---	---	---	37	26
21	11	---	---	---	---	---	---	---	---	---	34	26
22	11	---	---	---	---	---	---	---	---	---	31	26
23	11	---	---	---	---	---	---	---	---	---	28	26
24	11	---	---	---	---	---	---	---	---	---	29	19
25	11	---	---	---	---	---	---	---	---	---	29	17
26	11	---	---	---	---	---	---	---	---	---	28	17
27	11	---	---	---	---	---	---	---	---	---	25	17
28	11	---	---	---	---	---	---	---	---	---	24	18
29	11	---	---	---	---	---	---	---	---	---	22	16
30	11	---	---	---	---	---	---	---	---	---	21	16
31	11	---	---	---	---	---	---	---	---	---	36	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	738
MEAN	---	---	---	---	---	---	---	---	---	---	---	24.6
MAX	---	---	---	---	---	---	---	---	---	---	---	42
MIN	---	---	---	---	---	---	---	---	---	---	---	16
AC-FT	---	---	---	---	---	---	---	---	---	---	---	1460

e Estimated.

## 11376460 SOUTH FORK BATTLE CREEK BELOW DIVERSION TO COLEMAN DITCH, NEAR MANTON, CA

LOCATION.—Lat 40°24'10", long 121°58'02", in NW 1/4 NW 1/4 sec.3, T.29 N., R.1 W., Tehama County, Hydrologic Unit 18020118, on right bank 7.5 mi southwest of Shingletown and 5.7 mi southwest of Manton.

DRAINAGE AREA.—102 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year (operated as a low-flow station only). Unpublished records for water years 1978–86 available in files of the U.S. Geological Survey. Fragmentary records for water year 1977 available in files of Pacific Gas & Electric Co.

GAGE.—Water-stage recorder and metal Alaskan fishladder. Elevation of gage is 980 ft above sea level, from topographic map.

REMARKS.—This station records fishwater release only. Prior to water year 1996 flow computed to 10 ft<sup>3</sup>/s. The minimum release requirement is 5.0 ft<sup>3</sup>/s at all times; flow is computed to 45 ft<sup>3</sup>/s. See schematic diagram of Battle Creek Basin.

COOPERATION.—Records were collected by the Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e36	e31	e33	32	---	---	---	---	---	---	---	34
2	e36	e32	e32	45	---	---	---	---	---	---	43	34
3	e37	e32	e36	---	---	---	---	---	---	---	38	34
4	e37	e31	e33	---	---	---	---	---	---	---	38	34
5	e36	e32	33	---	---	---	---	---	---	---	33	33
6	e36	e32	36	---	---	---	---	---	---	---	32	33
7	e34	e32	---	---	---	---	---	---	---	---	32	33
8	e33	e32	---	---	---	---	---	---	---	---	31	33
9	---	e32	35	---	---	---	---	---	---	---	31	33
10	e32	e32	32	---	---	---	---	---	---	---	31	33
11	e33	e31	32	---	---	---	---	---	---	---	31	33
12	e33	e32	32	---	---	---	---	---	---	---	32	33
13	e33	e31	33	---	---	---	---	---	---	---	33	33
14	e33	e32	---	---	---	---	---	---	---	---	33	34
15	e33	e31	---	---	---	---	---	---	---	---	32	33
16	e33	e31	32	---	---	---	---	---	---	---	32	33
17	e32	e32	---	---	---	---	---	---	---	---	32	34
18	e32	e30	45	---	---	---	---	---	---	---	32	33
19	e32	e31	31	---	---	---	---	---	---	---	32	33
20	e33	e28	31	---	---	---	---	---	---	---	33	33
21	e33	e31	31	---	---	---	---	---	---	---	32	33
22	e32	e31	31	---	---	---	---	---	---	---	32	33
23	e32	e32	31	---	---	---	---	---	---	---	32	33
24	e32	e31	31	---	---	---	---	---	---	---	32	33
25	e32	---	31	---	---	---	---	---	---	---	33	33
26	e32	e32	32	---	---	---	---	---	---	---	34	33
27	e32	e33	32	---	---	---	---	---	---	---	34	33
28	e32	e33	32	---	---	---	---	---	---	---	34	33
29	e32	e33	32	---	---	---	---	---	---	---	34	33
30	e32	---	33	---	---	---	---	---	---	---	34	33
31	e31	---	32	---	---	---	---	---	---	---	34	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	996
MEAN	---	---	---	---	---	---	---	---	---	---	---	33.2
MAX	---	---	---	---	---	---	---	---	---	---	---	34
MIN	---	---	---	---	---	---	---	---	---	---	---	33
AC-FT	---	---	---	---	---	---	---	---	---	---	---	1980

e Estimated.

## 11376550 BATTLE CREEK BELOW COLEMAN FISH HATCHERY, NEAR COTTONWOOD, CA

LOCATION.—Lat 40°23'54", long 122°08'43", in SW 1/4 NE 1/4 sec.1, T.29 N., R.3 W., Shasta County, Hydrologic Unit 18020101, U.S. Fish and Wildlife Service land, on right bank 3.7 mi downstream from Spring Branch, 5.7 mi upstream from mouth, and 7.0 mi east of Cottonwood.

DRAINAGE AREA.—357 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1961 to September 1996. October 1996 to September 1997 (operated as a low flow station only). October 1997 to September 1998. October 1940 to September 1961 at site 0.6 mi upstream published as "near Cottonwood"; low-flow records not equivalent owing to Coleman Fish Hatchery diversion, maximum flows considered equivalent.

CHEMICAL DATA: Water years 1962–66.

WATER TEMPERATURE: Water years 1966–79.

SEDIMENT DATA: Water years 1962–70.

GAGE.—Water-stage recorder. Elevation of gage is 415 ft above sea level, from topographic map.

REMARKS.—Records good. Some regulation at low flows by five small powerplants, several small reservoirs, and Coleman Fish Hatchery.

Coleman Fish Hatchery diverts from 50 to 90 ft<sup>3</sup>/s and pumps ground water for temperature control, which is returned above the station. At times, 10 ft<sup>3</sup>/s diverted upstream from station for irrigation. Flow is computed to 540 ft<sup>3</sup>/s. See schematic diagrams of Battle Creek and upper Sacramento River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 24,300 ft<sup>3</sup>/s, Jan. 24, 1970, gage height, 14.75 ft, from rating curve extended above 4,200 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 52 ft<sup>3</sup>/s, Aug. 8, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.—Maximum stage known, 15.8 ft, Dec. 11, 1937, from floodmarks, site and datum then in use, discharge, 35,000 ft<sup>3</sup>/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 3,100 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 18	2000	6,320	7.53	Mar. 25	1000	3,620	5.53
Jan. 26	2145	5,950	7.28	May 9	0045	6,180	7.44
Feb. 3	0045	11,900	10.51	May 28	1900	4,010	5.86
Feb. 21	2330	4,200	6.01	June 11	0100	5,540	7.00

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	263	283	392	460	1720	865	993	1040	1640	980	636	471
2	274	281	357	535	2990	842	921	1230	1650	970	626	472
3	266	280	343	590	6640	1080	1010	1150	1740	972	614	464
4	271	276	316	735	2150	904	1030	1080	1470	969	604	461
5	267	275	324	595	1810	847	1040	1050	1410	963	602	462
6	266	284	361	599	3120	832	1230	1050	1370	934	601	470
7	267	291	517	756	2460	787	1520	1020	1400	911	597	471
8	283	289	550	619	1730	799	1120	1370	1390	929	591	468
9	364	287	439	546	1330	764	1040	3220	1360	903	587	465
10	332	290	375	893	1290	737	1030	2000	1910	884	574	462
11	312	300	359	1260	1260	721	962	1580	3140	859	554	451
12	298	296	353	1780	1210	729	917	1610	2080	849	546	443
13	284	302	354	1750	1270	997	949	1320	1900	849	536	438
14	280	307	482	2160	1970	828	954	1260	1650	853	535	442
15	279	306	593	2870	1510	789	1160	1240	1490	830	537	439
16	278	306	462	2160	1290	934	912	2200	1420	805	536	434
17	277	317	501	2770	1230	878	870	1810	1340	799	533	438
18	276	310	506	3260	1080	832	847	1540	1320	797	523	439
19	278	341	458	2460	1670	794	844	1420	1340	766	516	433
20	279	326	444	1440	1490	792	846	1290	1320	752	518	436
21	278	306	442	1120	2020	862	858	1140	1270	745	512	433
22	278	303	435	966	1830	2790	906	1080	1240	750	504	437
23	278	327	433	891	1680	1880	951	1060	1200	731	499	436
24	278	335	434	907	1350	2050	1050	1240	1140	731	495	439
25	278	380	431	921	1120	2360	979	1960	1120	720	491	440
26	278	428	430	3250	1030	1450	896	1920	1130	702	491	450
27	277	363	434	2270	970	1300	882	1920	1070	695	487	446
28	277	325	440	1370	920	1200	907	3100	1050	684	483	448
29	278	333	449	2110	---	1060	950	2510	1030	674	476	443
30	280	573	454	1510	---	965	992	1840	1010	662	477	434
31	283	---	457	1210	---	1010	---	1660	---	650	471	---
TOTAL	8757	9620	13325	44763	50140	33678	29566	48910	43600	25318	16752	13465
MEAN	282	321	430	1444	1791	1086	986	1578	1453	817	540	449
MAX	364	573	593	3260	6640	2790	1520	3220	3140	980	636	472
MIN	263	275	316	460	920	721	844	1020	1010	650	471	433
AC-FT	17370	19080	26430	88790	99450	66800	58640	97010	86480	50220	33230	26710

## 11376550 BATTLE CREEK BELOW COLEMAN FISH HATCHERY, NEAR COTTONWOOD, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	294	409	552	777	742	751	655	631	499	338	269	263
MAX	589	1058	1602	2434	1919	1802	1160	1578	1453	817	540	449
(WY)	1963	1982	1984	1970	1986	1983	1995	1998	1998	1998	1998	1998
MIN	139	205	224	234	260	266	231	266	207	168	160	154
(WY)	1993	1993	1992	1991	1977	1977	1977	1977	1992	1992	1992	1992

## SUMMARY STATISTICS

## FOR 1998 WATER YEAR

## WATER YEARS 1962 - 1998

ANNUAL TOTAL	337894		
ANNUAL MEAN	926		515
HIGHEST ANNUAL MEAN			926
LOWEST ANNUAL MEAN			238
HIGHEST DAILY MEAN	6640	Feb 3	10900
LOWEST DAILY MEAN	263	Oct 1	102
ANNUAL SEVEN-DAY MINIMUM	268	Oct 1	110
INSTANTANEOUS PEAK FLOW	11900	Feb 3	24300
INSTANTANEOUS PEAK STAGE	10.51	Feb 3	14.75
ANNUAL RUNOFF (AC-FT)	670200		372800
10 PERCENT EXCEEDS	1790		903
50 PERCENT EXCEEDS	794		368
90 PERCENT EXCEEDS	291		223



## 11377100 SACRAMENTO RIVER ABOVE BEND BRIDGE, NEAR RED BLUFF, CA

LOCATION.—Lat 40°17'19", long 122°11'08", in NW 1/4 NE 1/4 sec.15, T.28 N., R.3 W., Tehama County, Hydrologic Unit 18020103, on left bank 2.7 mi upstream from Bend Bridge, and 8.1 mi northeast of Red Bluff.

DRAINAGE AREA.—8,900 mi<sup>2</sup>, excluding Goose Lake Basin.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—1879–88 annual observed maximums only, published in WSP 1315-A. January 1892 to current year. Monthly discharges only for some periods and yearly estimates for some incomplete years, published in WSP 1315-A. Published as "at Red Bluff" 1894–96, as "at Jellys Ferry" 1895–1902, and as "near Red Bluff" 1903–68 (station 11378000).

REVISED RECORDS.—WSP 861: 1904, 1907, 1909, 1914–15, 1927–28. WSP 1315-A: 1916(M), 1918(M), 1941(M). WSP 1931: Drainage area. WDR CA-69-2: 1965.

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 285.77 ft above sea level. See WSP 2131 for history of changes prior to September 1968.

REMARKS.—Records good. Flow completely regulated by Shasta Lake (station 11370000), 52 mi upstream, since Dec. 30, 1943. Diversions, in addition to those on tributaries, for irrigation of about 22,000 acres between stations at Keswick and above Bend Bridge. Transbasin diversion from Trinity River to Whiskeytown Lake (station 11371700) via Judge Francis Carr Powerplant (station 11525430) started in April 1963. See schematic diagrams of upper Sacramento River and Battle Creek Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 291,000 ft<sup>3</sup>/s, Feb. 28, 1940, gage height, 38.9 ft, site and datum then in use, from rating curve extended above 170,000 ft<sup>3</sup>/s on basis of velocity-area studies; minimum (water years 1892–1998), 2,000 ft<sup>3</sup>/s, Mar. 29, 1944. Since regulation by Shasta Lake in 1943, maximum discharge, 170,000 ft<sup>3</sup>/s, Dec. 22, 1964, gage height, 28.15 ft, site and datum then in use; maximum gage height, 36.60 ft, Jan. 24, 1970.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6810	5380	8540	6120	55400	54600	38200	15500	28800	17100	16300	14500
2	6650	5370	7170	7090	41200	53300	33800	16600	27500	17100	16100	14300
3	6460	5480	6590	10400	88800	47400	31600	16400	31100	16800	16100	14500
4	6240	5700	6440	12500	78700	42500	31200	16200	28700	17200	16200	14400
5	6070	5470	6430	9140	61600	37600	29000	16300	27100	17300	16200	14100
6	5950	5410	7260	8400	69900	33400	26600	15400	25100	17500	15900	14100
7	5830	5530	11700	11100	79500	29200	27400	14700	24500	17800	15900	13600
8	5670	5570	13100	9740	79400	26300	20600	14600	23300	17600	15900	13400
9	6810	5560	8970	8820	77800	22800	19200	17300	21000	17700	15900	13200
10	6630	5580	7570	11200	72300	21400	18700	15900	20000	17400	16000	12600
11	6190	5650	6990	18700	73200	19100	16400	14900	21600	17000	16200	12500
12	5800	5650	6700	33300	69600	17400	15000	19200	21000	16900	16200	12200
13	5740	5760	6530	26100	73600	20700	15100	17900	20800	16800	15900	12000
14	5680	5900	9240	29300	83300	18200	13700	18000	19800	16600	16000	12000
15	5650	6010	13200	50300	66400	15200	13400	19600	19200	16700	16100	11900
16	5620	6450	8450	35900	70700	14600	12400	25800	19800	16400	16100	11700
17	5470	7460	8840	51000	e77700	13700	11800	22100	19200	16500	16400	11600
18	5480	6440	9110	49200	e69500	12900	12600	20900	19000	16400	16300	11400
19	5480	9260	7720	47800	64000	15700	15000	20100	19000	16500	16000	11100
20	5420	7960	7190	37000	67600	24300	15000	20300	18800	16600	16100	10800
21	5480	6500	7050	38400	59200	34400	14900	19700	18600	16600	16000	10900
22	5370	6180	6790	42500	69100	61600	14700	20400	18700	16300	16000	10800
23	5460	6220	6600	41300	64200	45600	15000	22000	18500	16300	15800	10600
24	5420	6360	6480	41500	64300	57200	16300	22200	18200	16600	16000	10100
25	5380	9570	6380	38600	66200	65100	15200	26500	18000	16300	15200	10300
26	5440	13200	6300	55000	63200	60300	14600	25300	18000	16200	15000	9990
27	5460	12100	6250	61600	54000	56400	14300	26200	17400	16200	14800	9940
28	5420	7960	6210	49400	54700	48700	14300	34800	17400	16400	14800	9710
29	5600	7290	6170	48300	---	43400	14800	35700	17200	16300	14600	9440
30	5380	16000	6160	54100	---	37900	15100	36900	17300	16300	14700	9360
31	5380	---	6130	48800	---	37400	---	30900	---	16300	14700	---
TOTAL	179440	212970	238260	992610	1915100	1088300	565900	658300	634600	519700	489400	357040
MEAN	5788	7099	7686	32020	68400	35110	18860	21240	21150	16760	15790	11900
MAX	6810	16000	13200	61600	88800	65100	38200	36900	31100	17800	16400	14500
MIN	5370	5370	6130	6120	41200	12900	11800	14600	17200	16200	14600	9360
AC-FT	355900	422400	472600	1969000	3799000	2159000	1122000	1306000	1259000	1031000	970700	708200

e Estimated.

## 11377100 SACRAMENTO RIVER ABOVE BEND BRIDGE, NEAR RED BLUFF, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1892 - 1943, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4853	7538	11940	18960	24760	22210	18280	12310	7635	5127	4381	4404
MAX	10910	21420	42780	72340	69240	73280	38810	27910	17640	10170	9050	8481
(WY)	1905	1904	1893	1909	1902	1904	1904	1896	1906	1893	1893	1893
MIN	2847	3300	3618	4142	4778	4434	4014	3253	2969	2622	2505	2551
(WY)	1933	1937	1937	1937	1920	1924	1924	1924	1924	1931	1931	1934

## SUMMARY STATISTICS

## WATER YEARS 1892 - 1943

ANNUAL MEAN	11800
HIGHEST ANNUAL MEAN	22180
LOWEST ANNUAL MEAN	4096
HIGHEST DAILY MEAN	261000
LOWEST DAILY MEAN	2400
ANNUAL SEVEN-DAY MINIMUM	2470
INSTANTANEOUS PEAK FLOW	291000
INSTANTANEOUS PEAK STAGE	38.9
ANNUAL RUNOFF (AC-FT)	8545000
10 PERCENT EXCEEDS	24000
50 PERCENT EXCEEDS	6500
90 PERCENT EXCEEDS	3520

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1962, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6501	6932	11440	16840	19340	11950	10210	10260	9469	10030	10030	7510
MAX	10490	11180	29530	52620	76870	24840	32420	17830	12930	11630	11800	10230
(WY)	1958	1958	1956	1956	1958	1958	1958	1948	1948	1951	1958	1958
MIN	5468	4681	4336	5104	4579	4727	5335	6788	7253	7476	7080	5289
(WY)	1960	1960	1960	1957	1948	1955	1950	1947	1947	1947	1947	1947

## SUMMARY STATISTICS

## WATER YEARS 1946 - 1962

ANNUAL MEAN	10840
HIGHEST ANNUAL MEAN	20330
LOWEST ANNUAL MEAN	6690
HIGHEST DAILY MEAN	125000
LOWEST DAILY MEAN	3640
ANNUAL SEVEN-DAY MINIMUM	3830
INSTANTANEOUS PEAK FLOW	139000
INSTANTANEOUS PEAK STAGE	24.98
ANNUAL RUNOFF (AC-FT)	7852000
10 PERCENT EXCEEDS	16900
50 PERCENT EXCEEDS	8430
90 PERCENT EXCEEDS	5190

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6795	9123	14060	19370	20370	17890	12380	12370	12290	12870	11750	8546
MAX	10600	29690	43350	61060	68400	75830	35110	22920	21150	16760	15790	11900
(WY)	1984	1974	1984	1970	1998	1983	1974	1995	1998	1998	1998	1998
MIN	3935	4068	4296	4573	4700	5476	4804	7322	7431	7811	7998	5323
(WY)	1978	1993	1977	1992	1990	1994	1991	1992	1992	1992	1992	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1964 - 1998

ANNUAL TOTAL	5218640	7851620	
ANNUAL MEAN	14300	21510	
HIGHEST ANNUAL MEAN			13130
LOWEST ANNUAL MEAN			25450
HIGHEST DAILY MEAN	103000	Jan 1	6494
LOWEST DAILY MEAN	5370	Oct 22	127000
ANNUAL SEVEN-DAY MINIMUM	5420	Oct 22	3200
INSTANTANEOUS PEAK FLOW			3210
INSTANTANEOUS PEAK STAGE			170000
ANNUAL RUNOFF (AC-FT)	10350000	15570000	36.60
10 PERCENT EXCEEDS	29800	53600	9509000
50 PERCENT EXCEEDS	9400	16100	20600
90 PERCENT EXCEEDS	5930	5930	10100
			5480

## 11377100 SACRAMENTO RIVER ABOVE BEND BRIDGE, NEAR RED BLUFF, CA—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1955–81, 1996 to current year.

CHEMICAL DATA: Water years 1955–81, February 1996 to current year. Published as "Sacramento River at Bend" from May 1955 to September 1973; as Sacramento River at Bend Bridge (station 11377200) from October 1973 to September 1976.

WATER TEMPERATURE: Water years 1955 to June 1980 (water years 1955–63 reported as station 11377200; water years 1964–70 as station 11378000).

SEDIMENT DATA: Water year 1958–70 (water years 1958–67 reported as station 11378500; water years 1968–70 as station 11377200), 1977 to May 1983, February 1996 to current year.

PERIOD OF DAILY RECORD.—

CHEMICAL DATA: May 1955 to September 1963.

SPECIFIC CONDUCTANCE: May 1955 to September 1963.

WATER TEMPERATURES: May 1955 to June 1980.

SUSPENDED SEDIMENT: October 1957 to September 1970, January 1977 to May 1980 (storm season only for water years 1977, 1979–80).

REMARKS.—National Water-Quality Assessment (NAWQA) Program site established February 1996. Samples collected from Bend Bridge, 2.7 mi downstream from gaging station.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED OF (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION) (MG/L) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
22...	1000	5330	117	7.7	13.6	755	10.0	97	10	5.3
NOV										
19...	1000	9900	136	8.1	12.0	753	10.7	100	11	5.7
DEC										
10...	1000	7620	145	7.9	9.2	768	10.8	93	12	6.0
JAN										
14...	1000	18300	114	7.9	9.1	757	8.2	72	11	5.3
FEB										
18...	1230	70700	107	7.9	9.1	758	12.1	105	9.8	4.4
MAR										
18...	1100	12900	127	7.9	10.8	754	10.4	95	12	5.5
APR										
09...	1000	19200	115	8.0	10.1	756	10.6	95	11	5.1
MAY										
14...	0930	17800	105	7.7	11.5	753	12.3	114	10	4.5
DATE		SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)
OCT										
22...	5.9	21	1.1	49	3.2	2.8	<.1	20	85	83
NOV										
19...	7.6	24	1.3	46	5.3	4.4	<.1	23	84	95
DEC										
10...	7.9	23	1.3	57	7.3	4.8	<.1	23	108	101
JAN										
14...	5.7	20	1.0	48	5.8	3.5	<.1	20	87	86
FEB										
18...	5.3	21	1	45	4.8	1.8	<.1	21	81	78
MAR										
18...	5.3	17	1	52	7.2	2.0	<.1	20	91	88
APR										
09...	5.3	19	.8	47	7.4	2.6	<.1	19	82	84
MAY										
14...	4.9	19	.8	46	4.4	1.8	<.1	19	75	75

## 11377100 SACRAMENTO RIVER ABOVE BEND BRIDGE, NEAR RED BLUFF, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT										
22...	.12	.01	.09	<.01	<.2	<.2	.02	.01	.02	12
NOV										
19...	.11	<.01	.19	<.02	.2	<.1	.05	.03	.02	9
DEC										
10...	.15	<.01	.20	<.02	.1	<.1	.03	.02	.01	15
JAN										
14...	.12	<.01	.21	<.02	.2	<.1	.11	.01	.02	12
FEB										
18...	.11	<.01	.09	<.02	<.1	<.1	.02	.02	.03	16
MAR										
18...	.12	<.01	.14	<.02	<.1	<.1	.03	<.01	<.01	13
APR										
09...	.11	<.01	.09	<.02	<.1	<.1	.03	.01	.02	14
MAY										
14...	.10	<.01	.12	.04	.1	<.1	<.01	.02	.02	12
DATE	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT										
22...	<1	1	14	<1	<1	<1	<1	4	29	<1
NOV										
19...	<1	<1	18	<1	<1	<1	<1	1	14	<1
DEC										
10...	<1	<1	20	<1	<1	<1	<1	3	11	<1
JAN										
14...	<1	<1	21	<1	<1	<1	<1	2	13	<1
FEB										
18...	<1	1	16	<1	<1	1	<1	2	<10	<1
MAR										
18...	<1	<1	20	<1	<1	<1	<1	2	<10	<1
APR										
09...	<1	<1	19	<1	<1	<1	<1	2	<10	<1
MAY										
14...	<1	1	16	<1	<1	<1	<1	2	<10	<1
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	
OCT										
22...	3	<1	1	<1	<1	<1	<1	1.3	.2	
NOV										
19...	3	<1	<1	<1	<1	2	<1	1.5	.3	
DEC										
10...	4	<1	<1	<1	<1	4	<1	1.7	.5	
JAN										
14...	3	<1	1	<1	<1	2	<1	1.9	.4	
FEB										
18...	4	<1	1	<1	<1	3	<1	1.1	.2	
MAR										
18...	6	<1	<1	<1	<1	2	<1	1.3	.2	
APR										
09...	5	<1	<1	<1	<1	4	<1	1.2	.2	
MAY										
14...	2	<1	1	<1	<1	5	<1	1.1	.3	

11377100 SACRAMENTO RIVER ABOVE BEND BRIDGE, NEAR RED BLUFF, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
22...N	1000	5330	13.6	6	86	76
NOV						
19...N	1000	9900	12.0	43	1150	70
DEC						
10...N	1000	7620	9.2	18	370	100
JAN						
14...N	1000	18300	9.1	141	6970	81
FEB						
18...N	1230	70700	9.1	63	12000	56
MAR						
18...N	1100	12900	10.8	38	1320	88
APR						
09...N	1000	19200	10.1	33	1710	59
MAY						
14...N	0930	17800	11.5	26	1250	39

## 11379500 ELDER CREEK NEAR PASKENTA, CA

LOCATION.—Lat 40°01'29", long 122°30'31", in SE 1/4 NW 1/4 sec.14, T.25 N., R.6 W., Tehama County, Hydrologic Unit 18020103, on left bank 2.5 mi downstream from South Fork Elder Creek, 8.2 mi northwest of Flourney, and 10 mi north of Paskenta.

DRAINAGE AREA.—92.4 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1948 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1959–66.

WATER TEMPERATURE: Water year 1963.

SEDIMENT DATA: Water years 1963–70.

REVISED RECORDS.—WSP 1515: 1956. WDR CA-70-2: 1967(P). WDR CA-75-4: 1966–67(P), 1969–71(P), 1973(P). WDR CA-78-4: Drainage area. WDR CA-94-4: 1993(P).

GAGE.—Water-stage recorder. Datum of gage is 718.1 ft above sea level. Prior to Aug. 13, 1965, water-stage recorder at site 300 ft downstream at datum 5.13 ft lower.

REMARKS.—Records good. No regulation or large diversion upstream from station. See schematic diagram of upper Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 17,700 ft<sup>3</sup>/s, Feb. 28, 1983, gage height, 12.10 ft, from rating curve extended above 5,200 ft<sup>3</sup>/s on basis of slope-area measurements at gage height 11.34 ft and of peak flow; maximum gage height, 13.90 ft, Feb. 24, 1958, site and datum then in use; no flow at times some years.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	1430	2,000	6.26	Feb. 19	1330	5,040	8.52
Feb. 7	1230	6,980	9.39	Mar. 22	0900	3,020	7.18
Feb. 16	1730	2,480	6.72	May 28	2000	3,970	7.88

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	5.1	96	35	973	348	441	446	552	90	28	11
2	1.4	4.8	66	56	1460	339	383	530	518	87	26	10
3	1.6	4.6	59	73	3390	341	628	492	701	90	24	9.8
4	1.7	4.6	93	138	1150	312	524	477	501	79	23	9.5
5	1.9	4.6	234	91	2290	294	456	423	421	74	22	9.7
6	2.1	4.8	232	104	3440	272	441	367	383	69	21	11
7	2.5	6.2	264	176	3450	249	385	358	382	65	21	10
8	4.1	6.1	193	137	1570	245	339	356	355	61	21	13
9	17	5.8	127	126	890	223	341	341	352	60	21	12
10	9.9	6.0	94	159	798	215	367	297	310	57	20	12
11	7.4	6.5	74	363	644	218	328	264	301	56	18	11
12	6.1	6.8	62	941	787	346	302	454	270	55	17	9.9
13	5.1	10	53	518	706	813	295	318	260	52	17	9.3
14	4.6	10	215	1030	927	526	290	282	238	48	16	9.1
15	4.6	68	155	1090	637	489	264	268	222	46	16	8.9
16	4.3	102	108	641	951	519	239	249	206	42	16	8.6
17	4.1	49	153	953	713	485	225	238	188	41	16	8.5
18	4.1	34	148	1120	542	414	222	218	177	40	17	8.5
19	4.1	e165	113	764	2280	371	233	209	168	38	17	8.6
20	4.1	47	95	470	910	361	255	205	157	37	16	8.5
21	4.1	27	81	344	1610	433	287	193	149	37	16	8.6
22	4.1	21	67	276	836	2180	341	189	142	36	16	8.6
23	4.1	25	59	258	1420	1500	416	187	135	36	15	9.1
24	4.1	28	52	243	819	1130	385	189	130	34	14	9.5
25	3.9	44	47	243	617	833	309	191	127	33	14	9.5
26	3.9	e280	43	1150	483	630	272	206	119	31	14	10
27	4.1	e200	40	862	420	507	276	223	108	30	13	10
28	4.1	107	37	507	377	438	305	1770	105	28	13	11
29	4.6	e110	36	817	---	378	333	2420	99	28	12	10
30	4.8	e190	35	489	---	328	364	1280	94	29	12	9.5
31	5.1	---	35	460	---	393	---	728	---	29	11	---
TOTAL	138.9	1582.9	3166	14634	35090	16130	10246	14368	7870	1538	543	294.7
MEAN	4.48	52.8	102	472	1253	520	342	463	262	49.6	17.5	9.82
MAX	17	280	264	1150	3450	2180	628	2420	701	90	28	13
MIN	1.3	4.6	35	35	377	215	222	187	94	28	11	8.5
AC-FT	276	3140	6280	29030	69600	31990	20320	28500	15610	3050	1080	585

e Estimated.

## 11379500 ELDER CREEK NEAR PASKENTA, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	9.28	48.2	135	259	296	238	148	83.5	32.1	8.98	3.43	3.14
MAX	102	310	649	1208	1636	1176	497	463	262	49.6	17.5	11.3
(WY)	1958	1974	1984	1995	1958	1983	1958	1998	1998	1998	1998	1978
MIN	.66	2.89	4.06	5.38	7.00	22.6	13.8	13.4	2.52	.32	.002	.14
(WY)	1992	1991	1991	1991	1977	1964	1977	1977	1977	1977	1994	1991

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1949 - 1998			
ANNUAL TOTAL	33519.43				105601.5							
ANNUAL MEAN	91.8				289				104			
HIGHEST ANNUAL MEAN									303			
LOWEST ANNUAL MEAN									6.69			
HIGHEST DAILY MEAN	4480				3450				7650			
LOWEST DAILY MEAN	.39				1.3				.00			
ANNUAL SEVEN-DAY MINIMUM	.58				1.8				.00			
INSTANTANEOUS PEAK FLOW					6980				17700			
INSTANTANEOUS PEAK STAGE					9.39				13.90			
ANNUAL RUNOFF (AC-FT)	66490				209500				75670			
10 PERCENT EXCEEDS	190				742				243			
50 PERCENT EXCEEDS	21				127				19			
90 PERCENT EXCEEDS	1.3				6.1				1.5			

## 11381500 MILL CREEK NEAR LOS MOLINOS, CA

LOCATION.—Lat 40°03'17", long 122°01'23", in NE 1/4 NW 1/4 sec.6, T.25 N., R.1 W., Tehama County, Hydrologic Unit 18020103, on right bank 4.5 mi northeast of Los Molinos and 5.5 mi upstream from mouth.

DRAINAGE AREA.—131 mi<sup>2</sup>.

PERIOD OF RECORD.—September 1909 to August 1913 (fragmentary), October 1928 to current year.

REVISED RECORDS.—WSP 1315-A: 1929(M). WSP 1931: Drainage area. WSP 2131: 1938(M).

GAGE.—Water-stage recorder. Elevation of gage is 385 ft above sea level, from topographic map. Prior to September 1913, nonrecording gage at site 0.3 mi downstream at different datum.

REMARKS.—Records excellent. No storage or large diversion upstream from station. See schematic diagram of upper Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD (water years 1929–98).—Maximum discharge, 36,400 ft<sup>3</sup>/s, Dec. 11, 1937, gage height, 23.4 ft, from floodmarks, from rating curve extended above 14,000 ft<sup>3</sup>/s on basis of step-backwater computation and slope-area measurement of peak flow; minimum, 49 ft<sup>3</sup>/s, Dec. 13, 1932.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 2,400 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 4	0245	3,090	7.10	Feb. 6	1845	3,630	7.65
Jan. 18	1700	3,390	7.41	Mar. 22	1000	2,630	6.56
Feb. 3	unknown	7,120	10.42	May 28	1845	2,680	6.62

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	120	273	138	868	365	510	786	779	614	308	169
2	135	116	206	294	e1510	355	474	850	821	633	296	167
3	121	114	176	534	e4000	370	604	781	832	661	292	165
4	116	113	166	1350	1420	356	550	746	770	654	288	164
5	115	112	162	465	1070	340	513	734	758	657	283	165
6	116	112	187	347	2110	331	737	730	748	641	279	171
7	123	123	882	350	2280	303	746	703	805	648	275	169
8	121	119	553	304	1510	294	581	767	797	651	266	166
9	240	116	331	287	937	283	541	893	773	598	257	167
10	152	116	246	589	762	276	539	795	921	563	250	165
11	153	122	203	1120	669	274	510	673	1160	531	240	164
12	134	120	181	2020	650	289	468	625	1020	504	231	163
13	127	123	171	1380	619	404	531	583	928	512	229	162
14	126	142	352	1050	1170	406	477	557	915	522	227	161
15	126	161	402	1800	788	416	483	533	865	510	226	160
16	124	194	275	1290	663	503	441	710	864	487	221	158
17	121	233	325	2220	643	532	415	705	757	507	216	157
18	119	170	351	2170	537	484	410	601	748	514	212	157
19	117	222	267	1560	1110	444	421	559	783	484	208	158
20	116	194	226	951	1130	440	451	540	777	473	203	160
21	115	155	214	676	1220	470	494	521	750	470	198	159
22	114	141	189	530	811	1760	582	499	748	453	195	158
23	114	162	176	453	862	1490	641	517	730	431	191	158
24	114	225	168	416	747	1910	730	512	715	432	188	160
25	112	364	161	385	561	1490	672	808	677	439	184	159
26	112	535	155	1190	480	1080	583	854	698	414	182	164
27	112	322	151	1120	425	917	583	744	654	394	179	165
28	112	215	140	701	389	772	630	1480	641	376	176	168
29	112	202	138	1170	---	638	691	1460	642	361	175	163
30	115	718	139	805	---	549	752	964	630	343	173	161
31	114	---	139	625	---	546	---	801	---	321	171	---
TOTAL	3858	5881	7705	28290	29941	19087	16760	23031	23706	15798	7019	4883
MEAN	124	196	249	913	1069	616	559	743	790	510	226	163
MAX	240	718	882	2220	4000	1910	752	1480	1160	661	308	171
MIN	110	112	138	138	389	274	410	499	630	321	171	157
AC-FT	7650	11660	15280	56110	59390	37860	33240	45680	47020	31340	13920	9690

e Estimated.



## 11381500 MILL CREEK NEAR LOS MOLINOS, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	124	199	352	457	478	452	433	444	332	181	118	107
MAX	684	1039	1365	1837	1744	1278	862	923	790	510	230	168
(WY)	1963	1974	1965	1970	1986	1983	1982	1938	1998	1998	1983	1983
MIN	76.0	75.1	87.4	96.8	98.6	107	112	122	94.9	67.8	61.4	65.4
(WY)	1930	1930	1977	1977	1977	1977	1977	1977	1931	1931	1931	1931

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1929 - 1998			
ANNUAL TOTAL	126976				185959							
ANNUAL MEAN	348				509				305			
HIGHEST ANNUAL MEAN									576			
LOWEST ANNUAL MEAN									93.6			
HIGHEST DAILY MEAN	14400				4000				14400			
LOWEST DAILY MEAN	110				110				52			
ANNUAL SEVEN-DAY MINIMUM	113				113				60			
INSTANTANEOUS PEAK FLOW					7120				36400			
INSTANTANEOUS PEAK STAGE					10.42				23.40			
ANNUAL RUNOFF (AC-FT)	251900				368800				221300			
10 PERCENT EXCEEDS	476				932				586			
50 PERCENT EXCEEDS	230				425				180			
90 PERCENT EXCEEDS	120				125				91			

## 11383500 DEER CREEK NEAR VINA, CA

LOCATION.—Lat 40°00'51", long 121°56'50", in NW 1/4 NE 1/4 sec.23, T.25 N., R.1 W., Tehama County, Hydrologic Unit 18020103, on left bank 0.5 mi upstream from irrigation diversion dam and 7.9 mi northeast of Vina.

DRAINAGE AREA.—208 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1911 to September 1915, March 1920 to current year. December 1937 to January 1939 first published in WDR CA-94-4. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.—WSP 1315-A: 1940-42(M). WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 479.2 ft above sea level, from river-profile survey. Prior to Oct. 9, 1928, nonrecording gage at site 0.8 mi downstream at different datum. Oct. 9, 1928, to Jan. 19, 1939, water-stage recorder at present site at datum 2.64 ft higher.

REMARKS.—Records good. No storage or large diversions upstream from station. See schematic diagram of upper Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 24,000 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 15.56 ft, from rating curve extended above 9,200 ft<sup>3</sup>/s; maximum gage height, 19.20 ft, Dec. 10, 1937; minimum, 43 ft<sup>3</sup>/s, Dec. 13, 1932.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 4	0315	3,350	7.00	Feb. 21	1215	4,110	7.68
Jan. 18	2000	3,880	7.43	Mar. 24	0315	3,310	7.08
Feb. 3	0545	9,870	10.94	May 28	1915	3,310	7.08

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	106	303	150	1340	537	769	836	1030	347	207	147
2	125	103	219	390	2150	524	711	931	957	340	199	146
3	115	101	186	713	6920	541	800	874	930	333	194	145
4	105	101	169	1570	2960	521	752	829	854	325	191	145
5	103	101	164	615	2360	498	712	831	798	315	188	152
6	110	103	182	457	4170	480	745	866	770	305	186	158
7	129	119	670	411	4500	434	781	803	799	298	184	153
8	117	113	602	357	2950	412	721	827	743	289	184	149
9	200	106	352	329	1760	386	684	1060	740	283	182	148
10	153	108	268	530	1310	369	690	1050	768	278	180	146
11	154	118	225	1020	1080	362	674	912	1140	270	178	146
12	130	113	200	2330	991	376	624	857	949	265	176	146
13	117	117	185	1630	914	498	699	808	858	260	173	144
14	112	136	356	1130	1680	529	644	761	785	255	170	142
15	109	161	423	1870	1280	552	610	703	727	250	169	141
16	107	204	308	1480	1080	642	582	767	691	245	167	141
17	105	210	337	2550	1050	696	561	802	638	239	167	141
18	104	164	396	2560	866	655	548	730	601	235	168	140
19	103	261	310	2090	1670	605	551	675	570	230	169	141
20	103	226	265	1310	1560	595	572	644	544	227	168	141
21	103	160	251	982	2210	618	606	630	519	223	166	140
22	103	140	219	789	1440	1830	673	609	496	221	164	140
23	103	164	199	673	1350	1940	727	586	476	224	162	141
24	102	200	188	610	1190	2840	856	577	458	220	161	143
25	100	338	177	552	911	2200	835	825	443	216	159	144
26	99	666	165	1110	751	1680	735	890	425	212	157	163
27	101	409	157	1260	648	1410	720	834	403	206	156	157
28	101	244	152	948	579	1220	745	1730	386	204	154	162
29	101	210	152	1480	---	1010	775	2180	370	202	151	152
30	105	655	154	1150	---	869	807	1480	357	201	150	151
31	103	---	151	952	---	840	---	1170	---	200	149	---
TOTAL	3519	5957	8085	33998	51670	26669	20909	28077	20225	7918	5329	4405
MEAN	114	199	261	1097	1845	860	697	906	674	255	172	147
MAX	200	666	670	2560	6920	2840	856	2180	1140	347	207	163
MIN	97	101	151	150	579	362	548	577	357	200	149	140
AC-FT	6980	11820	16040	67440	102500	52900	41470	55690	40120	15710	10570	8740

## 11383500 DEER CREEK NEAR VINA, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	113	195	380	554	636	585	535	396	204	119	98.4	95.3
MAX	775	984	1825	2458	2600	2105	1494	1193	674	267	194	174
(WY)	1963	1974	1956	1970	1986	1983	1982	1995	1998	1983	1983	1983
MIN	63.4	65.2	82.5	87.4	95.3	109	99.5	77.2	66.1	55.8	53.3	55.2
(WY)	1935	1930	1931	1991	1977	1977	1977	1924	1924	1931	1931	1931

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1912 - 1998	
ANNUAL TOTAL	146790		216761			
ANNUAL MEAN	402		594			
HIGHEST ANNUAL MEAN					325	
LOWEST ANNUAL MEAN					700	1983
HIGHEST DAILY MEAN	20100	Jan 1	6920	Feb 3	86.2	1977
LOWEST DAILY MEAN	92	Aug 17	97	Oct 1	20100	Jan 1 1997
ANNUAL SEVEN-DAY MINIMUM	94	Sep 4	101	Oct 23	52	Aug 25 1931
INSTANTANEOUS PEAK FLOW			9870	Feb 3	53	Aug 21 1931
INSTANTANEOUS PEAK STAGE			10.94	Feb 3	24000	Jan 1 1997
ANNUAL RUNOFF (AC-FT)	291200		429900		19.20	Dec 10 1937
10 PERCENT EXCEEDS	588		1270		235300	
50 PERCENT EXCEEDS	180		369		690	
90 PERCENT EXCEEDS	97		118		146	
					79	

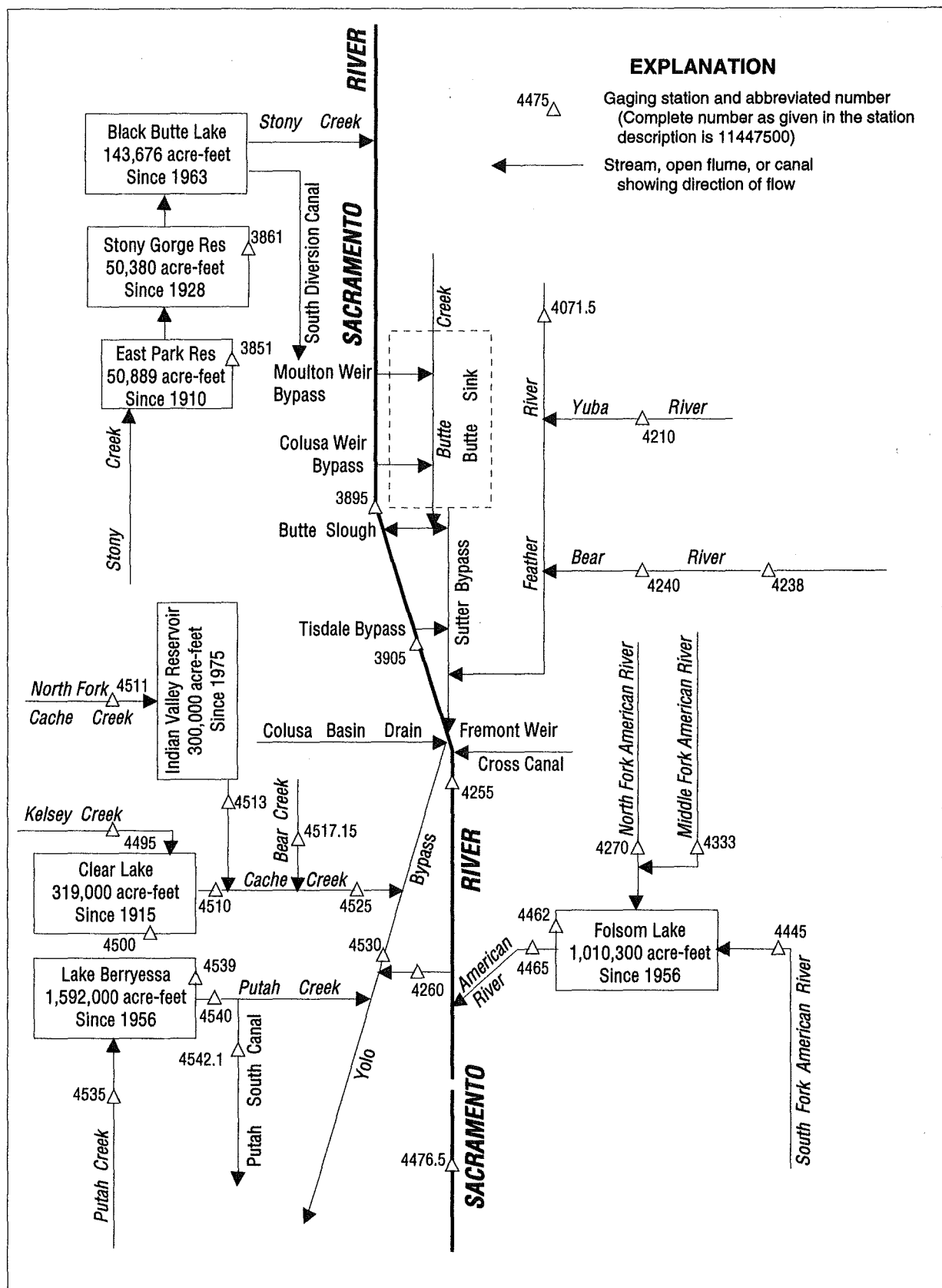


Figure 27. Diversions and storage in lower Sacramento River Basin.

## RESERVOIRS IN STONY CREEK BASIN, CA

11385100 EAST PARK RESERVOIR NEAR STONYFORD.—Lat 39°21'24", long 122°30'53", in SW 1/4 NE 1/4 sec.3, T.17 N., R.6 W., Colusa County, Hydrologic Unit 18020115, near south side of spillway section on East Park Dam on Little Stony Creek, 1.9 mi southeast of Stonyford. DRAINAGE AREA, 98.2 mi<sup>2</sup>. PERIOD OF RECORD, October 1969 to current year. GAGE, nonrecording gage read once daily. Datum of gage is sea level (levels by U.S. Bureau of Reclamation).

REMARKS.—Reservoir is formed by a concrete arch-type dam. Storage began in 1910. Capacity, 48,210 acre-ft, between elevations 1,131.68 ft, invert of sluice pipe, and 1,198.18 ft, crest of spillway. Capacity increased to 50,889 acre-ft with the addition of flashboards to an elevation of 1,199.68 ft. Dead storage, 279 acre-ft. Records of contents provided by U.S. Bureau of Reclamation. See schematic diagram of lower Sacramento River basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 53,500 acre-ft, Mar. 30, 1974, elevation, 1,201.10 ft; minimum, 280 acre-ft, Aug. 8 to Oct. 31, 1972, Apr. 30 to Nov. 1, 1977, elevation, 1,131.68 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 50,965 acre-ft, Feb. 9, elevation, 1,199.72 ft; minimum, 7,299 acre-ft, Nov. 2, 3, elevation, 1,160.80 ft.

11386100 STONY GORGE RESERVOIR NEAR ELK CREEK.—Lat 39°35'09", long 122°31'54", in NE 1/4 SE 1/4 sec.16, T.20 N., R.6 W., Glenn County, Hydrologic Unit 18020115, on south end of Stony Gorge Dam on Stony Creek, 1.3 mi southeast of Elk Creek. DRAINAGE AREA, 301 mi<sup>2</sup>. PERIOD OF RECORD, October 1969 to current year. GAGE, nonrecording gage read once daily. Datum of gage is sea level (levels by U.S. Bureau of Reclamation).

REMARKS.—Reservoir is formed by slab and buttress-type dam. Storage began in 1928. Capacity, 50,380 acre-ft between elevations 728.0 ft, top of low intake, and 841.0 ft, crest of spillway. No dead storage. Records of contents provided by U.S. Bureau of Reclamation. See schematic diagram of lower Sacramento River basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 54,630 acre-ft, Mar. 26, 1971, elevation, 844.20 ft; minimum, 3,810 acre-ft, Nov. 6, 1971, elevation, 779.20 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 51,193 acre-ft, June 3, elevation, 841.62 ft; minimum, 12,213 acre-ft, Oct. 1, 2 elevation, 799.74 ft.

## MONTHEND ELEVATION AND CONTENTS AT 0800 HOURS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (ft)	Contents (acre-ft)	Change in contents (acre-ft)	Elevation (ft)	Contents (acre-ft)	Change in contents (acre-ft)
11385100 EAST PARK RESERVOIR				11386100 STONY GORGE RESERVOIR		
Sept. 30 .....	1,163.16	8,597	-13,449	799.73	12,207	1,147
Oct. 31 .....	1,161.00	7,402	-1,195	803.16	14,245	2,038
Nov. 30 .....	1,165.60	10,085	2,683	810.08	18,943	4,698
Dec. 31 .....	1,180.60	23,033	12,948	826.06	33,020	14,077
CAL YR 1997 .....	—	—	-26,632	—	—	-9,076
Jan. 31 .....	1,198.90	49,488	26,455	830.26	37,492	4,472
Feb. 28 .....	1,198.76	49,240	-248	830.00	37,204	-288
Mar. 31 .....	1,198.48	48,745	-495	838.10	46,695	9,491
Apr. 30 .....	1,198.32	48,461	-284	840.97	50,344	3,649
May 31 .....	1,198.86	49,417	956	840.04	49,146	-1,198
June 30 .....	1,198.20	48,249	-1,168	839.76	48,789	-357
July 31 .....	1,198.08	48,037	-212	838.56	47,272	-1,517
Aug. 31 .....	1,197.34	46,752	-1,285	834.28	42,072	-5,200
Sept. 30 .....	1,196.64	45,553	-1,199	829.34	36,485	-5,587
WTR YR 1998 .....	—	—	36,956	—	—	24,278

## 11389500 SACRAMENTO RIVER AT COLUSA, CA

LOCATION.—Lat 39°12' 51", long 121°59' 57", at north end of Jimeno Grant, Colusa County, Hydrologic Unit 18020104, on right bank 60 ft downstream from highway bridge at Colusa and at mile 89.4 upstream from Sacramento.

DRAINAGE AREA.—12,090 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—April 1921 to current year (prior to October 1940, low-water periods only).

REVISED RECORDS.—WSP 1345; 1952. WDR CA-77-4; Drainage area.

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 2.95 ft below sea level. Prior to December 1930, water-stage recorder in center fender pier 50 ft upstream from bridge at same datum.

REMARKS.—Records good. Natural flow of stream affected by storage reservoirs, including Shasta Lake (station 11370000) since 1943, power development, bypassing for flood control, diversions for irrigation, and return flow from irrigated areas. When discharge exceeds about 30,000 ft<sup>3</sup>/s, flow begins over Colusa Weir, 2.5 mi upstream on left bank, into Butte Sink and Sutter Bypass. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge (water years 1941–98), 51,800 ft<sup>3</sup>/s, Mar. 4, 1983, gage height, 68.50 ft; maximum gage height, 69.20 ft, Feb. 18, 1942; minimum recorded, 820 ft<sup>3</sup>/s, July 25, 26, 1931, gage height, 34.79 ft.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6390	4520	22800	7560	41300	40000	35800	19400	37500	16200	12800	11800
2	6140	e4500	14900	7610	42500	39900	36400	20100	34400	15800	12700	11800
3	5940	e4480	10400	8430	44500	39700	35100	21200	32900	15600	12700	11700
4	5840	e4500	8800	12700	48200	38600	34600	21900	33600	15300	12600	11700
5	5550	e4500	8170	17400	49600	37100	34600	21400	33600	15200	12600	11900
6	5290	e4480	8020	14500	47800	35600	33900	21300	32700	15300	12500	11700
7	5120	e4480	9230	12100	47600	34100	33800	20100	31400	15400	12400	11800
8	4980	4510	15300	14500	48800	32600	34600	18800	29500	15400	12300	11800
9	4940	4640	19100	13800	48900	31300	31500	18600	27400	15100	12300	11600
10	5600	4750	13600	12600	47100	29100	28800	21700	25400	14900	12400	11600
11	6140	4840	10800	18200	45900	26900	27800	20800	24400	14600	12400	11300
12	5890	4950	9460	25800	45600	25000	25400	19000	27700	14100	12500	11300
13	5350	5120	8770	36300	45000	23500	23100	20700	26200	14000	12500	11100
14	5120	5350	8420	37200	45200	25800	22300	21300	25400	13800	12200	10800
15	5050	5560	12800	35500	45700	26000	20800	20300	24600	13500	12200	10700
16	4950	5840	18000	41700	45800	22800	19600	20200	23300	13400	12200	11100
17	4770	6320	13000	40600	44400	22100	18300	23900	23000	13200	12300	11000
18	4610	7080	11700	41600	45100	21200	17200	25100	22300	13000	12500	10900
19	4520	7030	12700	42600	44700	20300	17000	23100	21300	13000	12500	10700
20	4520	7840	11200	43400	44800	21600	18700	21900	20700	12800	12300	10400
21	4390	8710	10200	40300	46100	26400	19300	21100	20100	13000	12300	10200
22	4340	7380	9560	38100	45300	33400	19400	20200	19500	13000	12300	10200
23	4280	6660	9150	38000	45300	39700	19500	19800	19100	12800	12400	10100
24	4240	6440	8800	37800	45000	41900	20500	21000	18600	12700	12400	10100
25	4200	6720	8550	37400	45100	42000	22000	21700	18100	12900	12600	9740
26	4260	8950	8340	37100	44000	42800	21900	24600	17700	12800	12300	9810
27	4430	15100	8120	40300	43200	e40400	22500	25900	17500	12700	12000	9750
28	4470	16300	8020	44400	41500	e39400	21300	27500	16900	12700	11800	9660
29	4540	11300	7930	43300	---	e38000	19500	35800	16600	12700	11700	9640
30	4520	11300	7820	42100	---	e36200	19200	42500	16300	12800	11600	9460
31	4650	---	7600	42200	---	36200	---	42200	---	12800	11700	---
TOTAL	155030	204150	341260	925100	1274000	1009600	754400	723100	737700	430500	382000	325360
MEAN	5001	6805	11010	29840	45500	32570	25150	23330	24590	13890	12320	10850
MAX	6390	16300	22800	44400	49600	42800	36400	42500	37500	16200	12800	11900
MIN	4200	4480	7600	7560	41300	20300	17000	18600	16300	12700	11600	9460
AC-FT	307500	404900	676900	1835000	2527000	2003000	1496000	1434000	1463000	853900	757700	645400

e Estimated.

## 11389500 SACRAMENTO RIVER AT COLUSA, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6535	8749	13630	17940	19700	17140	12660	10680	9040	8633	8305	7244
MAX	12040	27000	38000	39720	45500	44450	31490	26680	24590	13890	12320	10850
(WY)	1958	1974	1984	1997	1998	1983	1982	1983	1998	1998	1998	1998
MIN	3219	3860	4141	5193	5147	5852	4966	5015	4852	5073	5081	4322
(WY)	1978	1993	1977	1991	1991	1977	1994	1947	1992	1992	1947	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR					FOR 1998 WATER YEAR			WATER YEARS 1946 - 1998			
ANNUAL TOTAL	4466080					7262200						
ANNUAL MEAN	12240					19900			11650			
HIGHEST ANNUAL MEAN									21790			
LOWEST ANNUAL MEAN									5671			
HIGHEST DAILY MEAN	48100					Jan 3			51300			
LOWEST DAILY MEAN	4200					Oct 25			2620			
ANNUAL SEVEN-DAY MINIMUM	4310					Oct 21			2690			
INSTANTANEOUS PEAK FLOW						50300			51800			
INSTANTANEOUS PEAK STAGE						68.02			68.67			
ANNUAL RUNOFF (AC-FT)	8858000					14400000			8442000			
10 PERCENT EXCEEDS	32000					41900			24500			
50 PERCENT EXCEEDS	8950					15300			8310			
90 PERCENT EXCEEDS	5350					5350			5320			

## 11389500 SACRAMENTO RIVER AT COLUSA, CA—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1959–66, 1973–80, 1996 to current year.

CHEMICAL DATA: Water years 1959–66, 1996 to current year.

SPECIFIC CONDUCTANCE: Water years 1995 to September 1998 (discontinued).

WATER TEMPERATURE: Water years 1975, 1977–80, 1995 to September 1998 (discontinued).

SEDIMENT: Water years 1973–80, 1996 to current year.

PERIOD OF DAILY RECORD.—

SPECIFIC CONDUCTANCE: October 1995 to September 1998 (discontinued).

WATER TEMPERATURE: October 1995 to September 1998 (discontinued).

INSTRUMENTATION.—Water-quality monitor since October 1995.

REMARKS.—Records good.

EXTREMES FOR PERIOD OF RECORD.—

SPECIFIC CONDUCTANCE: Maximum recorded, 201 microsiemens, Mar. 26, 1997; minimum recorded, 77 microsiemens, Feb. 4, 1998.

WATER TEMPERATURE: Maximum recorded, 21.0°C, May 16, 17, and 19, 1997; minimum recorded, 6.5°C, Jan. 20, 29, 1996.

EXTREMES FOR CURRENT YEAR.—

SPECIFIC CONDUCTANCE: Maximum recorded, 190 microsiemens, Dec. 29; minimum recorded, 77 microsiemens, Feb. 4.

WATER TEMPERATURE: Maximum recorded, 19.5°C, on several days during July and August; minimum recorded, 7.0°C, on several days during December and January.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	CALCIUM DIS- SOLVED (MG/L) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)
OCT										
21...	1100	4340	151	7.8	16.2	763	10.0	102	13	6.5
NOV										
13...	1100	5100	150	8.1	13.0	753	10.2	98	12	6.3
DEC										
09...	1100	19600	119	7.7	10.2	771	10.2	90	9.9	5.0
JAN										
13...	1150	36600	95	7.8	10.4	766	10.1	90	9.1	4.3
FEB										
11...	1300	45900	127	7.8	9.4	766	11.1	96	12	5.4
MAR										
17...	1230	22200	156	7.8	13.6	758	11.0	106	15	7.1
APR										
08...	1130	35100	118	7.9	11.8	765	11.1	102	12	5.4
MAY										
13...	1220	21000	115	7.8	12.4	756	11.8	111	11	5.3
JUN										
10...	1100	25600	128	8.0	16.1	756	9.8	100	12	5.5
JUL										
29...	1100	12700	116	7.8	17.9	758	9.4	100	10	5.3
AUG										
12...	1200	12600	115	7.9	17.3	760	12.8	134	--	--
SEP										
16...	1100	11300	120	7.9	18.0	758	9.0	96	11	5.4



## 11389500 SACRAMENTO RIVER AT COLUSA, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT										
21...	8.1	23	1.3	61	4.9	4.7	<.1	21	104	100
NOV										
13...	8.4	24	1.4	59	5.4	4.5	<.1	21	114	102
DEC										
09...	6.3	23	1.3	45	5.8	4.0	<.1	20	91	84
JAN										
13...	4.7	20	1.1	37	4.0	3.5	<.1	19	81	73
FEB										
11...	5.6	19	1.1	54	6.1	2.3	<.1	19	87	86
MAR										
17...	6.3	17	1.0	63	8.4	3.3	<.1	21	109	104
APR										
08...	5.3	18	.9	48	6.1	2.3	<.1	19	86	83
MAY										
13...	5.0	18	.8	47	4.6	2.5	<.1	19	82	80
JUN										
10...	5.7	18	1.0	56	5.6	2.2	<.1	20	93	88
JUL										
29...	5.4	19	1.0	47	3.7	2.0	<.1	20	86	81
AUG										
12...	--	--	--	47	--	--	--	--	--	--
SEP										
16...	5.9	20	1.1	--	3.7	2.1	<.1	20	87	84

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT										
21...	.14	<.01	.15	<.01	<.2	<.2	.03	.01	.02	6
NOV										
13...	.16	<.01	.20	<.02	.1	<.1	.04	.03	.03	6
DEC										
09...	.12	<.01	.23	<.02	.5	.1	.12	.03	.02	9
JAN										
13...	.11	<.01	.13	<.02	.7	.2	.29	.03	.03	11
FEB										
11...	.12	<.01	.19	<.02	.3	.1	.17	.02	.03	11
MAR										
17...	.15	.03	.34	<.02	.2	<.1	.13	.01	.03	9
APR										
08...	.12	<.01	.12	.02	.8	.1	.16	.03	.03	9
MAY										
13...	.11	<.01	.12	<.02	.2	<.1	.06	<.01	.01	8
JUN										
10...	.13	.02	.14	.04	.1	<.1	.04	<.01	.02	12
JUL										
29...	.12	<.01	.10	<.02	.2	<.1	.06	<.01	.02	8
AUG										
12...	--	<.01	.11	.08	.2	<.1	.05	.01	.02	8
SEP										
16...	.12	.01	.14	.04	.2	<.1	.08	.02	.02	4

## 11389500 SACRAMENTO RIVER AT COLUSA, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
OCT 21...	<1	2	20	<1	<1	<1	<1	1	16	<1
NOV 13...	<1	1	19	<1	<1	1	<1	1	10	<1
DEC 09...	<1	<1	18	<1	<1	<1	<1	3	24	<1
JAN 13...	<1	1	16	<1	<1	<1	<1	2	32	<1
FEB 11...	<1	1	23	<1	<1	1	<1	2	<10	<1
MAR 17...	<1	<1	26	<1	<1	<1	<1	1	<10	<1
APR 08...	<1	1	20	<1	<1	<1	<1	2	13	<1
MAY 13...	<1	1	18	<1	<1	1	<1	1	<10	<1
JUN 10...	<1	<1	20	<1	<1	1	<1	1	<10	<1
JUL 29...	<1	1	17	<1	<1	<1	<1	1	13	<1
AUG 12...	<1	1	17	<1	<1	<1	<1	1	--	<1
SEP 16...	<1	1	18	<1	<1	1	<1	2	10	<1

DATE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)
OCT 21...	11	<1	1	<1	<1	<1	<1	1.6	.3
NOV 13...	5	<1	1	<1	<1	<1	<1	1.1	.3
DEC 09...	3	<1	1	<1	<1	1	<1	3.5	2.5
JAN 13...	8	<1	2	<1	<1	2	<1	3.4	1.8
FEB 11...	6	<1	1	<1	<1	1	<1	1.6	.7
MAR 17...	13	<1	1	<1	<1	<1	<1	1.3	.5
APR 08...	3	<1	1	<1	<1	2	<1	2.2	.6
MAY 13...	4	<1	<1	<1	<1	2	<1	1.2	.5
JUN 10...	7	<1	<1	<1	<1	2	<1	1.1	.3
JUL 29...	6	<1	1	<1	<1	1	<1	1.1	.4
AUG 12...	5	<1	1	<1	<1	1	<1	1.4	.2
SEP 16...	5	<1	<1	<1	<1	2	<1	1.3	.2

11389500 SACRAMENTO RIVER AT COLUSA, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
21...N	1100	4340	16.2	36	422	65
NOV						
13...N	1100	5100	13.0	23	317	58
DEC						
09...N	1100	19600	10.2	177	9370	78
JAN						
13...N	1150	36600	10.4	545	53900	83
FEB						
11...N	1300	45900	9.4	202	25000	84
MAR						
17...N	1230	22200	13.6	149	8930	87
APR						
08...N	1130	35100	11.8	144	13600	87
MAY						
13...N	1220	21000	12.4	121	6860	69
JUN						
10...N	1100	25600	16.1	107	7400	65
JUL						
29...N	1100	12700	17.9	94	3220	65
AUG						
12...N	1200	12600	17.3	79	2690	68
SEP						
16...N	1100	11300	18.0	97	2960	64

## 11389500 SACRAMENTO RIVER AT COLUSA, CA—Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	139	134	147	144	136	91	181	178	126	121	146	133
2	155	138	149	147	127	99	178	177	125	104	145	138
3	156	148	151	149	159	127	178	173	104	85	143	137
4	148	140	150	149	173	159	178	136	85	77	146	141
5	143	139	150	150	179	173	136	91	106	79	150	135
6	144	139	150	146	179	175	119	105	117	106	151	145
7	140	136	147	146	181	176	144	119	116	99	160	138
8	141	139	148	146	180	111	148	132	100	96	151	141
9	141	139	148	145	119	111	141	131	110	99	166	148
10	145	141	148	146	138	119	163	141	125	110	182	150
11	153	142	150	148	169	138	166	117	129	123	157	150
12	157	140	151	149	169	156	120	107	128	122	172	149
13	147	139	151	149	174	169	108	89	132	125	160	157
14	147	145	151	150	176	174	131	97	130	124	160	153
15	150	146	151	150	181	121	146	107	130	115	158	150
16	151	149	151	149	121	109	107	93	131	112	188	154
17	151	149	150	149	133	112	117	101	135	128	179	155
18	151	149	155	150	180	133	113	101	132	125	160	156
19	155	148	158	153	165	156	111	101	142	124	165	160
20	152	149	159	154	166	155	114	99	138	127	168	156
21	154	149	154	147	177	166	125	114	137	115	156	127
22	159	153	149	145	183	177	131	125	143	130	131	119
23	158	153	159	149	185	183	135	131	144	129	122	102
24	159	154	160	157	188	185	137	135	147	136	118	102
25	157	151	157	153	189	184	137	135	151	142	116	107
26	166	149	155	153	187	185	135	130	154	139	111	108
27	159	146	155	99	188	186	130	96	152	140	115	109
28	150	141	122	104	189	188	107	94	149	134	116	115
29	146	142	144	122	190	188	124	107	---	---	121	116
30	144	143	154	136	189	188	124	114	---	---	141	119
31	145	144	---	---	189	181	122	111	---	---	141	118
MONTH	166	134	160	99	190	91	181	89	154	77	188	102
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	145	116	131	128	134	131	139	132	119	114	118	111
2	147	137	128	123	137	134	138	133	116	112	114	111
3	150	141	123	119	137	129	137	133	123	112	115	113
4	156	144	135	120	136	128	136	132	124	114	116	113
5	152	144	133	126	140	136	137	130	123	114	115	111
6	155	137	137	125	142	133	135	129	122	111	117	113
7	137	132	132	127	133	124	132	128	122	111	119	114
8	132	118	129	127	124	120	132	129	122	111	119	114
9	159	131	128	122	129	122	136	130	120	115	121	115
10	156	150	122	102	132	127	133	129	122	110	121	115
11	162	154	114	105	140	132	134	129	123	116	121	114
12	180	161	120	113	137	128	134	131	123	117	123	112
13	174	170	120	112	142	133	133	132	125	117	124	112
14	174	166	122	112	143	132	132	131	123	112	126	117
15	168	166	124	121	141	133	133	131	113	111	125	121
16	169	167	124	119	148	136	131	129	112	110	126	118
17	171	168	124	105	150	143	130	129	112	110	124	118
18	177	171	112	101	149	144	130	128	117	108	125	120
19	175	171	119	112	152	149	129	125	110	107	125	119
20	172	154	121	117	154	151	127	124	120	109	125	120
21	161	153	123	119	154	135	125	122	127	109	127	121
22	156	150	124	122	136	134	123	120	112	111	126	121
23	150	147	125	121	136	133	123	121	112	109	128	121
24	148	145	121	116	138	133	124	122	117	109	128	122
25	146	141	118	115	140	135	124	120	110	107	133	124
26	158	140	117	109	137	135	123	121	112	107	130	118
27	162	158	109	105	138	135	121	118	113	111	127	119
28	162	150	108	106	139	132	120	117	113	111	130	119
29	150	137	118	102	139	133	119	115	113	111	128	123
30	137	131	122	104	139	134	120	115	115	112	135	126
31	---	---	131	122	---	---	119	114	117	113	---	---
MONTH	180	116	137	101	154	120	139	114	127	107	135	111

## 11389500 SACRAMENTO RIVER AT COLUSA, CA—Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	18.5	17.5	16.5	15.5	10.5	10.0	9.5	9.0	10.0	9.5	10.5	10.0
2	18.5	17.5	16.5	15.5	10.0	10.0	10.0	9.5	10.0	9.5	10.5	10.5
3	18.5	18.0	16.5	16.0	10.5	10.0	10.0	9.5	10.0	10.0	10.5	10.5
4	18.5	17.5	16.5	16.0	10.5	10.0	10.0	9.5	10.0	9.5	10.5	10.0
5	18.0	17.0	16.5	15.5	10.5	10.5	9.5	8.5	10.0	9.5	10.0	9.5
6	17.0	16.5	15.5	15.0	11.0	10.5	8.5	7.5	9.5	9.5	9.5	9.0
7	16.5	15.5	15.0	14.5	11.5	11.0	7.5	7.5	9.5	9.5	9.5	9.0
8	15.5	14.5	14.5	14.0	11.0	11.0	7.5	7.0	9.5	9.0	9.5	9.0
9	15.0	14.5	14.0	13.5	11.0	10.0	8.0	7.0	9.5	9.0	10.0	9.5
10	15.5	14.5	13.5	13.0	10.0	9.0	9.0	8.0	9.5	9.5	11.0	10.0
11	15.0	14.5	13.0	13.0	9.5	9.0	10.0	9.0	9.5	9.5	11.5	10.5
12	15.0	14.0	13.0	12.5	9.0	9.0	10.5	10.0	9.5	9.5	11.5	11.0
13	15.0	14.0	13.0	13.0	9.0	8.5	10.5	10.0	10.0	9.5	12.0	11.5
14	16.0	15.0	13.0	12.5	9.0	9.0	10.0	9.5	10.0	10.0	12.0	11.5
15	16.5	15.5	13.0	12.0	9.0	8.5	9.5	9.5	10.5	10.0	13.0	12.0
16	17.0	16.0	12.5	12.0	8.5	8.0	10.0	9.5	10.0	9.5	14.0	12.5
17	17.5	16.5	12.0	12.0	9.0	8.5	11.0	10.0	9.5	9.0	14.5	13.5
18	17.5	16.5	12.0	12.0	9.5	9.0	11.0	11.0	9.0	9.0	14.5	13.5
19	17.5	16.5	12.0	12.0	9.5	8.5	11.0	10.0	9.5	9.0	14.0	13.0
20	17.0	16.5	12.0	11.5	8.5	8.0	10.0	9.5	9.5	9.0	13.5	13.0
21	17.0	16.0	12.0	11.5	8.5	8.0	9.5	9.0	9.0	8.5	13.5	12.0
22	17.0	16.0	12.0	12.0	8.0	7.0	9.5	9.0	9.0	8.5	12.0	11.0
23	16.5	16.0	12.5	12.0	7.5	7.0	9.5	9.5	9.5	9.0	11.5	11.0
24	16.0	14.5	13.0	12.5	7.5	7.0	10.0	9.5	9.5	9.0	12.5	11.5
25	14.5	13.5	13.0	12.5	7.5	7.0	10.0	10.0	9.5	9.0	12.0	11.5
26	14.0	13.0	13.0	12.5	7.5	7.0	10.0	10.0	10.0	9.5	11.5	11.5
27	14.5	13.5	12.5	12.0	7.5	7.0	10.0	10.0	10.0	9.5	11.5	11.0
28	14.5	13.5	12.0	11.5	8.0	7.5	10.5	10.0	10.5	10.0	11.0	10.5
29	15.0	14.0	11.5	11.0	8.5	8.0	10.5	10.5	---	---	10.5	10.0
30	15.5	14.5	11.5	10.5	9.0	8.5	10.5	10.5	---	---	10.5	10.0
31	16.0	15.0	---	---	9.0	8.5	10.5	10.0	---	---	10.5	10.0
MONTH	18.5	13.0	16.5	10.5	11.5	7.0	11.0	7.0	10.5	8.5	14.5	9.0
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	10.5	10.0	17.0	16.0	16.0	15.0	18.5	17.0	18.5	17.5	18.0	17.0
2	11.0	10.5	16.0	15.0	17.0	16.0	18.5	17.0	19.0	17.5	18.0	17.0
3	11.0	10.5	15.0	14.0	16.5	15.5	19.0	17.5	19.0	17.5	18.0	17.0
4	10.5	10.0	14.5	13.5	15.5	14.5	19.0	17.5	19.0	17.5	18.0	17.5
5	11.0	10.0	15.5	14.0	15.5	15.0	19.5	18.0	19.0	18.0	18.5	17.5
6	11.5	11.0	15.5	14.5	15.5	15.0	19.5	18.0	19.5	18.0	18.0	16.5
7	11.5	11.0	15.5	14.0	16.0	15.5	19.5	18.0	19.5	18.0	17.5	17.0
8	12.0	11.5	15.5	14.5	15.5	15.0	19.0	18.0	19.0	18.0	17.5	17.0
9	12.5	12.0	15.0	14.0	16.5	15.0	19.0	17.5	19.0	17.5	17.5	16.5
10	12.5	12.0	14.5	13.5	17.0	16.0	19.0	17.0	18.5	17.5	17.5	16.5
11	12.0	11.5	14.0	13.0	17.0	16.0	18.5	17.0	18.5	17.5	17.5	17.0
12	12.5	11.5	13.5	12.5	17.5	16.0	18.5	17.0	18.5	17.0	17.5	17.0
13	12.0	11.0	13.0	12.5	17.5	16.5	19.0	17.5	19.0	17.5	17.5	17.5
14	11.5	11.0	13.5	12.0	17.5	16.5	19.0	17.5	19.0	18.0	18.0	17.5
15	12.0	11.0	14.0	13.0	17.5	16.5	19.0	18.0	19.0	18.0	18.0	17.5
16	13.0	12.0	14.5	13.5	18.0	17.0	19.0	18.0	19.0	18.0	18.0	17.5
17	14.0	12.5	14.5	13.5	17.5	16.5	19.5	18.0	19.0	18.0	18.0	17.5
18	14.5	13.5	14.5	13.5	17.5	16.5	19.5	18.0	18.5	17.5	17.5	17.0
19	15.5	14.5	15.5	14.0	18.0	16.5	19.5	18.0	18.0	17.0	17.0	16.5
20	16.0	14.5	15.5	14.0	18.0	16.5	19.5	18.5	18.0	16.5	16.5	16.5
21	16.5	15.0	16.0	14.5	18.0	16.5	19.5	18.0	17.5	16.5	17.0	16.5
22	16.5	15.5	16.0	15.0	18.0	16.5	19.5	18.0	17.5	16.5	17.0	16.5
23	16.5	15.0	16.0	15.0	18.0	16.5	18.0	16.5	17.5	16.0	16.5	16.0
24	15.0	13.5	15.5	14.5	18.0	16.5	18.0	17.0	17.5	16.0	16.5	16.0
25	14.5	13.5	15.0	14.0	17.5	16.5	19.0	17.5	17.5	16.5	16.5	16.0
26	14.5	13.5	14.5	14.0	17.5	16.0	19.0	17.5	17.5	16.0	16.0	16.0
27	15.0	14.0	14.0	13.0	17.5	16.0	19.0	18.0	17.5	16.5	16.0	15.5
28	16.5	14.5	13.0	12.0	18.0	16.5	19.0	18.0	17.5	16.5	15.5	15.0
29	17.0	16.0	12.5	11.5	18.0	16.5	19.0	18.0	17.5	17.0	15.5	15.0
30	17.0	16.0	13.5	12.0	18.5	17.0	19.0	17.5	18.0	17.0	16.0	15.5
31	---	---	15.0	13.5	---	---	18.5	17.0	18.0	17.0	---	---
MONTH	17.0	10.0	17.0	11.5	18.5	14.5	19.5	16.5	19.5	16.0	18.5	15.0

## 11389720 BUTTE CREEK BELOW DIVERSION DAM, NEAR STIRLING CITY, CA

LOCATION.—Lat 39°58'53", long 121°35'15", unsurveyed, T.25 N., R.3 E., Butte County, Hydrologic Unit 18020120, on left bank 400 ft downstream from diversion dam, 0.1 mi upstream from Haw Creek, and 6.2 mi northwest of Stirling City.

DRAINAGE AREA.—61.3 mi<sup>2</sup>.

PERIOD OF RECORD.—January to February 1986, June 1986 to current year (low-flow records only).

GAGE.—Water-stage recorder. Elevation of gage is 2,840 ft above sea level, from topographic map.

REMARKS.—No records computed above 40 ft<sup>3</sup>/s. Flow regulated by diversion dam 400 ft upstream. Most of the water is diverted at diversion dam to Butte Creek Canal and then to De Sabla Powerplant (station 11389750).

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e19	e20	e39	e20	---	---	---	---	---	---	30	19
2	e19	e20	e26	---	---	---	---	---	---	---	29	19
3	e19	e20	e24	---	---	---	---	---	---	---	25	19
4	e19	e20	e23	---	---	---	---	---	---	---	21	19
5	e20	e20	e24	---	---	---	---	---	---	---	20	19
6	e20	e20	---	---	---	---	---	---	---	---	20	19
7	e20	e20	---	---	---	---	---	---	---	---	20	19
8	e20	e20	---	---	---	---	---	---	---	---	19	19
9	e25	e20	---	---	---	---	---	---	---	---	19	19
10	e32	e20	---	---	---	---	---	---	---	---	18	19
11	e23	e19	---	---	---	---	---	---	---	---	18	19
12	e22	e20	---	---	---	---	---	---	---	---	19	19
13	e20	e33	---	---	---	---	---	---	---	---	19	19
14	e20	---	---	---	---	---	---	---	---	---	19	19
15	e20	---	---	---	---	---	---	---	---	---	19	19
16	e20	---	---	---	---	---	---	---	---	---	19	19
17	e20	---	---	---	---	---	---	---	---	---	19	19
18	e20	---	---	---	---	---	---	---	---	---	19	19
19	e20	---	---	---	---	---	---	---	---	---	19	19
20	e20	e32	---	---	---	---	---	---	---	---	19	19
21	e20	---	---	---	---	---	---	---	---	---	19	19
22	e20	---	---	---	---	---	---	---	---	---	19	19
23	e20	---	---	---	---	---	---	---	---	---	19	19
24	e20	---	---	---	---	---	---	---	---	---	19	19
25	e20	---	---	---	---	---	---	---	---	---	19	19
26	e20	---	---	---	---	---	---	---	---	39	19	20
27	e20	---	e40	---	---	---	---	---	---	36	19	21
28	e20	---	e35	---	---	---	---	---	---	34	19	20
29	e20	---	e27	---	---	---	---	---	---	32	19	19
30	e20	---	e27	---	---	---	---	---	---	31	19	19
31	e20	---	e21	---	---	---	---	---	---	31	19	---
TOTAL	638	---	---	---	---	---	---	---	---	---	619	574
MEAN	20.6	---	---	---	---	---	---	---	---	---	20.0	19.1
MAX	32	---	---	---	---	---	---	---	---	---	30	21
MIN	19	---	---	---	---	---	---	---	---	---	18	19
AC-FT	1270	---	---	---	---	---	---	---	---	---	1230	1140

e Estimated.

## 11389740 BUTTE CREEK BELOW FORKS OF BUTTE DIVERSION DAM, NEAR DE SABLA, CA

LOCATION.—Lat 39°54'05", long 121°37'24", in NW 1/4 NE 1/4 sec.34, T.24 N., R.3 E., Butte County, Hydrologic Unit 18020120, on left bank 30 ft downstream from diversion dam, 0.2 mi upstream from American Ravine, and 2.0 mi north of De Sabla.

DRAINAGE AREA.—96.4 mi<sup>2</sup>.

PERIOD OF RECORD.—April 1992 to current year (low-flow records only).

GAGE.—Water-stage recorder and concrete control. Elevation of gage is 1,900 ft above sea level, from topographic map.

REMARKS.—No records computed above 60 ft<sup>3</sup>/s. Flow regulated by Forks of Butte Diversion Dam 30 ft upstream. Water is diverted out of creek to Butte Canal 7.4 mi upstream by Pacific Gas and Electric Co. Water is diverted 30 ft upstream to Forks of Butte Powerplant (station 11389747).

COOPERATION.—Records were collected by Energy Growth Partnership I, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	39	48	54	---	---	---	---	---	48	48	45
2	40	39	48	---	---	---	---	---	---	48	48	45
3	30	39	48	---	---	---	---	---	---	48	48	44
4	29	39	52	---	---	---	---	---	---	48	60	45
5	29	39	57	---	---	---	---	---	---	48	60	45
6	e29	41	48	52	---	---	---	---	---	48	60	47
7	e30	42	---	48	---	---	---	---	---	48	58	47
8	e30	39	---	48	---	---	---	---	---	48	57	46
9	e49	39	48	48	---	51	---	---	---	48	56	46
10	e49	41	48	---	---	48	---	---	---	48	55	46
11	e49	48	48	---	---	50	---	---	---	48	54	46
12	e46	43	48	---	---	---	---	---	---	48	54	45
13	e44	47	48	---	---	---	---	---	---	48	54	44
14	e42	49	49	---	---	---	---	---	---	48	54	44
15	e40	53	49	---	---	---	---	---	---	48	53	43
16	40	52	48	---	---	---	---	---	---	48	52	44
17	40	48	48	---	---	---	---	---	---	48	52	44
18	39	48	49	---	---	---	---	---	---	48	52	44
19	39	48	48	---	---	---	---	---	---	48	52	44
20	40	48	48	---	---	---	---	---	---	48	51	44
21	39	49	48	---	---	---	---	---	---	48	50	44
22	40	57	48	---	---	---	---	---	---	48	50	43
23	39	48	48	---	---	---	---	---	---	48	49	44
24	39	48	48	---	---	---	---	---	---	48	e48	44
25	39	48	48	---	---	---	---	---	---	48	48	44
26	39	---	48	---	---	---	---	---	---	48	48	54
27	39	---	48	---	---	---	---	---	---	48	47	48
28	39	48	48	---	---	---	---	---	---	48	47	48
29	39	48	50	---	---	---	---	---	---	48	46	45
30	39	48	56	---	---	---	---	---	53	48	46	45
31	39	---	54	---	---	---	---	---	---	48	45	---
TOTAL	1191	---	---	---	---	---	---	---	---	1488	1602	1357
MEAN	38.4	---	---	---	---	---	---	---	---	48.0	51.7	45.2
MAX	49	---	---	---	---	---	---	---	---	48	60	54
MIN	27	---	---	---	---	---	---	---	---	48	45	43
AC-FT	2360	---	---	---	---	---	---	---	---	2950	3180	2690
a	143	3030	4510	14430	13880	15150	15740	16460	14840	6360	123	0

e Estimated.

a Diversion, in acre-feet, to Forks of Butte Powerplant, provided by Energy Growth Partnership I.

## 11389780 BUTTE CREEK BELOW CENTERVILLE DIVERSION DAM, NEAR PARADISE, CA

LOCATION.—Lat 39°52'01", long 121°37'58", in SW 1/4 NW 1/4 sec.10, T.23 N., R.3 E., Butte County, Hydrologic Unit 18020120, on left bank 400 ft downstream from Centerville diversion dam, 0.2 mi downstream from De Sabla Powerplant, and 6.8 mi north of Paradise.

DRAINAGE AREA.—101 mi<sup>2</sup>.

PERIOD OF RECORD.—November 1985 to February 1986, June 1986 to current year (low-flow records only).

GAGE.—Water-stage recorder. Elevation of gage is 1,130 ft above sea level, from topographic map.

REMARKS.—No records computed above 60 ft<sup>3</sup>/s. Flow regulated by several reservoirs and diversions upstream. Most of the water is diverted at Centerville Diversion Dam to the Centerville Powerplant (station 11389775).

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	46
2	---	---	---	---	---	---	---	---	---	---	---	47
3	---	---	48	---	---	---	---	---	---	---	---	47
4	---	---	47	---	---	---	---	---	---	---	---	47
5	---	---	51	---	---	---	---	---	---	---	---	47
6	---	---	---	---	---	---	---	---	---	---	---	47
7	---	---	---	---	---	---	---	---	---	---	---	47
8	---	---	---	---	---	---	---	---	---	---	---	47
9	---	---	---	---	---	---	---	---	---	---	---	47
10	---	---	---	---	---	---	---	---	---	---	60	47
11	---	---	---	---	---	---	---	---	---	---	58	47
12	---	---	---	---	---	---	---	---	---	---	55	47
13	---	---	---	---	---	---	---	---	---	---	52	47
14	---	---	---	---	---	---	---	---	---	---	50	47
15	---	---	---	---	---	---	---	---	---	---	48	47
16	---	---	---	---	---	---	---	---	---	---	47	59
17	---	---	---	---	---	---	---	---	---	---	47	47
18	---	---	---	---	---	---	---	---	---	---	43	47
19	---	---	---	---	---	---	---	---	---	---	44	47
20	---	---	---	---	---	---	---	---	---	---	45	47
21	---	58	---	---	---	---	---	---	---	---	45	47
22	---	49	---	---	---	---	---	---	---	---	45	47
23	---	---	---	---	---	---	---	---	---	---	45	47
24	---	---	---	---	---	---	---	---	---	---	45	47
25	---	---	---	---	---	---	---	---	---	---	44	47
26	---	---	---	---	---	---	---	---	---	---	44	---
27	---	---	53	---	---	---	---	---	---	---	44	58
28	---	---	51	---	---	---	---	---	---	---	44	53
29	---	---	50	---	---	---	---	---	---	---	44	47
30	---	---	50	---	---	---	---	---	---	---	44	47
31	---	---	50	---	---	---	---	---	---	---	44	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---
a	2040	2300	7410	3650	4270	7550	8250	8870	8370	9120	9580	7680

CAL YR 1997 a 39600

WTR YR 1998 a 79090

a Diversion, in acre-feet, to Centerville Powerplant, provided by Pacific Gas & Electric Co.



## 11389800 TOADTOWN CANAL ABOVE BUTTE CANAL, NEAR STIRLING CITY, CA

LOCATION.—Lat 39°53'09", long 121°36'35", in NE 1/4 NW 1/4 sec.2, T.23 N., R.3 E., Butte County, Hydrologic Unit 18020120, on right bank 600 ft upstream from Butte Canal and 4.6 mi west of Stirling City.

PERIOD OF RECORD.—October 1986 to current year. Monthly discharges for water years 1931–86 are published as a line item to Butte Creek near Chico (station 11390000).

GAGE.—Water-stage recorder and Parshall flume. Elevation of gage is 2,790 ft above sea level, from topographic map.

REMARKS.—Canal diverts from right bank of West Branch Feather River, in sec.16, T.24 N., R.4 E. at Hendricks Diversion Dam to Hendricks Canal, flows through tunnel down Long Ravine to Toadtown Canal, and discharges into Butte Canal. Butte Canal flows to De Sabla Powerplant (station 11389750) on Butte Creek.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 127 ft<sup>3</sup>/s, Feb. 12, May 20, 1995, no flow at times in most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	32	82	71	58	101	97	115	106	113	90	74
2	23	32	71	83	15	101	99	114	116	114	85	72
3	15	32	65	79	21	110	100	113	108	113	84	71
4	31	31	62	29	14	113	100	113	111	112	93	71
5	30	31	61	51	18	110	99	114	118	112	105	73
6	33	33	74	100	25	94	100	104	115	112	105	74
7	34	38	90	100	29	97	101	104	79	112	103	73
8	37	34	85	94	24	88	100	104	87	111	102	70
9	63	33	96	89	50	102	100	94	104	111	100	58
10	46	34	98	87	99	112	100	88	102	112	99	57
11	43	46	89	50	98	115	100	87	95	112	97	56
12	38	39	82	33	91	108	100	84	94	112	97	56
13	36	43	77	14	83	100	38	93	95	114	95	55
14	35	53	85	12	72	98	4.6	95	96	115	94	54
15	34	52	87	53	61	98	2.9	94	105	112	93	54
16	34	70	88	101	75	99	2.3	95	110	106	91	56
17	34	74	97	94	80	108	2.4	95	113	109	91	79
18	33	55	95	47	81	115	2.0	96	112	113	69	79
19	33	72	93	54	74	116	1.9	95	112	113	58	80
20	33	78	92	99	54	117	2.1	101	112	112	57	79
21	33	55	92	101	94	106	6.5	108	112	112	63	79
22	32	49	86	105	88	94	11	107	111	112	63	79
23	33	82	81	91	88	100	59	107	112	113	63	81
24	33	86	77	87	100	94	99	107	114	112	62	87
25	32	79	73	82	112	87	104	108	113	110	62	88
26	32	76	70	88	110	81	104	107	113	109	61	97
27	33	82	68	90	108	80	103	107	114	109	60	93
28	32	88	67	25	107	79	109	104	115	110	60	91
29	22	75	69	15	---	79	114	96	112	103	59	89
30	32	90	72	87	---	89	114	94	113	98	58	87
31	32	---	71	89	---	97	---	97	---	94	61	---
TOTAL	1040	1674	2495	2200	1929	3088	2075.7	3140	3219	3422	2480	2212
MEAN	33.5	55.8	80.5	71.0	68.9	99.6	69.2	101	107	110	80.0	73.7
MAX	63	90	98	105	112	117	114	115	118	115	105	97
MIN	15	31	61	12	14	79	1.9	84	79	94	57	54
AC-FT	2060	3320	4950	4360	3830	6130	4120	6230	6380	6790	4920	4390
a	4710	5910	8330	6720	5580	8790	7720	6760	9240	10500	9650	7540

a Discharge, in acre-feet, at De Sabla Powerplant provided by Pacific Gas & Electric Co.

## 11389800 TOADTOWN CANAL ABOVE BUTTE CANAL, NEAR STIRLING CITY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1998, BY WATER YEAR (WY)

MEAN	30.7	36.0	52.0	62.2	74.6	96.0	101	97.7	78.3	67.1	49.4	28.9
MAX	57.8	55.8	91.8	95.8	118	117	119	118	119	114	99.7	73.7
(WY)	1987	1998	1997	1996	1995	1993	1992	1993	1995	1995	1995	1998
MIN	7.72	17.1	18.9	15.0	12.5	4.68	2.51	.95	39.2	41.3	12.0	2.24
(WY)	1989	1992	1991	1997	1997	1997	1997	1997	1987	1996	1991	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1987 - 1998	
ANNUAL TOTAL	12565.43		28974.7			
ANNUAL MEAN	34.4		79.4		64.4	
HIGHEST ANNUAL MEAN					83.8	
LOWEST ANNUAL MEAN					36.2	
HIGHEST DAILY MEAN	104	Aug 7	118	Jun 5	127	Feb 12 1995
LOWEST DAILY MEAN	.06	May 22	1.9	Apr 19	.00	Sep 9 1987
ANNUAL SEVEN-DAY MINIMUM	.09	May 17	2.6	Apr 14	.00	Sep 9 1987
ANNUAL RUNOFF (AC-FT)	24920		57470		46680	
ANNUAL DISCHARGE (AC-FT) a	40490		91460			
10 PERCENT EXCEEDS	77		112		116	
50 PERCENT EXCEEDS	32		88		61	
90 PERCENT EXCEEDS	.85		32		11	

a Discharge, in acre-feet, at De Sabla Powerplant provided by Pacific Gas & Electric Co.

## 11390000 BUTTE CREEK NEAR CHICO, CA

LOCATION.—Lat 39°43'34", long 121°42'28", in NW 1/4 NW 1/4 sec.36, T.22 N., R.2 E., Butte County, Hydrologic Unit 18020105, on right bank 0.7 mi downstream from Little Butte Creek and 7.5 mi east of Chico.

DRAINAGE AREA.—147 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1930 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

CHEMICAL DATA: Water years 1953–79.

WATER TEMPERATURE: Water years 1962–79.

REVISED RECORDS.—WSP 1445: 1953(M). WSP 1931: Drainage area.

GAGE.—Water-stage recorder and crest-stage gage. Elevation of gage is 320 ft above sea level, from topographic map. Prior to Aug. 13, 1944, water-stage recorder at site 0.4 mi upstream at different datum. Aug. 13, 1944, to June 5, 1986, at datum 3.00 ft higher.

REMARKS.—Records good. Flow slightly regulated by storage in Magalia Reservoir, usable capacity, 2,640 acre-ft, and since 1957 by Paradise Reservoir, usable capacity, 11,500 acre-ft. Diversions upstream from station for irrigation and domestic use of about 7,000 acre-ft annually. Butte Creek receives water above station from West Branch Feather River by way of Toadtown Canal (11389800).

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 35,600 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 15.06 ft, in gage well, 15.7 ft from floodmarks, on basis of slope-area measurement of peak flow; maximum gage height, 17.52 ft, Feb. 17, 1986, present datum; minimum discharge, 10 ft<sup>3</sup>/s, Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 2,700 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	1545	6,240	5.44	Feb. 21	1200	3,280	4.12
Feb. 3	0715	10,400	7.37	Mar. 24	0145	3,570	4.30

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	166	344	216	1400	959	942	974	1260	e465	e265	190
2	126	167	317	490	2030	920	910	1210	1190	e455	e260	189
3	122	169	324	943	7040	929	1020	1110	1100	e445	e255	184
4	115	170	342	1150	3080	876	1030	1040	965	e435	e250	182
5	116	173	366	614	2550	814	968	970	922	e425	e248	187
6	118	178	413	520	3980	737	975	1120	909	e415	e245	193
7	127	191	661	456	4820	680	1120	1010	901	e405	e243	189
8	131	184	627	424	3490	638	1040	988	826	e400	e240	186
9	212	184	425	401	2310	597	983	1530	859	e395	e238	173
10	149	187	357	832	1900	594	977	1420	888	e390	e235	171
11	150	211	312	2140	1720	593	929	1220	1070	e385	e233	159
12	138	204	282	4230	1740	602	882	1160	940	e375	e230	161
13	136	221	261	2140	1750	731	927	1080	885	e370	e225	170
14	137	256	365	1470	2350	721	833	1000	834	e360	e220	162
15	138	254	444	2570	1960	717	777	926	793	e355	e215	156
16	139	293	373	1950	1670	792	743	935	769	e350	e210	153
17	138	305	416	2860	1610	792	703	923	675	e345	e205	174
18	141	262	453	2680	1440	744	685	864	664	e340	e200	178
19	142	339	378	2450	1970	718	691	838	e645	e335	190	180
20	144	312	340	1730	2020	719	688	807	e635	e330	184	179
21	146	270	319	1360	2420	731	699	798	e615	e325	186	180
22	146	255	292	1050	1960	1450	713	747	e595	e315	187	180
23	150	290	272	911	1760	1770	807	740	e580	e310	184	181
24	149	297	256	846	1640	2740	1010	720	e570	e305	180	190
25	151	331	242	739	1450	2050	983	978	e560	e300	177	191
26	153	550	233	1200	1260	1610	900	954	e545	e295	176	217
27	155	440	223	1380	1110	1380	908	936	e525	e290	171	212
28	158	344	217	1090	1020	1230	922	1610	e505	e285	168	211
29	156	313	219	1540	---	1100	931	2220	e490	e280	166	201
30	160	399	222	1390	---	978	947	1680	e475	e275	170	198
31	163	---	218	1170	---	993	---	1420	---	e270	177	---
TOTAL	4419	7915	10513	42942	63450	30905	26643	33928	23190	11025	6533	5477
MEAN	143	264	339	1385	2266	997	888	1094	773	356	211	183
MAX	212	550	661	4230	7040	2740	1120	2220	1260	465	265	217
MIN	113	166	217	216	1020	593	685	720	475	270	166	153
AC-FT	8770	15700	20850	85180	125900	61300	52850	67300	46000	21870	12960	10860

e Estimated.

## 11390000 BUTTE CREEK NEAR CHICO, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	138	225	461	701	809	764	682	506	287	166	132	119
MAX	775	1269	2061	2847	2925	2601	1848	1314	773	356	223	183
(WY)	1963	1974	1956	1997	1986	1995	1982	1995	1998	1998	1975	1998
MIN	65.8	77.8	89.5	91.0	114	123	114	134	79.4	54.4	46.1	51.9
(WY)	1992	1992	1991	1991	1977	1977	1977	1977	1977	1977	1931	1992

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1931 - 1998

ANNUAL TOTAL	172307	266940	
ANNUAL MEAN	472	731	
HIGHEST ANNUAL MEAN			414
LOWEST ANNUAL MEAN			834
HIGHEST DAILY MEAN	26600	Jan 1	7040
LOWEST DAILY MEAN	113	Sep 30	113
ANNUAL SEVEN-DAY MINIMUM	116	Sep 25	120
INSTANTANEOUS PEAK FLOW			10400
INSTANTANEOUS PEAK STAGE			7.37
ANNUAL RUNOFF (AC-FT)	341800	529500	299800
10 PERCENT EXCEEDS	639	1610	860
50 PERCENT EXCEEDS	204	455	208
90 PERCENT EXCEEDS	127	166	101

## 11390500 SACRAMENTO RIVER BELOW WILKINS SLOUGH, NEAR GRIMES, CA

LOCATION.—Lat 39°00'36", long 121°49'25", in NW 1/4 NE 1/4 sec.2, T.13 N., R.1 E., Colusa County, Hydrologic Unit 18020104, on right bank 1,200 ft downstream from Wilkins Slough, 5.8 mi southeast of Grimes, and at mile 62.9 upstream from Sacramento.

DRAINAGE AREA.—12,926 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—August 1931 to current year (prior to October 1938, low-water periods only). Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1965, published as "below Wilkins Slough."

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 3.00 ft below sea level.

REMARKS.—Records good. Natural flow of stream affected by storage reservoirs, power development, bypassing for flood control, diversions for irrigation, and return flow from irrigated areas. When discharge exceeds about 23,000 ft<sup>3</sup>/s, flow begins over Tisdale Weir, 1.0 mi upstream on left bank, into Sutter Bypass. Records tabulated below do not include flow over Tisdale Weir. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge (water years 1939–98), 32,700 ft<sup>3</sup>/s, Feb. 20, 1986, gage height, 52.50 ft; maximum gage height, 52.75 ft, Mar. 1, 1940; minimum daily, 645 ft<sup>3</sup>/s, Aug. 9, 1939.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6230	4200	19600	7190	28500	26900	25400	17800	26700	14600	11300	10700
2	6020	4210	18100	7260	28600	26800	25500	18200	25600	14400	11300	10800
3	5810	4180	12900	7580	29200	26700	25200	19000	25000	14200	11300	10800
4	5690	4190	10500	11100	29900	26400	25000	19800	25000	14000	11200	10800
5	5480	4350	9420	e15800	30800	26000	25000	19700	25100	13800	11100	11000
6	5180	4490	8960	e13400	30800	25500	24800	19400	24800	13800	11100	11000
7	4990	4350	9620	e11400	30500	25100	24700	18800	24500	13900	11000	11000
8	4830	4320	12800	e13200	30700	24600	25000	17600	23800	13900	10800	11100
9	4750	4390	19000	e12900	31000	24200	24200	17000	23000	13700	10800	10900
10	4920	4540	16100	e11900	30500	23600	23400	18800	22100	13400	10900	10900
11	5770	4620	12700	e13400	29500	22800	23100	19100	21600	13300	10900	10800
12	5720	4770	10800	e19900	29000	22300	22500	17800	22500	12900	11000	10600
13	5330	4910	8960	e25000	28800	21600	21600	17900	22300	12600	11000	10600
14	4950	5130	9140	e25800	28700	22000	21100	19300	22000	12500	10800	10400
15	4860	5420	10700	26800	28700	22400	20200	18600	21700	12200	10600	10200
16	4770	5640	17500	28500	28900	21300	18900	18400	21200	12100	10600	10400
17	4620	6110	15200	28800	28600	20600	17900	19800	21000	11900	10700	10700
18	4440	6890	12600	28700	28500	20000	16700	21800	20400	11600	10800	10500
19	4310	7390	13300	29000	28400	19100	16100	20900	19300	11700	11000	10400
20	4300	7450	12300	29300	28300	19400	17000	19900	18700	11400	11000	10100
21	4200	9210	11000	28900	28700	21700	17800	18900	18100	11600	10900	9790
22	4100	8280	10100	28100	28600	23800	18000	18300	17600	11600	11000	9720
23	4080	7280	e9550	28000	28600	25600	18100	17700	17300	11500	11000	9700
24	3980	6850	9050	27900	28500	27100	18600	18200	17000	11400	11200	9640
25	3990	6910	8690	27800	28500	27300	19900	18900	16500	11500	11300	9390
26	3990	8290	e8380	27700	28200	27400	20100	20400	16200	11500	11300	9340
27	4080	12900	e8050	28100	27900	27500	20600	21900	15900	11400	10900	9380
28	4170	17500	7790	29000	27500	27300	20000	22400	15500	11400	10700	9260
29	4180	13700	7670	29100	---	27000	18500	24400	15000	11200	10600	9270
30	4070	11300	7530	28600	---	26400	17700	27100	14800	11300	10600	9090
31	4280	---	7310	28600	---	25800	---	27600	---	11300	10500	---
TOTAL	148090	203770	355320	678730	814400	754200	632600	615400	620200	387600	339200	308280
MEAN	4777	6792	11460	21890	29090	24330	21090	19850	20670	12500	10940	10280
MAX	6230	17500	19600	29300	31000	27500	25500	27600	26700	14600	11300	11100
MIN	3980	4180	7310	7190	27500	19100	16100	17000	14800	11200	10500	9090
AC-FT	293700	404200	704800	1346000	1615000	1496000	1255000	1221000	1230000	768800	672800	611500

e Estimated.

## 11390500 SACRAMENTO RIVER BELOW WILKINS SLOUGH, NEAR GRIMES, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6547	8479	12310	15130	16730	15310	11490	9451	7877	7390	7316	7244
MAX	11800	20510	27430	27310	29090	29490	24920	23110	20670	12500	10940	10620
(WY)	1958	1974	1984	1997	1998	1983	1982	1983	1998	1998	1998	1967
MIN	3330	3839	4103	5281	5013	5152	4201	3397	3451	3784	4086	4065
(WY)	1978	1993	1977	1991	1991	1977	1994	1992	1992	1992	1947	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1946 - 1998			
ANNUAL TOTAL	3775690				5857790							
ANNUAL MEAN	10340				16050							
HIGHEST ANNUAL MEAN									10410			
LOWEST ANNUAL MEAN									17980			1983
HIGHEST DAILY MEAN	31000				31000				5109			1977
LOWEST DAILY MEAN	3980				3980				32600			Feb 20 1986
ANNUAL SEVEN-DAY MINIMUM	4060				4060				2720			May 7 1992
INSTANTANEOUS PEAK FLOW					31100				2880			Oct 12 1977
INSTANTANEOUS PEAK STAGE					51.13				32700			Feb 20 1986
ANNUAL RUNOFF (AC-FT)	7489000				11620000				52.68			Jan 4 1997
10 PERCENT EXCEEDS	24600				28100				7541000			
50 PERCENT EXCEEDS	8380				13900				22100			
90 PERCENT EXCEEDS	4950				5160				7990			
									5010			

## 11390500 SACRAMENTO RIVER BELOW WILKINS SLOUGH, NEAR GRIMES, CA—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water year 1967 to current year.

PERIOD OF DAILY RECORD.—

WATER TEMPERATURE: October 1966 to current year.

INSTRUMENTATION.—Temperature recorder since October 1966.

EXTREMES FOR PERIOD OF DAILY RECORD.—

WATER TEMPERATURE: Maximum recorded, 25.5°C, Sept. 6–8, 1977, June 3–5, 1992; minimum recorded, 3.5°C, Dec. 23–25, 1990.

EXTREMES FOR CURRENT YEAR.—

WATER TEMPERATURE: Maximum recorded, 21.0°C, Aug. 29, 30; minimum recorded, 7.0°C, on several days during December and January.

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	18.5	18.0	16.5	15.5	11.5	10.5	9.5	9.0	10.0	9.5	10.5	10.5
2	18.5	18.0	16.5	16.0	10.5	10.0	9.5	9.0	9.5	9.5	11.0	10.5
3	18.5	17.5	16.5	16.0	10.5	10.0	10.0	9.5	9.5	9.5	11.0	10.5
4	18.5	18.0	16.5	16.0	10.5	10.0	10.5	10.0	10.0	9.5	10.5	10.0
5	18.5	17.5	16.5	15.5	10.5	10.5	10.0	9.0	10.0	9.5	10.0	9.5
6	18.0	17.0	16.0	15.5	11.0	10.5	9.0	8.0	9.5	9.5	9.5	9.0
7	17.0	16.0	15.5	14.5	11.0	10.5	8.0	7.5	9.5	9.5	9.5	9.0
8	16.5	15.5	15.0	14.0	11.0	11.0	8.0	7.5	9.5	9.0	9.5	9.0
9	15.5	15.0	14.0	14.0	11.0	10.5	7.5	7.0	9.5	9.0	10.0	9.5
10	15.5	15.0	14.0	13.5	10.5	9.5	8.5	7.0	9.5	9.5	10.5	10.0
11	15.5	15.0	13.5	13.0	9.5	9.0	9.5	8.5	9.5	9.5	11.0	10.5
12	15.0	14.5	13.0	13.0	9.0	9.0	10.0	9.5	9.5	9.5	11.5	11.0
13	15.5	14.5	13.0	13.0	9.0	8.5	10.0	10.0	9.5	9.0	11.5	11.5
14	16.0	15.0	13.0	13.0	8.5	8.5	10.0	9.5	10.0	9.5	12.0	11.5
15	16.5	15.5	13.0	12.5	9.0	8.5	9.5	9.0	10.5	10.0	12.5	12.0
16	17.0	16.0	12.5	12.5	9.0	8.5	9.5	9.0	10.0	9.5	13.5	12.5
17	17.5	16.5	12.5	12.0	8.5	8.5	10.5	9.5	9.5	9.0	14.0	13.0
18	17.5	17.0	12.5	12.0	9.5	8.5	11.0	10.5	9.0	9.0	14.5	13.5
19	17.5	17.0	12.5	12.0	9.0	9.0	10.5	10.0	9.5	9.0	14.0	13.5
20	17.5	16.5	12.5	12.0	9.0	8.5	10.0	9.5	9.5	9.0	14.0	13.0
21	17.0	16.5	12.5	12.0	8.5	8.0	9.5	9.0	9.0	9.0	13.5	12.5
22	17.0	16.0	12.0	12.0	8.0	7.5	9.0	9.0	9.0	8.5	12.5	11.5
23	17.0	16.0	12.5	12.0	7.5	7.0	9.5	9.0	9.5	9.0	11.5	11.0
24	16.0	15.0	13.0	12.5	7.5	7.0	9.5	9.5	9.5	9.0	12.0	11.5
25	15.0	14.0	13.0	12.5	7.5	7.0	10.0	9.5	9.5	9.0	12.0	12.0
26	14.5	13.5	13.0	13.0	7.5	7.0	10.0	9.5	10.0	9.5	12.0	11.5
27	14.5	13.5	13.0	12.0	7.5	7.0	10.0	10.0	10.0	9.5	11.5	11.0
28	14.5	14.0	12.0	12.0	8.0	7.5	10.0	10.0	10.5	10.0	11.0	10.5
29	15.0	14.0	12.0	11.5	8.5	7.5	10.5	10.0	---	---	10.5	10.5
30	15.5	14.5	11.5	11.0	9.0	8.5	10.5	10.5	---	---	10.5	10.0
31	16.0	15.0	---	---	9.0	8.5	10.5	10.0	---	---	10.5	10.5
MONTH	18.5	13.5	16.5	11.0	11.5	7.0	11.0	7.0	10.5	8.5	14.5	9.0

## 11390500 SACRAMENTO RIVER BELOW WILKINS SLOUGH, NEAR GRIMES, CA—Continued

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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



## 11390890 COLUSA BASIN DRAIN AT ROAD 99E, NEAR KNIGHTS LANDING, CA

LOCATION.—Lat 38°48' 45", long 121°46'23", in NW 1/4 SE 1/4, sec.8, T.11 N., R.2 E., Yolo County, Hydrologic Unit 18020104, on downstream side of bridge over "Ridgecut" at the intersection of Road 99E and Road 108, and 3.2 mi west of Knights Landing.

DRAINAGE AREA.—Indeterminate.

PERIOD OF RECORD.— Water years 1996 to current year.

CHEMICAL DATA.: Water years 1996 to current year.

SPECIFIC CONDUCTANCE.: Water years 1995 to current year.

WATER TEMPERATURE.: Water years 1995 to current year.

SEDIMENT DATA.: Water years 1996 to current year.

PERIOD OF DAILY RECORD.—

WATER STAGE: Water year 1996.

SPECIFIC CONDUCTANCE: October 1995 to current year.

WATER TEMPERATURE: October 1995 to current year.

INSTRUMENTATION.—Water-quality monitor since October 1995.

REMARKS.—Interruptions in record were due to malfunction of the recording instrument.

EXTREMES FOR PERIOD OF RECORD.—

SPECIFIC CONDUCTANCE: Maximum recorded, 1,120 microsiemens, Jan. 4, 1998; minimum recorded, 104 microsiemens, Jan. 4, 1997.

WATER TEMPERATURE: Maximum recorded, 30.0°C, June 9, July 30, 31, 1996; minimum recorded, 3.5°C, Jan. 14, 1997.

EXTREMES FOR CURRENT YEAR.—

SPECIFIC CONDUCTANCE: Maximum recorded, 1,120 microsiemens, Jan. 4; minimum recorded, 165 microsiemens, Feb. 11.

WATER TEMPERATURE: Maximum recorded, 23.5°C, Apr. 29, 30; minimum recorded, 5.0°C, Dec. 25, 26.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	CALCIUM DIS- SOLVED AS CA (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
30...	1040	191	543	8.0	14.6	768	8.2	80	31	22
NOV										
12...	1130	461	569	7.7	13.4	756	5.7	55	34	24
DEC										
17...	1040	1570	547	7.9	8.9	764	8.9	77	28	20
JAN										
21...	1030	2550	490	7.9	9.2	763	7.8	68	26	18
FEB										
26...	1100	14200	237	7.9	10.1	763	9.2	82	17	9.1
MAR										
11...	1100	4200	486	8.2	13.4	765	10.4	99	32	20
APR										
15...	1130	1230	765	8.3	14.1	764	8.4	82	47	31

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT										
30...	51	39	4.3	170	56	26	.3	25	343	331
NOV										
12...	53	38	5.3	210	52	24	.3	29	367	357
DEC										
17...	57	44	4.9	150	79	31	.3	16	350	338
JAN										
21...	50	44	3.8	140	66	24	.3	16	310	298
FEB										
26...	18	32	2.1	91	19	6.5	.2	10	140	138
MAR										
11...	42	36	2.4	170	53	19	.3	13	303	288
APR										
15...	73	39	2.3	230	100	37	.3	12	479	456

## 11390890 COLUSA BASIN DRAIN AT ROAD 99E, NEAR KNIGHTS LANDING, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT										
30...	.47	.01	.15	<.01	.8	.5	.23	.10	.11	6
NOV										
12...	.50	.03	.21	.16	.9	.6	.27	.14	.17	6
DEC										
17...	.48	.01	1.3	.08	1.2	.8	.36	.20	.19	4
JAN										
21...	.42	.03	.76	.03	.9	.6	.30	.15	.16	8
FEB										
26...	.19	<.01	.39	<.02	.7	.3	.30	.08	.07	6
MAR										
11...	.41	<.01	.46	<.02	.8	.4	.21	.06	.06	6
APR										
15...	.65	.01	.07	.04	.5	.2	.13	.01	.02	9

DATE	ANTI- MONY, DIS- SOLVED (UG/L AS SB) 01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT										
30...	<1	4	73	<1	<1	2	<1	2	27	<1
NOV										
12...	<1	3	76	<1	<1	5	<1	2	44	<1
DEC										
17...	<1	2	66	<1	<1	1	<1	3	35	<1
JAN										
21...	<1	2	65	<1	<1	4	<1	3	36	<1
FEB										
26...	<1	1	46	<1	<1	3	<1	2	11	<1
MAR										
11...	<1	2	80	<1	<1	2	<1	2	<10	<1
APR										
15...	<1	<1	53	<1	<1	3	<1	1	<10	<1

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT									
30...	62	2	3	<1	<1	<1	<1	6.5	1.1
NOV									
12...	71	2	3	<1	<1	3	<1	8.3	.7
DEC									
17...	11	2	3	<1	<1	1	<1	6.5	1.1
JAN									
21...	15	2	4	<1	<1	2	<1	7.5	1
FEB									
26...	2	<1	2	<1	<1	<1	<1	3.6	1.5
MAR									
11...	15	2	3	<1	<1	<1	<1	3.7	1
APR									
15...	2	<1	2	<1	<1	1	<1	2.5	1.4

11390890 COLUSA BASIN DRAIN AT ROAD 99E, NEAR KNIGHTS LANDING, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
30...N	1040	191	14.6	75	39	99
NOV						
12...N	1130	461	13.4	60	75	95
DEC						
17...N	1040	1570	8.9	125	529	99
JAN						
21...N	1030	2550	9.2	156	1070	98
FEB						
26...N	1100	14200	10.1	199	7640	99
MAR						
11...N	1100	4200	13.4	109	1240	98
APR						
15...N	1130	1230	14.1	119	395	100

## 11390890 COLUSA BASIN DRAIN AT ROAD 99E, NEAR KNIGHTS LANDING, CA—Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

[illegible]

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	21.0	20.0	17.0	16.0	11.0	10.5	8.0	7.5	11.5	10.5	13.0	11.5
2	20.5	20.0	17.0	16.0	11.0	10.0	9.0	8.0	11.0	10.5	14.0	12.5
3	20.5	19.5	17.0	16.5	10.0	10.0	10.0	9.0	11.0	10.5	14.0	13.5
4	21.0	19.5	17.0	16.5	10.0	10.0	10.0	9.5	10.5	10.5	14.0	13.5
5	20.5	19.5	17.0	16.5	10.5	10.0	9.5	9.0	10.5	10.5	13.5	12.5
6	19.5	18.5	17.0	16.0	11.0	10.5	9.5	8.5	10.5	10.0	17.5	11.0
7	18.5	17.5	16.5	15.5	11.0	11.0	8.5	8.0	10.5	10.0	12.0	11.0
8	17.5	16.5	16.5	15.0	11.5	10.5	8.5	8.0	10.0	9.5	11.5	10.5
9	17.5	16.5	15.0	14.5	11.0	9.5	8.5	8.0	10.0	9.5	---	---
10	17.5	16.5	14.5	14.0	9.5	9.0	9.5	8.5	9.5	9.5	---	---
11	17.0	16.5	14.0	13.5	9.0	8.0	10.5	9.5	9.5	9.5	---	---
12	16.5	15.5	19.5	13.5	8.5	8.0	11.0	10.5	10.0	9.5	15.0	14.5
13	15.5	15.0	13.5	13.0	8.5	8.0	11.5	11.0	10.0	9.5	15.0	14.5
14	17.0	15.5	13.5	13.0	8.5	8.0	11.5	10.5	10.5	10.0	16.0	14.0
15	16.5	16.0	13.0	12.5	8.5	8.0	11.0	10.5	11.0	10.0	17.0	15.0
16	17.0	16.5	13.0	12.0	9.0	8.5	11.0	10.5	10.5	10.5	18.0	16.5
17	18.0	17.0	12.5	12.0	9.5	9.0	12.0	11.0	10.5	10.5	18.0	17.0
18	18.0	17.5	12.0	11.5	10.0	9.0	12.5	12.0	10.5	10.5	18.0	17.0
19	18.5	18.0	12.5	11.5	9.0	8.0	12.5	11.0	10.5	9.5	17.5	16.5
20	18.5	18.0	12.0	11.5	8.5	7.5	11.0	9.5	10.0	9.5	18.0	17.0
21	19.0	17.5	12.0	11.5	7.5	6.5	9.5	9.0	10.0	9.5	18.0	17.0
22	19.5	18.0	12.0	11.5	7.0	5.5	10.0	9.5	9.5	9.0	17.0	16.5
23	19.0	18.0	13.0	12.0	6.5	6.0	10.0	9.5	9.5	9.5	16.5	15.5
24	18.5	15.0	13.0	12.0	6.0	5.5	10.5	9.5	10.0	9.0	16.0	15.0
25	15.0	14.0	13.0	12.5	6.0	5.0	10.5	10.0	10.0	9.5	16.5	15.0
26	16.0	14.5	13.0	12.5	6.0	5.0	11.0	10.5	10.5	10.0	16.5	16.0
27	16.0	15.0	13.0	12.0	6.0	5.5	11.0	10.5	11.5	10.5	16.5	16.0
28	16.0	15.0	12.5	12.0	6.5	5.5	11.5	11.0	12.0	11.0	16.0	15.0
29	15.0	14.5	12.0	11.5	7.0	6.0	12.5	11.5	---	---	15.5	14.5
30	---	14.5	12.0	11.0	7.0	6.5	12.5	11.5	---	---	14.5	14.0
31	16.0	15.5	---	---	7.5	7.0	12.0	11.5	---	---	14.0	12.5
MONTH	21.0	14.0	19.5	11.0	11.5	5.0	12.5	7.5	12.0	9.0	---	---

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	13.5	12.5	23.0	21.5	---	---	---	---	---	---	---	---
2	13.0	11.0	21.5	20.0	---	---	---	---	---	---	---	---
3	12.5	12.0	21.0	20.0	---	---	---	---	---	---	---	---
4	12.5	12.5	20.5	19.5	---	---	---	---	---	---	---	---
5	13.5	12.0	20.0	19.0	---	---	---	---	---	---	---	---
6	14.5	13.0	19.5	19.0	---	---	---	---	---	---	---	---
7	15.0	13.5	20.0	18.5	---	---	---	---	---	---	---	---
8	16.0	14.5	20.0	18.5	---	---	---	---	---	---	---	---
9	16.0	15.0	19.0	18.0	---	---	---	---	---	---	---	---
10	15.5	15.0	19.5	17.5	---	---	---	---	---	---	---	---
11	15.5	14.5	---	---	---	---	---	---	---	---	---	---
12	15.0	14.5	---	---	---	---	---	---	---	---	---	---
13	15.0	14.0	---	---	---	---	---	---	---	---	---	---
14	15.0	13.5	---	---	---	---	---	---	---	---	---	---
15	16.0	13.5	---	---	---	---	---	---	---	---	---	---
16	16.5	14.5	---	---	---	---	---	---	---	---	---	---
17	18.0	16.0	---	---	---	---	---	---	---	---	---	---
18	19.0	17.0	---	---	---	---	---	---	---	---	---	---
19	20.0	18.5	---	---	---	---	---	---	---	---	---	---
20	21.0	19.5	---	---	---	---	---	---	---	---	---	---
21	22.5	21.0	---	---	---	---	---	---	---	---	---	---
22	23.0	22.0	---	---	---	---	---	---	---	---	---	---
23	22.5	19.5	---	---	---	---	---	---	---	---	---	---
24	20.0	18.5	---	---	---	---	---	---	---	---	---	---
25	20.0	18.0	---	---	---	---	---	---	---	---	---	---
26	18.5	16.5	---	---	---	---	---	---	---	---	---	---
27	20.5	18.0	---	---	---	---	---	---	---	---	---	---
28	21.5	19.5	---	---	---	---	---	---	---	---	---	---
29	23.5	20.5	---	---	---	---	---	---	---	---	---	---
30	23.5	22.0	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	23.5	11.0	---	---	---	---	---	---	---	---	---	---

## 11391100 SACRAMENTO SLOUGH NEAR KNIGHTS LANDING, CA

LOCATION.—Lat 38°47'06", long 121°39'12", in SE 1/4 NE 1/4, sec.20, T.11 N., R.3 E., Sutter County, Hydrologic Unit 18020104, on right bank 200 ft upstream of Karnak Pumping Plant, and 3.6 mi east of Knights Landing.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—Water years 1996 to current year.

CHEMICAL DATA: February 1996 to current year.

SPECIFIC CONDUCTANCE: October 1995 to September 1996.

WATER TEMPERATURE: October 1995 to September 1996.

SEDIMENT DATA: February 1996 to current year.

PERIOD OF DAILY RECORD.—

SPECIFIC CONDUCTANCE: October 1995 to September 1996.

WATER TEMPERATURE: October 1995 to September 1996.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, SATURATION (PERCENT) (00301)	CALCIUM DIS-SOLVED (MG/L) (00915)	MAGNESIUM, DIS-SOLVED (MG/L) (00925)	SODIUM, DIS-SOLVED (MG/L) (00930)	SODIUM PERCENT (00932)	POTASSIUM, DIS-SOLVED (MG/L) (00935)
OCT 29...	1000	370	7.9	14.7	765	7.4	73	26	18	23	26	3.2
NOV 25...	1000	332	8.0	12.8	764	7.4	70	23	17	18	23	3.9
DEC 16...	1030	301	8.0	8.3	770	9.5	80	21	15	16	22	3.2
JAN 28...	1100	143	7.8	10.3	759	7.2	64	12	5.9	7.2	22	1.3
FEB 25...	1100	124	7.8	9.7	761	10.2	90	12	5.5	5.2	17	1.0
MAR 25...	1120	126	7.5	13.5	755	10.0	97	12	5.4	5.2	18	1
APR 22...	1000	261	7.8	21.2	757	7.2	80	23	14	13	20	1.4

DATE	ALKALINITY WAT.DIS GRAN T. FIELD (MG/L) (29802)	SULFATE DIS-SOLVED (MG/L) (00945)	CHLORIDE, DIS-SOLVED (MG/L) (00940)	FLUORIDE, DIS-SOLVED (MG/L) (00950)	SILICA, DIS-SOLVED (MG/L) (00955)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITROGEN, NITRITE DIS-SOLVED (MG/L) (00613)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L) (00608)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L) (00625)
OCT 29...	150	8.0	21	<.1	28	226	220	.31	<.01	<.05	<.01	.5
NOV 25...	150	8.1	11	<.1	28	211	202	.29	.01	.11	<.02	.6
DEC 16...	130	9.8	10	<.1	25	192	182	.26	.01	<.05	<.02	.5
JAN 28...	60	5.5	3.7	<.1	23	107	98	.15	.01	.16	<.02	.1
FEB 25...	54	5.8	2.1	<.1	18	84	82	.11	<.01	.16	<.02	.3
MAR 25...	50	5.3	2.9	<.1	18	89	83	.12	<.01	.11	.05	.4
APR 22...	120	7.1	6.4	<.1	18	164	158	.22	<.01	.13	.03	.5

## 11391100 SACRAMENTO SLOUGH NEAR KNIGHTS LANDING, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)
OCT 29...	.3	.18	.10	.10	5	<1	4	53	<1	<1	3	<1
NOV 25...	.4	.14	.09	.09	5	<1	3	53	<1	<1	2	<1
DEC 16...	.4	.15	.09	.05	5	<1	3	46	<1	<1	2	<1
JAN 28...	<.1	.03	.02	.03	9	<1	1	23	<1	<1	2	<1
FEB 25...	<.1	.14	.01	.03	9	<1	<1	23	<1	<1	2	<1
MAR 25...	<.1	.12	.01	.03	10	<1	1	21	<1	<1	1	<1
APR 22...	.2	.13	.04	.03	6	<1	2	48	<1	<1	3	<1

DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDEED TOTAL (MG/L AS C) (00689)
OCT 29...	2	24	<1	28	1	3	<1	<1	<1	<1	4.7	.9
NOV 25...	2	29	<1	27	1	2	<1	<1	<1	<1	5.7	.6
DEC 16...	2	29	<1	21	<1	3	<1	<1	1	<1	5.4	.7
JAN 28...	1	<10	<1	6	<1	<1	<1	<1	<1	<1	1.4	.4
FEB 25...	2	<10	<1	5	<1	1	<1	<1	<1	<1	1.7	.6
MAR 25...	2	<10	<1	7	<1	1	<1	<1	1	<1	1.8	.9
APR 22...	2	13	<1	30	<1	2	<1	<1	1	<1	3.3	.5

11391100 SACRAMENTO SLOUGH NEAR KNIGHTS LANDING, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT				
29...N	1000	14.7	77	99
NOV				
25...N	1000	12.8	44	96
DEC				
16...N	1030	8.3	37	95
JAN				
28...N	1100	10.3	30	99
FEB				
25...N	1100	9.7	134	100
MAR				
25...N	1120	13.5	182	99



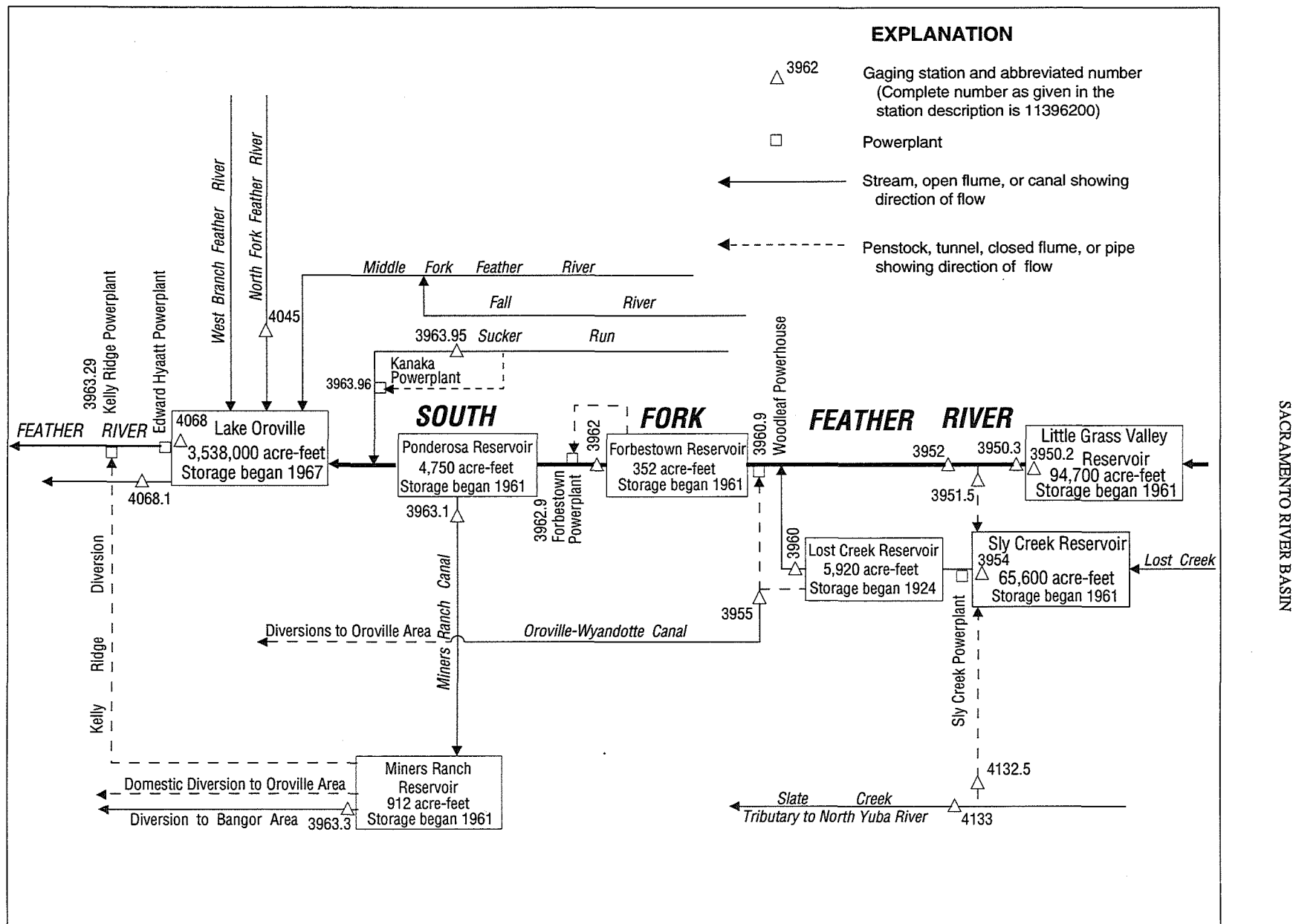


Figure 28. Diversions and storage in South Fork Feather River Basin.

## 11395020 LITTLE GRASS VALLEY RESERVOIR NEAR LA PORTE, CA

LOCATION.—Lat 39°43'25", long 121°01'10", in SE 1/4 NW 1/4 sec.31, T.22 N., R.9 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, on right bank 300 ft upstream from dam on South Fork Feather River, 3.3 mi northwest of La Porte.

DRAINAGE AREA.—25.8 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1961 to current year. Monthend elevation and contents only, October 1961 to October 1962.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Oroville–Wyandotte Irrigation District). Prior to Nov. 1, 1962, in valve chamber in dam at same datum.

REMARKS.—Reservoir is formed by rockfill dam. Storage began in October 1961. Total capacity, 94,700 acre-ft between elevations 4,876 ft, invert of release valve, and 5,047 ft, top of spillway gates, all of which is available for release. Water is released down South Fork Feather River for power development and irrigation. See schematic diagram of South Fork Feather River Basin. Records represent total contents at 2400 hours.

COOPERATION.—Records provided by Oroville–Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 98,000 acre-ft, May 1, 1995, and May 17, 1996, elevation, 5,049.0 ft; minimum since reservoir first filled, 30,300 acre-ft, many days during 1977, elevation, 4,994.8 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 94,500 acre-ft, several days in July, elevation, 5,046.9 ft; minimum, 53,200 acre-ft, Nov. 17–20, elevation, 5,017.7 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co. in 1963)

4,990	26,300	5,030	68,900
5,000	34,600	5,040	83,500
5,010	44,400	5,048	96,300
5,020	55,900	5,049	98,000

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56800	54300	54500	55500	73400	74100	74700	76800	90900	94300	85700	72000
2	56700	54200	54500	55800	74100	73700	74900	77600	91200	94500	85200	71500
3	56700	54000	54500	56100	75600	73300	74900	78500	91500	94500	84700	70900
4	56500	53900	54500	56300	76000	72800	74700	79400	91900	94500	84400	70500
5	56400	53800	54500	56400	76300	72100	74700	80000	92000	94500	84000	70100
6	56300	53800	54600	56400	76500	71400	74600	80900	92400	94500	83500	69600
7	56100	53700	55200	56400	76600	70600	74400	81600	92500	94500	82900	69200
8	56300	53600	55400	56400	76300	70100	74300	82600	93000	94300	82500	68500
9	56400	53500	55400	56500	76000	69300	74100	83600	93200	94300	81900	68100
10	56300	53500	55500	56800	76000	68500	74100	84400	93200	94200	81600	67700
11	56100	53500	55500	57600	75900	67800	74000	85200	93300	94000	81100	67300
12	56100	53500	55500	59100	75900	67200	73900	85800	93700	93800	80700	66800
13	56100	53400	55500	59900	75700	66700	73700	86500	94000	93700	80300	66400
14	56000	53400	55700	60700	75900	66000	73600	87000	94200	93300	79800	66000
15	55800	53400	55700	62000	75700	65400	73400	87400	94300	93000	79400	65600
16	55700	53400	55700	63400	75700	65000	73300	88100	94200	92700	79000	65200
17	55500	53200	55800	65800	75600	64500	73000	88500	94000	92200	78500	64700
18	55500	53200	55800	67500	75500	64300	72800	89000	93800	91900	77900	64300
19	55400	53200	55900	68400	75600	64200	72700	89300	93700	91400	77500	63900
20	55300	53200	55900	69000	75500	64200	72500	89500	93300	90900	77200	63400
21	55300	53400	55900	69600	75600	64300	72400	89800	93000	90600	76800	63000
22	55200	53400	55900	70100	75600	65400	72500	90100	92800	90100	76200	62600
23	55100	53700	55800	70300	75600	66900	72800	90400	93000	89600	75700	62300
24	55000	53800	55800	70600	75500	69300	73300	90900	93300	89300	75500	61700
25	54800	53900	55800	70900	75300	70800	73600	92000	93500	88900	75000	61300
26	54700	54500	55700	71400	75300	71800	73900	92800	93700	88500	74600	61200
27	54600	54500	55700	71700	75000	72700	74300	92800	94000	88100	74100	61000
28	54600	54600	55700	71800	74600	73300	74700	92500	94000	87600	73600	60600
29	54500	54600	55700	72400	---	73700	75300	92000	94200	87100	73100	60000
30	54400	54600	55500	72700	---	74000	75900	91500	94300	86600	72700	59700
31	54300	---	55500	73000	---	74400	---	90900	---	86200	72400	---
MAX	56800	54600	55900	73000	76600	74400	75900	92800	94300	94500	85700	72000
MIN	54300	53200	54500	55500	73400	64200	72400	76800	90900	86200	72400	59700
a	5018.6	5018.9	5019.7	5032.8	5033.9	5033.8	5034.8	5044.7	5046.8	5041.7	5032.4	5022.9
b	-2600	+300	+900	+17500	+1600	-200	+1500	+15000	+3400	-8100	-13800	-12700

CAL YR 1997 b -27000

WTR YR 1998 b +2800

a Elevation, in feet, at end of month.

b change in contents, in acre-feet.

## 11395030 SOUTH FORK FEATHER RIVER BELOW LITTLE GRASS VALLEY DAM, CA

LOCATION.—Lat 39°43'26", long 121°01'16", in SW 1/4 NW 1/4 sec.31, T.22 N., R.9 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, on left bank 0.1 mi downstream from Little Grass Valley Dam and 3.5 mi northwest of La Porte.

DRAINAGE AREA.—25.9 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1927 to September 1933 (published as "near La Porte"), October 1960 to current year.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 4,809.0 ft above sea level. Prior to Oct. 1, 1960, at site 0.4 mi upstream at different datum. Oct. 1, 1960, to Oct. 30, 1962, at present site and datum. Nov. 1, 1962, to May 31, 1966, at site on outlet works at base of Little Grass Valley Dam 0.1 mi upstream at datum 4,850.00 ft above sea level.

REMARKS.—Flow regulated by Little Grass Valley Reservoir (station 11395020) beginning in October 1961. No diversion upstream from station. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 7,370 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 14.80 ft; minimum daily, 0.2 ft<sup>3</sup>/s, Oct. 28–31, Nov. 2, 1961.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	49	50	47	50	278	56	147	511	151	234	211
2	49	49	49	47	51	278	118	148	380	151	234	211
3	49	49	49	48	95	277	196	147	378	151	234	211
4	49	49	49	48	210	329	196	147	380	150	234	210
5	49	49	49	47	296	429	195	146	380	150	234	210
6	49	49	50	47	363	428	195	76	382	150	234	210
7	49	49	56	47	406	427	195	13	383	150	233	210
8	49	49	51	47	388	427	195	14	383	150	233	209
9	50	49	50	47	305	426	195	14	481	150	233	209
10	50	49	49	49	257	426	195	13	555	150	233	209
11	49	49	49	52	239	425	195	12	557	150	223	209
12	49	49	49	60	207	424	195	12	560	150	216	209
13	49	49	49	52	195	425	195	12	564	149	215	208
14	49	49	48	51	214	425	195	12	565	196	215	208
15	49	50	48	58	196	424	195	12	564	236	215	208
16	49	50	48	58	175	427	194	12	563	236	215	208
17	49	50	49	64	169	426	194	12	562	236	215	208
18	49	50	49	55	149	277	192	12	560	236	214	207
19	49	51	48	52	151	199	191	76	560	236	214	207
20	49	50	48	51	151	200	191	145	557	235	214	207
21	49	49	48	51	158	201	191	145	552	235	214	206
22	49	49	48	50	164	207	193	145	414	235	213	206
23	49	53	48	50	160	129	193	145	234	235	213	206
24	49	51	48	50	156	65	191	146	153	235	213	205
25	49	51	47	50	130	58	190	151	152	235	213	205
26	49	54	47	51	110	57	189	147	152	235	212	206
27	49	51	47	51	211	57	188	481	152	235	212	205
28	49	50	47	51	281	56	165	703	152	235	212	205
29	49	50	47	51	---	56	146	698	152	235	212	205
30	49	50	47	51	---	56	146	682	152	235	212	204
31	49	---	47	50	---	56	---	671	---	234	211	---
TOTAL	1521	1495	1508	1583	5637	8375	5465	5296	12090	6147	6829	6232
MEAN	49.1	49.8	48.6	51.1	201	270	182	171	403	198	220	208
MAX	50	54	56	64	406	429	196	703	565	236	234	211
MIN	49	49	47	47	50	56	56	12	152	149	211	204
AC-FT	3020	2970	2990	3140	11180	16610	10840	10500	23980	12190	13550	12360

## 11395030 SOUTH FORK FEATHER RIVER BELOW LITTLE GRASS VALLEY DAM, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1933, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2.56	19.5	47.6	26.3	45.2	134	181	201	78.8	7.70	1.74	1.35
MAX	6.62	94.5	206	51.3	94.7	386	301	384	169	13.7	2.54	1.72
(WY)	1932	1928	1930	1928	1930	1928	1930	1932	1933	1932	1932	1930
MIN	1.43	1.67	2.65	3.60	3.55	14.5	106	48.9	13.8	2.38	1.06	1.04
(WY)	1929	1930	1933	1933	1933	1933	1933	1931	1931	1931	1931	1931

## SUMMARY STATISTICS

## WATER YEARS 1928 - 1933

ANNUAL MEAN	62.3
HIGHEST ANNUAL MEAN	85.6 1932
LOWEST ANNUAL MEAN	28.0 1931
HIGHEST DAILY MEAN	1800 Mar 25 1928
LOWEST DAILY MEAN	.90 Aug 25 1931
ANNUAL SEVEN-DAY MINIMUM	.90 Sep 1 1931
INSTANTANEOUS PEAK FLOW	2600 Mar 26 1928
INSTANTANEOUS PEAK STAGE	7.00 Mar 26 1928
ANNUAL RUNOFF (AC-FT)	45140
10 PERCENT EXCEEDS	202
50 PERCENT EXCEEDS	10
90 PERCENT EXCEEDS	1.4

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	97.6	75.6	73.6	104	108	107	80.4	139	101	117	147	168
MAX	305	404	420	725	694	586	317	489	403	350	344	389
(WY)	1970	1982	1982	1997	1986	1995	1989	1995	1998	1983	1968	1984
MIN	13.0	2.94	4.01	2.36	2.25	3.70	4.31	4.38	3.99	3.71	7.43	10.0
(WY)	1986	1976	1979	1964	1976	1964	1964	1977	1977	1977	1976	1981

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1963 - 1998

ANNUAL TOTAL	48881.1	62178	
ANNUAL MEAN	134	170	110
HIGHEST ANNUAL MEAN			250 1982
LOWEST ANNUAL MEAN			29.5 1981
HIGHEST DAILY MEAN	5420 Jan 1	703 May 28	5420 Jan 1 1997
LOWEST DAILY MEAN	7.6 Apr 6	12 May 11	1.4 Jan 27 1964
ANNUAL SEVEN-DAY MINIMUM	7.9 Mar 31	12 May 11	1.4 Jan 27 1964
INSTANTANEOUS PEAK FLOW		737 May 27	7370 Jan 1 1997
INSTANTANEOUS PEAK STAGE		10.06 May 27	14.80 Jan 1 1997
ANNUAL RUNOFF (AC-FT)	96960	123300	79690
10 PERCENT EXCEEDS	195	383	252
50 PERCENT EXCEEDS	50	151	49
90 PERCENT EXCEEDS	12	48	5.2

## 11395150 SOUTH FORK TUNNEL NEAR STRAWBERRY VALLEY, CA

LOCATION.—Lat 39°38'55", long 120°07'00", in NW 1/4 SW 1/4 sec.29, T.21 N., R.8 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, 3.2 mi upstream from Rock Creek, and 5.8 mi north of Strawberry Valley.

PERIOD OF RECORD.—October 1973 to current year. Records of daily discharge for November 1961 to September 1973 are in files of the U.S. Geological Survey. Monthly diversion used to adjust South Fork Feather River below diversion dam near Strawberry Valley (station 11395200) since October 1961.

GAGE.—Water-stage recorder. Datum of gage is sea level.

REMARKS.—Tunnel diverts water from South Fork Feather River to Sly Creek Reservoir (station 11395400) for power development. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 570 ft<sup>3</sup>/s, Mar. 13, May 25–29, June 3, 1983; no flow many days in 1980–82, Mar. 11–28, 1995 and Jan. 1–9, 1997.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	45	81	67	182	332	172	370	52	180	240	220
2	51	45	76	96	256	334	202	415	52	178	239	221
3	46	47	73	173	528	343	308	394	52	177	239	220
4	46	51	70	152	504	370	301	369	52	176	240	220
5	46	51	71	121	502	473	298	355	53	174	239	220
6	46	52	81	109	520	467	294	309	54	173	240	220
7	46	52	236	104	531	462	290	205	54	172	239	219
8	49	51	172	99	521	459	274	102	205	171	239	220
9	70	51	126	100	457	456	275	48	448	170	238	220
10	51	51	107	168	389	457	283	48	500	169	238	218
11	52	55	96	383	367	461	281	49	510	168	233	218
12	48	52	88	517	330	468	275	49	515	168	223	217
13	47	59	83	449	326	477	272	48	513	167	224	216
14	46	61	84	316	356	487	265	49	510	198	225	217
15	46	61	81	489	327	500	261	107	508	251	225	217
16	46	71	80	481	278	519	261	126	515	251	225	216
17	46	79	94	517	264	524	262	123	521	250	224	216
18	46	65	97	500	234	445	268	117	519	248	225	215
19	46	102	88	385	231	358	282	158	516	248	224	214
20	46	75	85	279	228	364	298	259	513	247	223	215
21	46	64	82	214	229	376	333	262	509	247	223	217
22	46	61	79	191	234	521	369	256	464	247	223	216
23	46	129	77	171	228	537	410	257	302	246	221	218
24	45	95	75	156	222	554	426	256	200	246	221	217
25	44	94	73	145	193	472	403	365	197	245	221	216
26	45	205	71	178	172	355	379	168	193	245	221	229
27	45	133	70	178	231	315	379	52	189	244	222	216
28	45	101	69	171	335	267	374	53	186	244	222	216
29	46	87	68	210	---	224	359	52	185	242	221	216
30	46	87	68	194	---	198	364	52	183	242	221	214
31	46	---	68	180	---	186	---	53	---	241	220	---
TOTAL	1465	2232	2769	7493	9175	12761	9218	5526	9270	6625	7078	6534
MEAN	47.3	74.4	89.3	242	328	412	307	178	309	214	228	218
MAX	70	205	236	517	531	554	426	415	521	251	240	229
MIN	44	45	68	67	172	186	172	48	52	167	220	214
AC-FT	2910	4430	5490	14860	18200	25310	18280	10960	18390	13140	14040	12960

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1998, BY WATER YEAR (WY)

	MEAN	83.2	102	107	126	145	177	146	169	114	118	131	150
MAX	176	377	462	381	406	454	429	520	421	363	327	390	
(WY)	1975	1982	1982	1974	1996	1983	1989	1993	1983	1983	1983	1978	
MIN	6.21	4.14	3.36	5.99	8.49	9.71	8.68	16.4	7.22	4.43	4.03	.000	
(WY)	1986	1977	1977	1977	1977	1977	1977	1977	1977	1977	1981	1981	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1974 - 1998	
ANNUAL TOTAL	40613.00		80146			
ANNUAL MEAN	111		220		131	
HIGHEST ANNUAL MEAN					294	
LOWEST ANNUAL MEAN					35.0	
HIGHEST DAILY MEAN	561	Jan 26	554	Mar 24	570	Mar 13 1983
LOWEST DAILY MEAN	.00	Jan 1	44	Oct 25	.00	Jan 16 1980
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	45	Oct 22	.00	Jan 16 1980
ANNUAL RUNOFF (AC-FT)	80560		159000		94610	
10 PERCENT EXCEEDS	255		463		323	
50 PERCENT EXCEEDS	83		217		85	
90 PERCENT EXCEEDS	20		50		8.3	

## 11395200 SOUTH FORK FEATHER RIVER BELOW DIVERSION DAM, NEAR STRAWBERRY VALLEY, CA

LOCATION.—Lat 39°38'51", long 121°07'04", in NE 1/4 SE 1/4 sec.30, T.21 N., R.8 E., Plumas County, Hydrologic Unit 18020123, Plumas National Forest, on left bank 0.1 mi downstream from diversion dam, 3.1 mi upstream from Rock Creek, and 5.8 mi north of Strawberry Valley.

DRAINAGE AREA.—37.7 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1960 to current year.

REVISED RECORDS.—WDR CA-80-4: 1976(M).

GAGE.—Water-stage recorder and since May 8, 1987, sharp crested rectangular weir. Datum of gage is 3,535.02 ft above sea level (levels by Oroville-Wyandotte Irrigation District).

REMARKS.—Flow regulated by Little Grass Valley Reservoir (station 11395020) since October 1961. South Fork Diversion Tunnel, maximum capacity, about 600 ft<sup>3</sup>/s 500 ft upstream, diverts to Sly Creek Reservoir (station 11395400); diversion began in November 1961. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 11,300 ft<sup>3</sup>/s, Jan. 1, 1997, gage height unknown, from computation of peak flow over diversion dam; minimum daily, 0.3 ft<sup>3</sup>/s, Dec. 25, 1962, to Jan. 2, 1963, Mar. 1–3, 1963.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	11	5.6	5.8	6.2	6.2	6.0	11	733	11	11	11
2	10	11	5.6	5.8	6.4	6.2	6.1	11	528	11	11	11
3	10	8.2	5.6	5.9	35	6.2	6.4	11	507	11	11	11
4	10	5.5	5.6	5.9	6.7	6.2	6.4	11	487	11	11	11
5	10	5.5	5.6	5.8	6.7	6.2	6.4	11	478	11	11	11
6	10	5.5	5.6	5.8	11	6.2	6.4	11	476	11	11	11
7	10	5.5	6.1	5.8	7.0	6.2	6.4	11	469	11	11	11
8	11	5.5	5.8	5.8	8.2	6.2	6.3	92	293	11	11	11
9	11	5.5	5.8	5.8	6.6	6.2	6.3	170	137	11	11	11
10	11	5.5	5.8	5.9	6.4	6.2	6.3	146	242	11	11	11
11	11	5.5	5.8	6.4	6.4	6.2	6.2	125	246	11	11	11
12	11	5.5	5.8	147	6.4	6.2	6.2	111	246	11	11	11
13	11	5.6	5.8	24	6.4	6.2	6.2	100	246	11	11	11
14	11	5.6	5.8	6.4	6.6	6.2	6.2	96	237	11	11	11
15	11	5.7	5.8	19	6.4	6.2	6.2	53	229	11	11	11
16	11	5.7	5.8	22	6.2	6.5	6.2	11	220	11	11	11
17	11	5.7	5.8	171	6.2	6.5	6.2	11	208	11	11	11
18	11	5.6	5.8	28	6.2	6.4	6.2	11	199	11	11	11
19	11	5.7	5.8	6.6	6.3	6.2	6.2	11	191	11	11	11
20	11	5.5	5.8	6.2	6.2	6.2	6.2	12	184	11	11	11
21	11	5.5	5.8	23	6.3	6.2	6.2	12	175	11	11	11
22	11	5.5	5.8	6.2	6.2	22	6.2	12	80	11	11	11
23	11	5.8	5.8	6.2	6.4	36	6.2	12	11	11	11	11
24	11	5.7	5.8	6.1	6.2	148	20	12	11	11	11	11
25	11	5.7	5.8	6.0	6.2	6.6	6.2	12	11	11	11	11
26	11	6.0	5.8	6.1	6.2	6.4	6.2	161	11	11	11	11
27	11	5.8	5.8	6.0	6.2	6.4	6.2	573	11	11	11	11
28	11	5.7	5.8	6.0	6.2	6.4	6.2	918	11	11	11	11
29	11	5.6	5.8	6.2	---	6.3	9.2	921	11	11	11	11
30	11	5.7	5.8	6.2	---	6.2	11	908	11	11	11	11
31	11	---	5.8	6.1	---	6.2	---	896	---	11	11	---
TOTAL	334	181.8	178.9	579.0	213.4	381.5	208.6	5463	6899	341	341	330
MEAN	10.8	6.06	5.77	18.7	7.62	12.3	6.95	176	230	11.0	11.0	11.0
MAX	11	11	6.1	171	35	148	20	921	733	11	11	11
MIN	10	5.5	5.6	5.8	6.2	6.2	6.0	11	11	11	11	11
AC-FT	662	361	355	1150	423	757	414	10840	13680	676	676	655

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	MEAN	10.2	13.6	44.5	86.5	57.0	51.1	25.8	47.1	22.0	9.59	10.2	10.5
MAX	16.1	226	808	885	1113	741	317	417	230	13.3	18.5	18.8	
(WY)	1982	1982	1965	1970	1986	1995	1982	1995	1998	1968	1973	1973	
MIN	2.92	2.62	2.41	3.94	2.73	3.79	3.68	3.61	2.20	2.57	3.32	3.45	
(WY)	1978	1978	1980	1976	1978	1980	1970	1977	1977	1977	1977	1977	

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1964 - 1998

ANNUAL TOTAL	31874.2	15451.2	
ANNUAL MEAN	87.3	42.3	
HIGHEST ANNUAL MEAN			32.3
LOWEST ANNUAL MEAN			120
HIGHEST DAILY MEAN	9020	Jan 1	1995
LOWEST DAILY MEAN	5.5	Nov 4	1977
ANNUAL SEVEN-DAY MINIMUM	5.5	Nov 4	3.72
INSTANTANEOUS PEAK FLOW			9020
INSTANTANEOUS PEAK STAGE			.70
ANNUAL RUNOFF (AC-FT)	63220		1.1
10 PERCENT EXCEEDS	48		Jan 18 1968
50 PERCENT EXCEEDS	11		Jan 18 1968
90 PERCENT EXCEEDS	5.8		11300
			Jan 1 1997
			14.92
			Feb 17 1986
			23400
			12
			8.1
			4.4

## 11395400 SLY CREEK RESERVOIR NEAR STRAWBERRY VALLEY, CA

LOCATION.—Lat 39°35'01", long 121°06'59", in NE 1/4 NE 1/4 sec.19, T.20 N., R.8 E., Butte County, Hydrologic Unit 18020123, Plumas National Forest, on right bank 100 ft upstream from dam on Lost Creek, 1.4 mi northwest of Strawberry Valley.

DRAINAGE AREA.—24.0 mi<sup>2</sup>.

PERIOD OF RECORD.—November 1961 to current year (fragmentary prior to Mar. 14, 1962).

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Oroville–Wyandotte Irrigation District). Prior to Sept. 30, 1966, water-stage recorder in valve chamber inside dam at same datum. Oct. 1, 1966, to December 1974, nonrecording gage read once daily.

REMARKS.—Reservoir is formed by earthfill dam. Storage began in November 1961. Total capacity, 65,600 acre-ft between elevations 3,285 ft, invert of outlet, and 3,531 ft, top of spillway gate, all of which is available for release. Water is diverted into reservoir from South Fork Feather River through South Fork Diversion Tunnel and from North Yuba River basin through Slate Creek Tunnel (station 11413250). See schematic diagram of South Fork Feather River Basin. Records represent total contents at 2400 hours.

COOPERATION.—Records provided by Oroville–Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 65,600 acre-ft, June 22, 1978, elevation, 3,530.9 ft; minimum observed under normal operating conditions since reservoir first filled, 860 acre-ft, Feb. 11, 1976, elevation, 3,320.0 ft. Reservoir completely drained for powerplant construction, Sept. 12 to Oct. 17, 1981.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 64,400 acre-ft, May 29, elevation, 3,528.9 ft; minimum, 15,400 acre-ft, Jan. 2, elevation, 3,415.7 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co. in 1946)

3,310	450	3,360	4,300	3,450	26,300
3,315	655	3,380	7,360	3,480	38,500
3,320	860	3,400	11,500	3,510	53,400
3,340	2,150	3,420	16,600	3,531	65,600

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15800	19300	26100	15800	44500	46400	53000	59400	63200	63500	58600	39700
2	15900	19400	26400	15700	44600	46200	52300	59700	63100	63200	57900	39000
3	16000	19500	26700	17200	45800	46100	52500	60400	63200	63100	57200	38200
4	16000	19600	26900	18500	46200	45900	52600	60600	63200	63000	56400	37700
5	16000	19700	27200	19200	47100	46000	52800	61500	62700	63000	55800	36800
6	16100	19900	27600	19700	49100	46000	52900	62400	62300	63100	55300	35900
7	16100	20000	29500	19600	51100	46000	53000	63000	61900	62800	54700	35200
8	16200	20100	30700	19400	52700	45900	53000	63100	61500	62800	54200	34400
9	16600	20200	31400	18900	53600	45700	53100	63100	61600	62500	53700	33700
10	16800	20400	32000	19200	54300	45600	53300	63100	61900	62300	53300	33000
11	16900	20500	32000	21800	54500	46100	53400	63000	62200	62200	53100	32200
12	17100	20600	31400	25200	54200	46700	53600	62900	62600	62000	53000	31700
13	17200	20800	30600	27700	54000	47400	53900	62800	62500	61900	52400	31000
14	17300	21100	30000	29600	54100	48000	54300	62500	62400	61800	51400	30100
15	17400	21300	29300	33100	53800	49000	54700	62300	62200	61900	50700	29400
16	17600	21500	28600	35900	53500	50600	55000	62100	62500	61900	50400	28600
17	17700	21900	28000	39300	53100	52300	55300	61900	62900	62000	50100	28000
18	17800	22200	27400	42100	52500	53800	55700	61900	62800	62200	49700	27200
19	17900	22300	26700	44300	52100	54600	56200	61900	62700	62200	49300	26700
20	18000	21400	26000	46100	51500	54800	56900	62000	62600	62700	48500	26000
21	18100	20800	25200	47100	51000	54700	57900	62100	62400	63300	47800	25100
22	18200	20700	24400	47900	50400	55300	59200	62500	62300	63300	47200	24400
23	18400	21300	23500	48000	49800	56200	59500	63100	62000	63100	46500	23700
24	18500	21400	22600	47700	49200	56900	59400	63600	61800	62800	45700	22900
25	18600	21700	21700	47300	48400	56800	59100	63900	62200	62400	45100	23300
26	18700	23400	20800	47100	47600	56500	58700	64000	62700	62000	44800	23800
27	18800	24400	19900	47100	47000	56200	58400	64200	62900	61200	44200	24300
28	18900	25100	19000	46800	46700	55800	58000	64300	63100	60600	43100	24700
29	19000	25400	18100	46600	---	55200	58500	64200	63400	59800	42000	25100
30	19100	25800	17300	46000	---	54500	59100	63600	63400	59500	41100	25500
31	19200	---	16500	45100	---	53800	---	63200	---	59300	40200	---
MAX	19200	25800	32000	48000	54500	56900	59500	64300	63400	63500	58600	39700
MIN	15800	19300	16500	15700	44500	45600	52300	59400	61500	59300	40200	22900
a	3428.8	3448.5	3419.8	3493.9	3497.1	3510.6	3520.0	3526.9	3527.3	3520.4	3483.6	3447.8
b	+3500	+6600	-9300	+28600	+1600	+7100	+5300	+4100	+200	-4100	-19100	-14700

CAL YR 1997 b -42300

WTR YR 1998 b +9800

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11395500 OROVILLE-WYANDOTTE CANAL NEAR CLIPPER MILLS, CA

LOCATION.—Lat 39°33'15", long 121°11'31", in NW 1/4 NE 1/4 sec.33, T.20 N., R.7 E., Butte County, Hydrologic Unit 18020123, in concrete valve house at head of canal and 2.5 mi north of Clipper Mills.

PERIOD OF RECORD.—October 1927 to September 1941 (published as Forbestown Ditch), October 1953 to current year. Monthly discharge only for October 1953 to September 1961, published with records for Lost Creek near Clipper Mills.

GAGE.—Water-stage recorder and Parshall flume. Datum of gage is 3,166.0 ft above sea level (levels by Oroville-Wyandotte Irrigation District). Prior to Sept. 30, 1941, nonrecording gages and Oct. 1, 1941, to Nov. 16, 1962, water-stage recorder at sites at different datums 4 mi upstream in abandoned part of canal, 0.3 mi downstream from Lost Creek Dam.

REMARKS.—Water is discharged to canal through valve in Woodleaf Penstock. Prior to Nov. 16, 1962, canal diverted from Lost Creek Dam. Water is used for irrigation and domestic supply. Demand for water reduced when a large lumber mill closed at Woodleaf in 1962. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 43 ft<sup>3</sup>/s, Aug. 9 to Sept. 9, 1937, Aug. 13–15, 1977; no flow at times in many years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	.00	.00	.00	.00	.00	.00	.00	.00	2.4	12	18
2	24	.00	.00	.00	.00	.00	.00	.00	.00	2.4	12	18
3	22	.00	.00	.00	.00	.00	.00	.00	.00	2.4	12	18
4	20	.00	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
5	24	7.0	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
6	24	12	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
7	22	8.0	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
8	21	.86	.00	.00	.00	.00	.00	.00	.00	2.4	13	19
9	13	.81	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
10	9.1	.31	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
11	4.0	.00	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.4	13	18
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.0	14	18
14	4.4	.00	.00	.00	.00	.00	.00	.00	.00	9.5	15	18
15	4.4	.00	.00	.00	.00	.00	.00	.00	.00	9.5	15	18
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.5	15	18
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.4	15	18
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.5	15	18
19	.00	.00	8.2	.00	.00	.00	.00	.00	.00	9.5	15	18
20	.00	.00	13	.00	.00	.00	.00	.00	.00	11	15	18
21	.00	.00	13	.00	.00	.00	.00	.00	.00	12	15	19
22	.00	.00	4.8	.00	.00	.00	.00	.00	.00	12	15	19
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	15	19
24	.00	9.0	.00	.00	.00	.00	.00	.00	.00	12	15	19
25	.00	14	.00	.00	.00	.00	.00	.00	5.7	12	15	19
26	.00	5.0	.00	.00	.00	.00	.00	.00	6.1	12	17	19
27	.00	.00	.00	.00	.00	.00	.00	.00	4.6	12	18	19
28	.00	.00	.00	.00	.00	.00	.00	.00	4.5	12	18	19
29	.00	.00	.00	.00	---	.00	.00	.00	3.2	12	18	19
30	.00	.00	.00	.00	---	.00	.00	.00	2.4	12	18	19
31	.00	---	.00	.00	---	.00	---	.00	---	12	18	---
TOTAL	215.90	56.98	39.00	0.00	0.00	0.00	0.00	0.00	26.50	235.7	454	551
MEAN	6.96	1.90	1.26	.000	.000	.000	.000	.000	.88	7.60	14.6	18.4
MAX	24	14	13	.00	.00	.00	.00	.00	6.1	12	18	19
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.4	12	18
AC-FT	428	113	77	.00	.00	.00	.00	.00	53	468	901	1090

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	MEAN	12.6	5.69	2.28	1.34	.78	.99	1.82	5.59	12.0	17.3	20.5	19.7
MAX	20.2	16.5	8.64	6.89	5.34	6.70	11.4	20.2	29.3	26.4	37.4	30.9	
(WY)	1967	1968	1977	1968	1977	1964	1977	1977	1963	1976	1977	1977	
MIN	3.75	.84	.000	.000	.000	.000	.000	.000	.88	7.60	9.47	9.29	
(WY)	1990	1992	1982	1980	1963	1963	1963	1975	1998	1998	1965	1965	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1963 - 1998
ANNUAL TOTAL	3531.88	1579.08	
ANNUAL MEAN	9.68	4.33	8.43
HIGHEST ANNUAL MEAN			16.7
LOWEST ANNUAL MEAN			4.33
HIGHEST DAILY MEAN	24 Aug 5	24 Oct 1	43 Aug 13 1977
LOWEST DAILY MEAN	.00 Jan 1	.00 Oct 12	.00 Dec 12 1962
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 1	.00 Oct 16	.00 Dec 15 1962
ANNUAL RUNOFF (AC-FT)	7010	3130	6100
10 PERCENT EXCEEDS	24	18	22
50 PERCENT EXCEEDS	5.7	.00	5.5
90 PERCENT EXCEEDS	.00	.00	.00



## 11396000 LOST CREEK NEAR CLIPPER MILLS, CA

LOCATION.—Lat 39°34'25", long 121°08'26", in SE 1/4 SW 1/4 sec.24, T.20 N., R.7 E., Butte County, Hydrologic Unit 18020123, Plumas National Forest, on left bank 0.3 mi downstream from Lost Creek Reservoir and 2.8 mi north of Clipper Mills.

DRAINAGE AREA.—30.0 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1927 to September 1941, October 1948 to current year. Records for Woodleaf Powerplant from February 1963 to September 1966 in files of the U.S. Geological Survey.

REVISED RECORDS.—WSP 1395: 1954. WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Sharp crested weir for low-water control since June 20, 1987. Elevation of gage is 3,170 ft above sea level, from topographic map. Prior to June 20, 1987, at site 100 ft downstream at same datum.

REMARKS.—Flow regulated by Sly Creek Reservoir (station 11395400) 1.5 mi upstream and Lost Creek Reservoir 0.3 mi upstream, usable capacity, 5,920 acre-ft with flashboards. Water is diverted into Sly Creek Reservoir through South Fork Diversion Tunnel from South Fork Feather River and through Slate Creek Tunnel (station 11413250) from North Yuba River Basin. Woodleaf Tunnel diverts from Lost Creek Reservoir to Woodleaf Powerplant. Oroville–Wyandotte Canal (station 11395500) diverts from Woodleaf Penstock for irrigation and domestic use. Records represent seepage, release, and spill from Lost Creek Reservoir to Lost Creek. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville–Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 5,760 ft<sup>3</sup>/s, Jan.1, 1997, gage height, 13.50 ft; no flow at times in some years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	8.9	23	551	344	331	409	8.1	441	8.4	8.6	11
2	32	8.8	21	515	387	333	400	8.2	308	8.6	8.8	10
3	18	8.6	20	69	519	335	60	8.2	283	8.6	9.7	9.6
4	7.1	8.6	20	60	416	335	8.7	8.3	273	8.6	9.3	10
5	7.2	8.6	21	32	404	341	8.7	26	467	8.6	8.9	10
6	7.3	8.5	25	116	429	334	8.9	17	460	8.6	8.8	9.6
7	7.4	8.4	81	351	428	335	8.9	110	452	8.7	8.7	9.7
8	7.6	8.4	48	397	402	335	8.8	285	449	13	9.9	9.5
9	7.7	8.4	49	610	331	334	9.1	283	462	11	10	9.2
10	7.6	8.4	30	562	309	326	8.6	282	467	9.7	11	9.0
11	22	8.6	212	389	300	30	8.6	282	484	10	12	8.9
12	33	8.6	593	290	286	5.9	8.6	281	587	9.9	8.9	9.6
13	32	8.9	623	255	274	5.9	9.0	297	703	9.0	8.6	9.6
14	77	9.2	608	380	341	6.1	8.8	313	699	8.8	8.7	9.3
15	100	9.3	614	220	300	6.3	8.8	309	575	8.7	10	9.2
16	88	44	610	211	285	6.5	8.8	307	390	8.6	12	9.1
17	54	37	614	12	277	6.4	8.8	304	453	8.6	13	8.9
18	11	6.8	606	12	267	6.3	8.7	302	596	8.6	11	8.9
19	8.8	7.3	616	12	302	21	8.6	298	599	8.6	9.3	8.9
20	8.7	9.4	619	11	284	222	8.6	297	596	8.6	9.5	8.9
21	8.6	9.5	619	11	312	226	8.6	296	588	8.8	11	8.9
22	8.4	9.7	631	11	316	241	8.4	191	585	8.8	10	9.7
23	8.2	11	641	8.9	328	257	102	8.6	451	8.8	9.2	9.5
24	8.1	10	638	6.7	315	505	376	8.4	260	8.8	9.3	8.9
25	7.8	11	641	6.5	311	750	374	184	14	8.8	9.4	8.9
26	7.6	12	637	6.2	312	542	377	316	8.4	8.9	8.6	8.6
27	7.2	11	634	5.6	329	483	372	315	8.4	9.1	8.4	8.4
28	7.8	11	634	5.5	329	427	367	131	8.2	9.3	8.6	8.4
29	9.5	16	636	6.5	---	407	34	434	8.2	9.6	8.7	8.4
30	9.3	23	600	180	---	394	8.0	569	8.2	9.7	9.9	8.4
31	9.1	---	556	311	---	497	---	561	---	9.0	12	---
TOTAL	647.0	358.9	12920	5613.9	9437	8384.4	3045.0	7039.8	11683.4	282.8	301.8	277.0
MEAN	20.9	12.0	417	181	337	270	102	227	389	9.12	9.74	9.23
MAX	100	44	641	610	519	750	409	569	703	13	13	11
MIN	7.1	6.8	20	5.5	267	5.9	8.0	8.1	8.2	8.4	8.4	8.4
AC-FT	1280	712	25630	11140	18720	16630	6040	13960	23170	561	599	549
a	0	0	28	15260	29050	31010	29490	34800	33550	25560	33500	28870

a Diversion, acre-feet, through Woodleaf Powerplant (station 11396090), provided by Oroville–Wyandotte Irrigation District.

## 11396000 LOST CREEK NEAR CLIPPER MILLS, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1961, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3.78	8.61	66.0	93.4	170	175	191	129	29.9	6.42	4.23	5.13
MAX	13.4	121	544	485	562	467	423	441	153	34.7	10.2	15.3
(WY)	1928	1951	1956	1956	1958	1938	1938	1952	1952	1952	1961	1960
MIN	.20	.000	.000	.15	.50	25.7	4.68	1.21	1.33	.20	.10	.10
(WY)	1935	1960	1960	1960	1937	1933	1931	1931	1934	1939	1934	1934

## SUMMARY STATISTICS

## WATER YEARS 1928 - 1961

ANNUAL MEAN	73.0
HIGHEST ANNUAL MEAN	167
LOWEST ANNUAL MEAN	6.78
HIGHEST DAILY MEAN	3840
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	.00
INSTANTANEOUS PEAK FLOW	5000
INSTANTANEOUS PEAK STAGE	a6.90
ANNUAL RUNOFF (AC-FT)	52890
10 PERCENT EXCEEDS	212
50 PERCENT EXCEEDS	8.4
90 PERCENT EXCEEDS	.30

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	13.2	6.88	44.9	58.6	72.3	77.3	57.8	49.1	42.3	3.86	3.36	3.67
MAX	392	179	417	674	512	573	410	454	750	16.0	22.2	34.4
(WY)	1963	1963	1998	1997	1986	1983	1993	1995	1995	1962	1966	1997
MIN	.006	.029	.094	.10	.35	.33	.22	.13	.097	.10	.000	.000
(WY)	1965	1975	1975	1962	1964	1964	1968	1968	1966	1963	1964	1963

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1962 - 1998

ANNUAL TOTAL	46118.0	59991.0	
ANNUAL MEAN	126	164	35.9
HIGHEST ANNUAL MEAN			200
LOWEST ANNUAL MEAN			.49
HIGHEST DAILY MEAN	4490	Jan 1	4490
LOWEST DAILY MEAN	4.1	Jan 11	.00
ANNUAL SEVEN-DAY MINIMUM	4.1	Feb 28	.00
INSTANTANEOUS PEAK FLOW			1110
INSTANTANEOUS PEAK STAGE			8.56
ANNUAL RUNOFF (AC-FT)	91480	119000	26020
TOTAL DIVERSION (AC-FT) b	170000	261100	
10 PERCENT EXCEEDS	427	528	18
50 PERCENT EXCEEDS	7.6	12	1.5
90 PERCENT EXCEEDS	5.5	8.4	.14

a Site then in use.

b Diversion, in acre-feet, through Woodleaf Powerplant, provided by Oroville-Wyandotte Irrigation District.

## 11396200 SOUTH FORK FEATHER RIVER BELOW FORBESTOWN DAM, CA

LOCATION.—Lat 39°33'05", long 121°12'30", in SE 1/4 NE 1/4 sec.32, T.20 N., R.7 E., Butte County, Hydrologic Unit 18020123, Plumas National Forest, on right bank 500 ft downstream from Forbestown Dam, 0.4 mi upstream from Oroleve Creek, and 4.0 mi northeast of Forbestown.

DRAINAGE AREA.—87.5 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1962 to current year. Records for Forbestown Powerplant from February 1963 to September 1966 in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Elevation of gage is 1,690 ft above sea level, from topographic map.

REMARKS.—Flow regulated by Little Grass Valley Reservoir (station 11395020), Sly Creek Reservoir (station 11395400), and smaller reservoirs. Water from North Yuba River Basin is imported through Slate Creek Tunnel (station 11413250) to Sly Creek Reservoir. Oroville–Wyandotte Canal (station 11395500) diverts upstream from station. Tunnel 600 ft upstream from station diverts most flow through Forbestown Powerplant (station 11396290) except fishwater releases and uncontrolled spill over Forbestown Dam. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville–Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 21,800 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 17.64 ft, from rating curve extended above 5,400 ft<sup>3</sup>/s on basis of flow-over-dam measurement of peak flow; minimum daily, 0.6 ft<sup>3</sup>/s, Apr. 4, 1963.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	36	6.1	6.1	379	339	387	12	1240	12	17	11
2	11	36	6.1	6.4	1380	334	384	12	856	12	17	11
3	11	36	6.0	6.3	1330	336	99	12	815	12	17	11
4	10	32	6.0	6.5	787	324	34	12	777	12	17	11
5	11	24	6.1	6.2	657	322	48	12	969	13	17	11
6	11	7.9	6.1	6.1	830	311	41	26	956	13	17	11
7	11	6.1	6.4	6.2	930	297	276	129	943	14	13	11
8	11	6.1	6.1	13	830	294	17	417	809	14	11	11
9	11	6.1	6.1	6.2	560	288	13	522	556	15	11	12
10	11	6.1	6.8	6.3	459	283	15	493	691	15	11	11
11	11	6.0	6.1	6.6	436	60	6.8	461	716	14	11	11
12	11	5.9	6.1	233	418	6.1	6.1	440	807	15	11	11
13	11	6.0	6.1	32	413	6.1	6.1	440	939	14	11	11
14	11	6.0	6.2	6.4	659	6.1	6.1	449	917	15	11	11
15	11	6.0	6.1	30	546	6.1	5.9	421	780	15	11	11
16	11	6.0	6.1	209	447	6.1	6.0	364	586	15	11	11
17	11	6.0	6.1	387	402	6.1	5.9	362	632	16	11	11
18	11	6.0	6.1	283	359	6.1	5.9	354	784	16	11	11
19	10	6.1	6.0	222	435	6.1	5.9	348	770	16	11	11
20	10	5.9	6.1	60	422	164	5.9	344	760	17	11	11
21	11	5.9	6.0	9.7	482	205	5.9	342	744	17	11	11
22	19	5.9	6.0	6.3	500	275	5.9	263	675	17	11	11
23	33	6.2	6.1	6.3	497	306	67	64	447	17	11	11
24	33	6.1	6.1	6.3	479	752	389	62	250	17	11	11
25	33	6.1	6.1	6.3	419	797	365	239	29	17	11	11
26	33	6.4	6.1	6.3	381	591	352	487	12	17	11	11
27	33	6.1	6.1	6.4	364	499	345	893	12	17	11	11
28	34	6.1	6.1	6.3	349	444	341	1250	12	17	11	11
29	37	6.1	6.1	65	---	416	73	1470	12	17	11	20
30	37	6.2	6.1	199	---	395	12	1560	12	17	11	39
31	37	---	6.1	360	---	405	---	1500	---	17	11	---
TOTAL	557	317.3	189.7	2216.2	16150	8485.8	3330.4	13760	18508	472	379	368
MEAN	18.0	10.6	6.12	71.5	577	274	111	444	617	15.2	12.2	12.3
MAX	37	36	6.8	387	1380	797	389	1560	1240	17	17	39
MIN	10	5.9	6.0	6.1	349	6.1	5.9	12	12	12	11	11
AC-FT	1100	629	376	4400	32030	16830	6610	27290	36710	936	752	730
a	807	903	26050	33950	36270	40330	37690	39680	38590	27620	34890	30050

a Diversion, in acre-feet, to Forbestown Powerplant (station 11396290), provided by Oroville–Wyandotte Irrigation District.

## 11396200 SOUTH FORK FEATHER RIVER BELOW FORBESTOWN DAM, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	29.5	23.3	101	181	188	163	105	109	47.1	12.7	11.2	14.2
MAX	520	240	1262	2059	2000	1472	718	990	617	37.1	27.3	120
(WY)	1963	1982	1997	1997	1986	1995	1982	1996	1998	1962	1986	1996
MIN	4.21	3.68	3.37	4.06	4.46	4.47	4.06	4.02	2.90	4.04	3.37	3.84
(WY)	1978	1976	1976	1976	1972	1972	1964	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1962 - 1998			
ANNUAL TOTAL	76474.7				64733.4							
ANNUAL MEAN	210				177				81.6			
HIGHEST ANNUAL MEAN									325			
LOWEST ANNUAL MEAN									4.36			
HIGHEST DAILY MEAN	17300				1560				17300			
LOWEST DAILY MEAN	5.2				5.9				.60			
ANNUAL SEVEN-DAY MINIMUM	5.7				5.9				1.7			
INSTANTANEOUS PEAK FLOW					2120				21800			
INSTANTANEOUS PEAK STAGE					unknown				17.64			
ANNUAL RUNOFF (AC-FT)	151700				128400				59090			
TOTAL DIVERSION (AC-FT) a	207300				346800							
10 PERCENT EXCEEDS	325				588				141			
50 PERCENT EXCEEDS	11				12				10			
90 PERCENT EXCEEDS	6.1				6.1				5.0			

a Diversion, in acre-feet, to Forbestown Powerplant (station 11396290), provided by Oroville-Wyandotte Irrigation District.

## 11396310 MINERS RANCH CANAL BELOW PONDEROSA DAM, NEAR FORBESTOWN, CA

LOCATION.—Lat 39°33'00", long 121°18'20", in SE 1/4 NW 1/4 sec.33, T.20 N., R.6 E., Butte County, Hydrologic Unit 18020123, on right bank 800 ft downstream from Ponderosa Dam and 3 mi northwest of Forbestown.

PERIOD OF RECORD.—October 1962 to current year.

REVISED RECORDS.—WDR CA-88-4: diversion only.

GAGE.—Water-stage recorder and concrete control. Elevation of gage is 975 ft above sea level, from topographic map.

REMARKS.—Canal diverts from South Fork Feather River at Ponderosa Dam. Water is used for power development and irrigation. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville–Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 314 ft<sup>3</sup>/s, May 13, 1984; no flow at times in most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	38	268	257	263	273	272	263	239	284	285
2	109	.00	39	268	257	232	272	272	263	281	284	284
3	97	88	40	268	254	264	269	271	263	281	284	284
4	.00	.00	186	264	241	272	267	272	265	281	285	268
5	.00	.00	156	258	250	264	268	272	267	281	284	285
6	.00	.00	51	258	257	267	267	271	268	282	284	285
7	.00	97	188	262	257	268	233	272	268	282	285	284
8	.00	.00	267	261	257	271	267	271	268	284	284	285
9	.00	.00	253	263	257	273	267	271	268	285	284	284
10	133	90	144	265	257	272	270	271	271	284	284	284
11	19	.00	134	265	258	272	271	272	273	284	284	253
12	.00	.00	269	258	259	272	272	271	273	285	284	284
13	.00	.00	268	250	259	273	272	271	274	285	284	284
14	159	67	267	253	259	273	272	272	270	285	284	284
15	97	29	268	251	258	272	271	270	238	284	284	284
16	98	54	268	249	259	272	271	268	275	284	284	284
17	98	55	268	249	258	272	271	268	280	284	284	284
18	206	185	268	249	259	272	271	268	277	284	285	284
19	243	267	268	252	260	272	271	268	240	284	284	285
20	32	246	268	256	259	272	271	268	280	284	284	284
21	.00	89	267	256	259	272	272	268	280	284	284	284
22	.00	40	267	258	259	273	271	268	280	284	285	285
23	85	42	237	261	259	272	271	269	280	284	284	284
24	.00	46	267	263	259	271	271	270	281	253	284	285
25	.00	48	267	263	259	271	271	272	280	285	285	284
26	.00	162	267	263	259	269	272	272	280	285	284	284
27	.00	266	267	263	260	267	271	272	281	284	285	158
28	106	117	267	262	262	267	271	271	281	284	284	.00
29	.00	.00	267	260	---	269	221	265	281	285	258	11
30	.00	17	268	257	---	272	271	262	280	285	285	19
31	62	---	267	256	---	273	---	263	---	285	284	---
TOTAL	1544.00	2005.00	6816	8029	7208	8344	8028	8363	8148	8721	8785	7532.00
MEAN	49.8	66.8	220	259	257	269	268	270	272	281	283	251
MAX	243	267	269	268	262	273	273	272	281	285	285	285
MIN	.00	.00	38	249	241	232	221	262	238	239	258	.00
AC-FT	3060	3980	13520	15930	14300	16550	15920	16590	16160	17300	17430	14940
a	1530	2690	12070	15680	14140	15550	15010	15730	14960	15290	15330	13410

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

MEAN	169	186	195	196	211	212	208	215	233	244	244	186
MAX	263	269	254	259	262	269	276	276	283	284	289	270
(WY)	1980	1992	1981	1998	1996	1998	1987	1992	1992	1996	1986	1980
MIN	26.6	20.9	18.1	16.6	10.5	16.8	14.5	22.2	51.9	49.3	43.0	25.0
(WY)	1987	1978	1977	1977	1977	1977	1977	1977	1977	1977	1977	1992

## SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1963 - 1998

ANNUAL TOTAL	75006.00	83523.00	
ANNUAL MEAN	205	229	209
HIGHEST ANNUAL MEAN			256
LOWEST ANNUAL MEAN			52.2
HIGHEST DAILY MEAN	283	Jul 9	285
LOWEST DAILY MEAN	.00	May 6	.00
ANNUAL SEVEN-DAY MINIMUM	12	Oct 21	12
ANNUAL RUNOFF (AC-FT)	148800	165700	151200
TOTAL DIVERSION (AC-FT) a	132900	151400	
10 PERCENT EXCEEDS	282	284	277
50 PERCENT EXCEEDS	259	268	245
90 PERCENT EXCEEDS	18	39	45

a Discharge, in acre-feet, through Kelly Ridge Powerplant (station 11396329), provided by Oroville–Wyandotte Irrigation District.

## 11396330 BANGOR CANAL BELOW MINERS RANCH RESERVOIR, NEAR OROVILLE, CA

LOCATION.—Lat 39°30'15", long 121°27'16", in NE 1/4 SW 1/4 sec.18, T.19 N., R.5 E., Butte County, Hydrologic Unit 18020124, on left bank 400 ft downstream from outlet at Miners Ranch Dam and 5 mi east of Oroville.

PERIOD OF RECORD.—January 1963 to current year.

GAGE.—Water-stage recorder and Parshall flume. Elevation of gage is 815 ft above sea level, from topographic map.

REMARKS.—Flow regulated by Miners Ranch Reservoir, capacity, 912 acre-ft. Canal completed in November 1962. Water is used for irrigation. See schematic diagram of South Fork Feather River Basin.

COOPERATION.—Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 65 ft<sup>3</sup>/s, Aug. 17–20, 1963; no flow for several days in 1965, 1969.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	11	8.3	8.8	4.2	4.1	7.5	11	7.0	15	19	19
2	19	11	8.4	8.8	4.3	7.1	7.5	11	7.0	16	19	19
3	20	11	8.3	8.8	4.4	11	7.5	11	7.0	17	19	19
4	19	11	8.2	9.1	4.3	19	7.5	11	7.0	17	18	19
5	19	11	9.9	8.9	4.2	16	7.5	11	7.0	17	19	19
6	19	11	11	8.8	4.3	8.8	7.5	11	7.0	17	19	19
7	19	11	11	8.1	4.1	8.8	7.3	11	7.0	17	19	19
8	19	11	11	7.5	4.1	8.8	7.8	11	7.0	17	19	19
9	15	11	11	7.5	4.1	8.5	8.2	11	7.9	18	19	19
10	13	9.4	11	7.5	4.1	8.6	7.2	11	9.1	19	19	19
11	13	8.0	11	7.5	4.1	7.2	7.2	11	9.4	19	19	19
12	13	8.2	11	4.8	4.1	7.2	7.2	11	9.4	19	19	19
13	13	8.0	11	2.5	4.1	7.2	7.6	11	9.4	19	19	19
14	13	8.0	11	3.9	4.1	7.2	7.4	11	9.4	19	19	19
15	13	8.5	11	3.9	4.1	7.2	7.2	9.9	9.2	18	19	19
16	13	8.5	11	3.9	4.1	7.2	7.3	9.0	9.0	18	19	19
17	13	8.3	11	3.9	4.1	7.2	7.2	9.7	10	19	19	19
18	13	8.2	11	3.8	4.1	7.2	7.2	8.9	11	19	20	19
19	13	8.2	11	3.6	4.1	7.2	7.2	8.1	14	19	19	19
20	13	8.2	11	3.6	4.1	7.4	7.2	9.0	16	19	19	19
21	13	8.2	11	3.6	4.1	7.5	7.2	8.8	15	19	20	19
22	13	8.3	11	3.8	4.1	7.4	7.3	8.8	15	19	19	19
23	13	8.5	11	4.2	4.1	7.5	7.5	8.8	15	19	19	19
24	12	8.5	11	4.3	4.1	7.5	7.5	8.8	15	19	19	19
25	11	8.5	11	4.3	4.1	7.5	7.5	8.8	15	19	19	19
26	11	8.4	11	4.4	4.1	7.5	7.3	8.8	15	19	19	19
27	11	8.2	11	4.6	4.1	7.5	7.3	8.8	15	19	19	19
28	11	8.3	11	4.6	4.1	7.5	9.1	8.8	15	19	19	19
29	11	8.3	11	4.4	---	7.5	10	8.0	15	19	19	19
30	11	8.2	9.9	4.3	---	7.5	11	7.0	15	19	20	19
31	11	---	8.8	4.1	---	7.5	---	7.0	---	19	19	---
TOTAL	439	273.9	325.8	171.8	115.9	255.3	229.9	301.0	329.8	567	591	570
MEAN	14.2	9.13	10.5	5.54	4.14	8.24	7.66	9.71	11.0	18.3	19.1	19.0
MAX	20	11	11	9.1	4.4	19	11	11	16	19	20	19
MIN	11	8.0	8.2	2.5	4.1	4.1	7.2	7.0	7.0	15	18	19
AC-FT	871	543	646	341	230	506	456	597	654	1120	1170	1130

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	16.8	7.89	5.54	4.52	4.11	4.51	8.68	16.2	21.9	24.4	24.6	22.3																								
MAX	29.7	14.3	11.2	12.0	7.68	8.27	20.3	27.8	42.0	56.4	53.4	36.2																								
(WY)	1965	1972	1975	1963	1980	1988	1970	1963	1963	1963	1963	1963																								
MIN	5.42	1.47	.035	.30	.25	.20	2.65	6.41	11.0	16.0	17.1	14.4																								
(WY)	1985	1969	1966	1966	1966	1966	1983	1995	1998	1982	1992	1993																								

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1963 - 1998

	1997	1998	1963-1998
ANNUAL TOTAL	4771.2	4170.4	
ANNUAL MEAN	13.1	11.4	13.3
HIGHEST ANNUAL MEAN			18.0
LOWEST ANNUAL MEAN			8.95
HIGHEST DAILY MEAN	23 Aug 9	20 Oct 3	65 Aug 17 1963
LOWEST DAILY MEAN	2.1 Jan 3	2.5 Jan 13	.00 Jan 7 1965
ANNUAL SEVEN-DAY MINIMUM	3.1 Jan 1	3.6 Jan 13	.00 Jan 7 1965
ANNUAL RUNOFF (AC-FT)	9460	8270	9610
10 PERCENT EXCEEDS	19	19	28
50 PERCENT EXCEEDS	13	11	11
90 PERCENT EXCEEDS	5.3	4.2	3.0

## 11396395 SUCKER RUN AT KANAKA DIVERSION, NEAR FEATHER FALLS, CA

LOCATION.—Lat 39°33'44", long 121°16'46", in SE 1/4 NE 1/4 sec.27, T.20 N., R.6 E., Butte County, Hydrologic Unit 18020123, on left bank at Kanaka Diversion Measuring Weir, 2.5 mi upstream from confluence with South Fork Feather River, and 2.5 mi southwest of Feather Falls.

DRAINAGE AREA.—15.5 mi<sup>2</sup>.

PERIOD OF RECORD.—March 1989 to current year.

GAGE.—Water-stage recorder and 120 degree V-notch weir. Elevation of gage is 1,660 ft above sea level, from topographic map.

REMARKS.—Water from creek is diverted upstream from gage to Kanaka Powerplant (station 11396396). See schematic diagram of South Fork Feather River Basin. See station 11396397 for records of combined discharge of creek and powerplant.

COOPERATION.—Records provided by STS Hydro Power Ltd., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Creek only, maximum discharge, 1,500 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 4.40 ft; minimum daily, 1.2 ft<sup>3</sup>/s, Aug. 21, 22, 27, 1992, Aug. 13, 1994.

Combined flow: Maximum discharge, 1,510 ft<sup>3</sup>/s, Jan. 1, 1997; minimum daily, 1.2 ft<sup>3</sup>/s, Aug. 21, 22, 27, 1992, Aug. 13, 1994.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.8	5.6	5.5	5.1	41	43	34	16	20	8.4	7.3	7.7
2	e6.3	5.5	5.3	8.0	90	37	29	15	16	8.3	6.5	7.8
3	4.8	5.4	5.3	43	275	34	48	12	15	8.2	9.1	7.6
4	4.7	5.3	5.2	48	98	28	48	16	13	8.5	8.8	8.0
5	4.7	5.3	5.2	8.5	80	27	53	16	11	8.4	8.9	8.3
6	4.7	5.4	5.3	6.2	142	27	52	14	9.7	8.3	9.4	8.6
7	5.0	6.2	49	5.9	189	23	51	11	9.3	8.3	6.3	8.4
8	5.3	5.6	10	15	137	22	42	9.6	12	8.3	6.2	7.4
9	20	5.6	6.0	5.7	79	19	e40	12	12	8.5	6.2	7.5
10	7.5	5.8	5.7	12	66	17	e33	8.3	12	12	6.2	6.3
11	9.8	6.1	5.6	68	70	15	e34	9.3	9.1	8.5	6.2	6.6
12	6.6	6.3	5.5	148	63	14	e33	9.6	8.6	8.5	6.3	7.6
13	5.9	6.7	5.4	62	63	16	e41	11	11	8.5	8.3	8.0
14	5.7	5.5	6.1	25	142	15	e38	8.6	10	8.4	8.5	7.9
15	5.6	6.0	6.3	86	87	15	e35	8.1	8.5	8.4	7.8	7.8
16	5.5	5.3	5.5	83	68	19	e32	10	8.7	8.4	6.4	7.6
17	5.4	5.3	5.5	96	62	15	e30	9.3	12	11	6.4	7.7
18	5.4	5.1	5.5	97	51	14	e28	8.4	11	12	6.4	7.5
19	5.3	5.5	5.5	82	75	14	e25	8.0	8.4	12	6.4	7.7
20	5.3	5.3	5.4	47	70	14	e22	8.1	8.2	11	6.4	7.7
21	5.3	5.1	5.4	28	103	14	e20	8.2	8.4	11	6.4	7.6
22	5.3	6.3	5.4	16	94	26	e17	8.7	8.5	8.5	6.4	7.8
23	5.4	9.6	5.4	10	94	35	e18	8.6	8.4	8.4	6.4	7.2
24	5.3	5.2	5.3	8.4	91	70	e21	12	8.3	8.3	6.4	6.3
25	5.2	5.2	5.3	7.8	71	62	e17	19	8.4	11	6.4	6.2
26	5.3	25	5.3	16	62	40	e15	31	8.3	11	6.4	6.2
27	5.3	8.6	5.3	20	56	39	e14	27	8.3	11	9.1	9.9
28	5.3	6.1	5.3	9.8	49	37	e18	63	8.4	10	6.4	7.8
29	5.4	5.9	5.3	40	---	32	20	59	9.9	10	6.3	8.2
30	5.5	5.8	5.3	29	---	28	14	36	8.9	8.4	6.3	6.4
31	5.6	---	5.2	18	---	36	---	27	---	8.5	6.7	---
TOTAL	187.2	195.6	217.3	1154.4	2568	847	922	519.8	311.3	290.0	217.2	227.3
MEAN	6.04	6.52	7.01	37.2	91.7	27.3	30.7	16.8	10.4	9.35	7.01	7.58
MAX	20	25	49	148	275	70	53	63	20	12	9.4	9.9
MIN	4.7	5.1	5.2	5.1	41	14	14	8.0	8.2	8.2	6.2	6.2
AC-FT	371	388	431	2290	5090	1680	1830	1030	617	575	431	451

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1998, BY WATER YEAR (WY)

	MEAN	4.55	5.32	12.0	37.5	28.5	26.4	17.4	13.9	7.82	6.60	4.52	4.11
MAX	7.19	7.32	51.7	128	91.7	92.0	37.5	45.5	10.4	13.7	8.09	7.58	
(WY)	1990	1990	1997	1997	1998	1995	1995	1995	1998	1995	1995	1998	
MIN	2.36	3.44	4.34	4.44	5.11	12.1	9.83	6.40	4.24	2.85	1.55	1.33	
(WY)	1995	1993	1991	1991	1991	1994	1994	1992	1992	1994	1994	1992	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1989 - 1998			
ANNUAL TOTAL	7233.9				7657.1							
ANNUAL MEAN	19.8				21.0				14.1			
HIGHEST ANNUAL MEAN									28.2			
LOWEST ANNUAL MEAN									6.29			
HIGHEST DAILY MEAN	1100				275				1100			
LOWEST DAILY MEAN	4.7				4.7				1.2			
ANNUAL SEVEN-DAY MINIMUM	4.9				5.0				1.3			
INSTANTANEOUS PEAK FLOW					422				1500			
INSTANTANEOUS PEAK STAGE					3.38				4.40			
ANNUAL RUNOFF (AC-FT)	14350				15190				10230			
10 PERCENT EXCEEDS	20				57				21			
50 PERCENT EXCEEDS	8.3				8.5				7.1			
90 PERCENT EXCEEDS	5.3				5.3				2.7			

e Estimated.

## 11396397 SUCKER RUN AT KANAKA DIVERSION, NEAR FEATHER FALLS, CA—Continued

## SUCKER RUN AND KANAKA HYDROELECTRIC PROJECT POWERPLANT,

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.8	5.6	13	11	75	80	71	47	57	27	17	10
2	e6.3	5.5	12	30	115	74	66	52	53	27	16	10
3	4.8	5.4	11	80	291	71	85	48	52	27	16	9.9
4	4.7	5.3	10	85	134	65	85	52	50	28	15	9.8
5	4.7	5.3	10	41	117	64	90	53	48	26	15	10
6	4.7	5.4	12	28	169	64	89	51	47	26	15	11
7	5.0	6.2	76	27	204	60	88	47	46	25	15	10
8	5.3	5.6	38	26	164	59	79	46	45	24	15	9.7
9	20	5.6	23	24	116	56	e77	45	43	25	15	10
10	7.5	5.8	19	36	103	54	e70	44	44	25	15	9.4
11	9.8	8.6	17	105	107	52	e71	44	45	25	14	9.1
12	6.6	6.8	15	172	100	51	e70	46	45	24	14	9.3
13	5.9	11	14	96	100	53	e78	48	42	24	13	9.0
14	5.7	9.5	25	62	170	51	e75	46	41	22	13	8.9
15	5.6	12	26	115	124	49	e72	43	39	22	13	8.9
16	5.5	10	20	120	105	55	e69	45	38	22	13	8.8
17	5.4	13	19	133	99	49	e67	45	37	21	12	8.7
18	5.4	8.1	18	132	88	46	e65	42	36	22	12	8.5
19	5.3	20	16	119	112	45	e62	40	35	22	13	8.7
20	5.3	13	15	84	107	44	e59	39	34	20	12	8.7
21	5.3	7.9	15	65	137	44	e57	39	34	21	12	8.6
22	5.3	8.0	14	53	131	63	e53	39	34	21	12	8.8
23	5.4	31	14	47	131	72	e55	38	33	20	12	8.7
24	5.3	18	13	43	128	107	e58	40	32	19	11	8.9
25	5.2	15	12	41	108	99	e53	55	32	20	11	9.0
26	5.3	59	12	53	99	77	e50	68	31	19	11	11
27	5.3	32	12	57	93	76	e48	64	30	19	10	12
28	5.3	18	12	47	86	74	e46	100	29	18	11	11
29	5.4	15	11	77	---	69	43	96	30	18	10	9.9
30	5.5	16	11	66	---	65	44	73	26	18	9.9	9.2
31	5.6	---	11	55	---	73	---	64	---	18	9.5	---
TOTAL	187.2	387.6	546	2130	3513	1961	1995	1599	1188	695	402.4	285.5
MEAN	6.04	12.9	17.6	68.7	125	63.3	66.5	51.6	39.6	22.4	13.0	9.52
MAX	20	59	76	172	291	107	90	100	57	28	17	12
MIN	4.7	5.3	10	11	75	44	43	38	26	18	9.5	8.5
AC-FT	371	769	1080	4220	6970	3890	3960	3170	2360	1380	798	566

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1998, BY WATER YEAR (WY)

MEAN	4.55	6.69	18.5	53.1	46.0	42.9	31.1	24.9	15.0	8.47	5.27	4.30
MAX	7.19	12.9	75.5	156	125	113	72.1	71.3	39.6	22.4	13.0	9.52
(WY)	1990	1998	1997	1997	1998	1995	1995	1995	1998	1998	1998	1998
MIN	2.36	3.44	4.34	4.52	5.22	14.3	10.1	6.40	4.27	2.85	1.55	1.33
(WY)	1995	1993	1991	1991	1991	1994	1994	1992	1992	1994	1994	1992

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1989 - 1998

ANNUAL TOTAL	10795.9	14889.7	
ANNUAL MEAN	29.6	40.8	21.9
HIGHEST ANNUAL MEAN			41.5
LOWEST ANNUAL MEAN			7.86
HIGHEST DAILY MEAN	1110	291	1110
LOWEST DAILY MEAN	4.7	4.7	1.2
ANNUAL SEVEN-DAY MINIMUM	4.9	5.0	1.3
INSTANTANEOUS PEAK FLOW		438	1510
ANNUAL RUNOFF (AC-FT)	21410	29530	15870
10 PERCENT EXCEEDS	55	94	51
50 PERCENT EXCEEDS	14	27	9.0
90 PERCENT EXCEEDS	5.4	6.3	2.7

e Estimated.



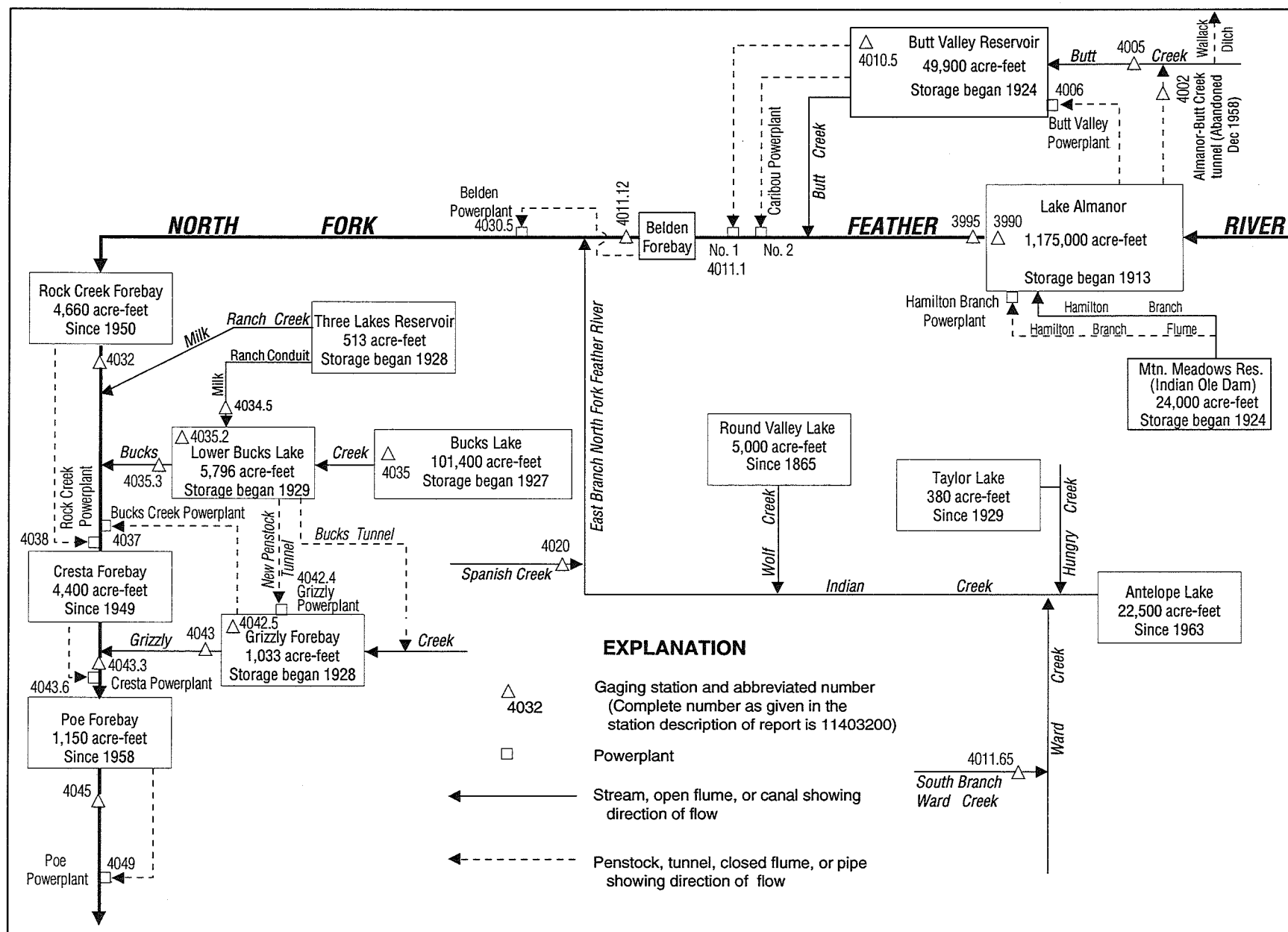


Figure 29. Diversions and storage in North Fork Feather River Basin.

## 11399000 LAKE ALMANOR AT PRATTVILLE, CA

LOCATION.—Lat 40°12'46", long 121°09'43", in SW 1/4 NE 1/4 sec.11, T.27 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Lassen National Forest, at intake tower to Butt Valley Tunnel at Prattville, 4.7 mi northwest of Lake Almanor Dam, and 5.6 mi northwest of Canyon Dam.

DRAINAGE AREA.—491 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1913 to current year. Monthly contents only for some periods, published in WSP 1315-A. Published as "near Prattville" 1937–60. Prior to October 1964, records published as usable contents.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Nonrecording gage read once daily. Datum of gage is 10.23 ft below sea level (levels by Pacific Gas & Electric Co.). Prior to June 1, 1965, nonrecording gage at site 4.7 mi southeast at same datum.

REMARKS.—Lake is formed by earthfill dam; storage began in July 1913; dam raised to gage height 4,455 ft in 1917 and 4,515 ft in 1927. Usable capacity, 1,174,887 acre-ft between gage heights 4,422 ft, invert of outlet, and 4,495.5 ft, maximum storage limit. Dead storage, 8,948 acre-ft. Water is diverted by tunnel and penstock to Butt Valley Powerplant (station 11400600) and then is used for power development in the North Fork Feather River. Figures given, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 1,142,960 acre-ft, June 8, 1982, gage height, 4,494.00 ft; minimum, 5,230 acre-ft, Feb. 5, 1918, gage height, 4,416.1 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 1,123,508 acre-ft, July 11, gage height, 4,493.28 ft; minimum, 624,226 acre-ft, Dec. 31, gage height, 4,472.79 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on surveys by Pacific Gas & Electric Co. in 1924 and 1926)

4,422	8,948	4,434	49,510	4,460	376,686
4,424	10,067	4,437	74,189	4,470	565,519
4,426	11,260	4,440	101,869	4,480	787,304
4,428	13,480	4,445	156,414	4,490	1,036,269
4,430	21,200	4,450	220,848	4,495.5	1,183,835
4,432	34,173	4,455	94,531		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	811990	748722	698211	625736	711570	784001	852663	920939	1066588	1116243	1095864	1019266
2	810797	746177	695730	628761	717258	784944	855578	927202	1068179	1118124	1093460	1016660
3	809844	743405	693478	630493	723191	784237	858496	932224	1070036	1119738	1091324	1013537
4	808652	742712	690329	633963	726622	782351	861175	937508	1072691	1120814	1088924	1010937
5	806985	742712	688308	635048	730518	784237	863856	942803	1077209	1121353	1086526	1008080
6	805557	742712	685616	635266	735571	786124	866053	948362	1080136	1122700	1083596	1006005
7	802941	735111	686288	638311	739945	787304	868741	953679	1083596	1122700	1081733	1002894
8	801277	732124	685616	648361	741097	787068	868985	959006	1087592	1122700	1079604	1000046
9	800802	730747	684271	641581	745484	786124	871432	970212	1089724	1123238	1077209	997201
10	799615	728455	682928	643328	746640	785652	872411	975839	1095062	1122969	1075348	994101
11	797006	725936	679350	646171	746640	784237	874371	980711	1099074	1123508	1073222	991262
12	795109	722963	676225	649677	752662	782822	877069	986109	1101217	1122969	1071628	988684
13	792505	720907	673551	652093	754519	782587	876578	990746	1104165	1121084	1069240	986109
14	790376	718170	671993	656053	758703	783058	876578	994617	1106847	1120545	1066853	982766
15	788249	715892	669103	658699	760100	783765	878788	998753	1109262	1119200	1063675	980197
16	786360	713844	666662	662012	762430	786360	879771	1003153	1110335	1118124	1059442	977888
17	784472	712252	664668	667106	764063	788721	881491	1006783	1111677	1116780	1058914	973791
18	781880	711116	662233	673551	765931	791085	882721	1010677	1111141	1115974	1056536	971489
19	779762	711343	659140	678680	768970	792505	884198	1013537	1112751	1113825	1053368	968170
20	777646	709526	656714	681585	770374	794399	885922	1016921	1114094	1113825	1049940	965111
21	775297	707485	654292	684495	774828	797006	886169	1021874	1115168	1114631	1047042	962310
22	772952	705898	650555	686737	776471	803416	888634	1025791	1115974	1112751	1044410	960022
23	770843	707258	647704	689206	778351	811274	890856	1029453	1115437	1111677	1041781	959768
24	768035	708165	645077	690554	780938	818920	895058	1033381	1115437	1111141	1039416	957483
25	765698	709073	641363	693478	782351	825150	897782	1039416	1114094	1108725	1036791	958752
26	763363	710435	638747	696181	783765	829713	901501	1044937	1113825	1107384	1034168	957483
27	760799	706578	635918	698211	784944	836213	905226	1049676	1114631	1106579	1034430	957737
28	758936	704992	633311	700469	784708	840073	908709	1053104	1114900	1103897	1028144	956214
29	756842	702503	630060	703860	---	843940	912197	1057064	1115974	1102288	1026314	954693
30	754286	700469	626815	706125	---	847086	916439	1060764	1115974	1099877	1022918	953172
31	751270	---	624226	707938	---	850721	---	1064204	---	1098271	1021874	---
MAX	811990	748722	698211	707938	784944	850721	916439	1064204	1115974	1123508	1095864	1019266
MIN	751270	700469	624226	625736	711570	782351	852663	920939	1066588	1098271	1021874	953172
a	4478.46	4476.24	4472.79	4476.57	4479.89	4482.65	4485.32	4491.06	4493.00	4492.34	4489.45	4486.78
b	-62391	-50801	-76243	+83712	+76770	+66013	+65718	+147765	+51770	-17703	-76397	-68702

CAL YR 1997 MAX 968680 MIN 624226 b -249165

WTR YR 1998 MAX 1123508 MIN 624226 b +139511

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## 11399500 NORTH FORK FEATHER RIVER NEAR PRATTVILLE, CA

LOCATION.—Lat 40°10'06", long 121°05'31", in NE 1/4 SW 1/4 sec.28, T.27 N., R.8 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 0.4 mi downstream from Almanor Dam, 4.5 mi southeast of Prattville, and 9 mi upstream from Butt Creek.

DRAINAGE AREA.—493 mi<sup>2</sup>.

PERIOD OF RECORD.—June 1905 to current year. Published as "below Prattville" prior to 1911. No record for January, February, or March 1911. Estimated mean discharge for water year 1911 published in WSP 1315-A.

REVISED RECORDS.—WSP 1245: 1951 (yearly summaries). WSP 1285: 1952 (yearly summaries). WDR CA-88-4: 1987 (monthly and yearly totals for Butt Valley Powerplant).

GAGE.—Water-stage recorder and broad-crested weir. Datum of gage is 4,379.86 ft above sea level. Prior to Oct. 1, 1936, nonrecording gages or water-stage recorders at several sites within 0.5 mi of present site at various datums.

REMARKS.—Flow regulated since 1913 by Lake Almanor (station 11399000) 0.5 mi upstream and since 1924 by Mountain Meadows Reservoir, capacity, 24,000 acre-ft, 12 mi upstream on Hamilton Branch. Water diverted from Lake Almanor to Butt Valley Reservoir (station 11401050) through old Almanor-Butt Creek Tunnel from May 1921 to December 1958, for use at Caribou Powerplant. Old tunnel closed Dec. 30, 1958, and diversion began Dec. 31, 1958, to Butt Valley Powerplant (station 11400600) at upstream end of Butt Valley Reservoir. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 10,000 ft<sup>3</sup>/s, Mar. 19, 1907, before construction of dam, gage height, 16.2 ft, at former site, from rating curve extended above 3,700 ft<sup>3</sup>/s; no flow at times during 1914, 1919, 1923.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	37	37	41	37	38	38	39	41	35	36	35
2	37	37	37	41	37	38	38	39	41	35	36	37
3	37	37	37	41	39	38	38	39	41	35	36	38
4	37	38	37	41	38	38	39	39	41	35	36	39
5	37	38	37	41	38	38	39	40	41	35	36	39
6	37	38	37	41	38	38	39	39	41	35	36	39
7	37	37	37	41	38	37	39	39	41	35	36	39
8	39	37	37	41	38	37	39	39	41	35	36	39
9	39	37	37	41	38	37	39	40	41	35	36	39
10	39	37	37	41	38	37	39	40	41	35	36	39
11	38	37	37	42	38	37	39	40	41	35	36	39
12	38	37	37	42	38	37	39	40	41	35	36	39
13	38	37	37	42	38	37	39	40	42	36	36	39
14	38	37	37	42	38	37	39	40	42	37	36	39
15	38	37	37	42	38	36	39	40	42	37	36	39
16	38	37	37	42	38	36	39	40	42	37	36	39
17	38	37	37	43	38	37	39	40	42	37	36	39
18	38	37	37	43	38	37	39	39	42	37	36	38
19	38	37	37	43	38	37	39	39	42	37	36	38
20	38	37	37	43	38	37	39	39	42	37	36	38
21	38	37	36	43	38	37	39	39	42	37	36	38
22	38	37	36	43	38	38	39	39	42	37	36	38
23	38	37	37	43	38	39	39	39	42	37	36	38
24	38	37	37	43	38	40	39	40	42	37	36	38
25	37	37	37	43	38	40	39	40	42	37	35	38
26	37	37	36	43	38	39	39	40	42	37	35	38
27	37	37	36	40	38	39	39	40	42	37	35	38
28	37	37	36	36	38	39	39	40	42	37	35	38
29	37	37	36	37	---	38	39	40	42	37	35	38
30	37	37	36	36	---	38	39	40	39	37	35	38
31	37	---	39	36	---	38	---	41	---	36	35	---
TOTAL	1167	1113	1142	1277	1063	1169	1167	1228	1245	1121	1109	1150
MEAN	37.6	37.1	36.8	41.2	38.0	37.7	38.9	39.6	41.5	36.2	35.8	38.3
MAX	39	38	39	43	39	40	39	41	42	37	36	39
MIN	37	37	36	36	37	36	38	39	39	35	35	35
AC-FT	2310	2210	2270	2530	2110	2320	2310	2440	2470	2220	2200	2280
a	105200	95580	119900	545	1510	27940	15240	6210	102800	94290	121300	112100

a Diversion, in acre-feet, to Butt Valley Powerplant, provided by Pacific Gas & Electric Co.

## 11399500 NORTH FORK FEATHER RIVER NEAR PRATTVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1958, BY WATER YEAR (WY)

MEAN	498	393	371	282	349	272	318	327	349	479	602	569
MAX	1607	1414	1418	1489	2124	1609	1852	2206	1065	1280	1755	1762
(WY)	1931	1931	1938	1946	1938	1929	1938	1938	1935	1929	1929	1929
MIN	3.80	3.32	3.41	3.20	3.20	3.61	2.63	2.02	2.11	8.02	3.72	3.16
(WY)	1942	1940	1937	1944	1944	1944	1939	1939	1939	1943	1937	1937

## SUMMARY STATISTICS

## WATER YEARS 1925 - 1958

ANNUAL TOTAL	
ANNUAL MEAN	401
HIGHEST ANNUAL MEAN	1061
LOWEST ANNUAL MEAN	27.1
HIGHEST DAILY MEAN	2670
LOWEST DAILY MEAN	.50
ANNUAL SEVEN-DAY MINIMUM	.87
INSTANTANEOUS PEAK FLOW	2710
INSTANTANEOUS PEAK STAGE	6.95
ANNUAL RUNOFF (AC-FT)	290600
10 PERCENT EXCEEDS	1060
50 PERCENT EXCEEDS	60
90 PERCENT EXCEEDS	4.4

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

MEAN	47.5	45.1	33.0	81.3	79.7	37.4	42.1	50.3	68.9	63.9	60.2	45.0
MAX	510	546	59.6	1901	1800	163	293	352	660	688	596	415
(WY)	1997	1997	1997	1997	1997	1997	1983	1996	1996	1996	1996	1996
MIN	17.3	8.65	7.47	8.67	10.0	9.90	10.1	15.7	16.0	15.4	14.9	15.0
(WY)	1978	1960	1960	1960	1962	1964	1964	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1960 - 1998

ANNUAL TOTAL	136816	13951	
ANNUAL MEAN	375	38.2	54.4
HIGHEST ANNUAL MEAN			459
LOWEST ANNUAL MEAN			22.3
HIGHEST DAILY MEAN	2140	Jan 5	2140
LOWEST DAILY MEAN	17	May 23	2.9
ANNUAL SEVEN-DAY MINIMUM	23	May 23	4.7
INSTANTANEOUS PEAK FLOW			10000
INSTANTANEOUS PEAK STAGE			16.20
ANNUAL RUNOFF (AC-FT)	271400	27670	39410
ANNUAL DIVERSION (AC-FT) a	746400	802700	
10 PERCENT EXCEEDS	1910	41	40
50 PERCENT EXCEEDS	37	38	36
90 PERCENT EXCEEDS	37	36	32

a Diversion, in acre-feet, to Butt Valley Powerplant, provided by Pacific Gas & Electric Co.

## 11400500 BUTT CREEK BELOW ALMANOR-BUTT CREEK TUNNEL, NEAR PRATTVILLE, CA

LOCATION.—Lat 40°11'14", long 121°11'13", in NE 1/4 NW 1/4 sec.22, T.27 N., R.7 E., Plumas County, Hydrologic Unit 18020121, on right bank 500 ft downstream from outlet of old Almanor-Butt Creek Tunnel, and 2.2 mi southwest of Prattville.

DRAINAGE AREA.—69.3 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1936 to September 1959, October 1964 to current year. Published as "below tunnel No. 1" 1938–40. Records for water years 1937–38 published in WSP 1515. Records prior to 1964 not equivalent owing to inflow from Almanor-Butt Creek Tunnel.

GAGE.—Water-stage recorder and concrete control. Elevation of gage is 4,300 ft above sea level, from topographic map. Prior to Oct. 5, 1937, at site 200 ft downstream at datum 4 ft lower.

REMARKS.—No regulation upstream from station. Howell-Bunger valve in conduit from Lake Almanor (station 11399000) to Butt Valley Powerplant (station 11400600) is opened for short periods several times a year, causing sharp peaks. Wallack Ditch upstream from station diverts about 3 ft<sup>3</sup>/s during each irrigation season into Yellow Creek Basin. Some inflow 500 ft upstream that is the leakage from the abandoned Almanor-Butt Creek Tunnel at Outlet (station 11400200) is included in the table below. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 4,080 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 6.22 ft, from rating curve extended above 1,400 ft<sup>3</sup>/s; minimum daily, 26 ft<sup>3</sup>/s, several days during May and June 1976.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	48	59	52	112	79	192	467	334	134	74	61
2	50	48	54	60	111	81	190	523	365	131	72	61
3	48	48	53	75	301	88	185	483	358	127	70	61
4	47	48	53	65	208	84	172	445	331	123	69	61
5	48	48	53	60	161	83	165	412	316	119	68	61
6	48	48	54	59	158	81	161	448	305	114	68	62
7	49	51	65	59	150	78	161	424	297	112	68	62
8	50	48	63	57	134	78	150	450	305	111	68	62
9	80	48	57	57	118	79	152	580	299	107	67	63
10	56	48	55	58	112	80	171	460	379	103	67	63
11	58	50	54	100	106	83	171	391	417	100	67	63
12	53	49	53	192	104	87	153	340	364	98	67	63
13	52	50	53	162	102	105	150	301	342	95	67	62
14	50	53	53	113	110	118	143	281	316	92	68	62
15	50	53	56	163	102	133	136	264	295	90	66	62
16	50	58	55	166	98	168	137	261	283	88	66	62
17	50	58	66	412	94	184	146	244	258	86	65	62
18	50	55	68	264	90	176	165	229	246	84	65	62
19	50	73	58	190	91	170	193	232	235	83	63	62
20	50	59	59	141	86	182	226	230	223	82	63	62
21	48	53	57	119	84	197	275	235	215	80	63	62
22	48	51	51	106	88	508	326	228	206	79	62	62
23	48	65	51	98	82	555	364	235	195	80	62	62
24	48	62	52	94	86	715	400	232	189	79	62	62
25	48	72	51	89	80	524	366	388	186	78	62	63
26	48	72	50	129	78	431	335	302	175	77	62	65
27	48	65	51	133	78	358	358	275	164	75	62	67
28	48	60	53	117	79	287	394	399	156	74	62	66
29	48	58	53	145	---	243	431	366	145	72	62	64
30	48	68	53	126	---	219	460	305	140	72	62	63
31	48	---	52	112	---	210	---	307	---	74	62	---
TOTAL	1562	1667	1715	3773	3203	6464	7028	10737	8039	2919	2031	1875
MEAN	50.4	55.6	55.3	122	114	209	234	346	268	94.2	65.5	62.5
MAX	80	73	68	412	301	715	460	580	417	134	74	67
MIN	45	48	50	52	78	78	136	228	140	72	62	61
AC-FT	3100	3310	3400	7480	6350	12820	13940	21300	15950	5790	4030	3720
a	478	445	451	477	444	494	500	556	549	570	565	526

a Inflow, in acre-feet, from Almanor-Butt Creek Tunnel at Outlet, provided by Pacific Gas & Electric Co.

## 11400500 BUTT CREEK BELOW ALMANOR-BUTT CREEK TUNNEL, NEAR PRATTVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1998, BY WATER YEAR (WY)

MEAN	378	350	362	307	303	337	344	382	376	396	388	384
MAX	995	1073	1419	1098	1025	1050	1178	1176	1092	1038	1019	990
(WY)	1943	1938	1959	1953	1941	1953	1952	1956	1958	1953	1953	1953
MIN	32.3	39.2	39.3	39.4	38.0	47.8	47.5	42.7	32.9	28.7	27.8	29.4
(WY)	1989	1992	1991	1992	1937	1977	1977	1976	1976	1977	1977	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1937 - 1998	
ANNUAL TOTAL	37273		51013			
ANNUAL MEAN	102		140		359	
HIGHEST ANNUAL MEAN					974	1953
LOWEST ANNUAL MEAN					40.1	1977
HIGHEST DAILY MEAN	2660	Jan 1	715	Mar 24	2830	Feb 17 1986
LOWEST DAILY MEAN	45	Oct 1	45	Oct 1	26	May 26 1976
ANNUAL SEVEN-DAY MINIMUM	47	Sep 25	48	Oct 1	26	May 30 1976
INSTANTANEOUS PEAK FLOW			901	Mar 24	4080	Jan 1 1997
INSTANTANEOUS PEAK STAGE			2.82	Mar 24	6.22	Jan 1 1997
ANNUAL RUNOFF (AC-FT)	73930		101200		260200	
ANNUAL INFLOW (AC-FT) a	6000		6050			
10 PERCENT EXCEEDS	154		334		989	
50 PERCENT EXCEEDS	60		80		102	
90 PERCENT EXCEEDS	48		50		42	

a Inflow, in acre-feet, from Almanor-Butt Creek Tunnel at Outlet, provided by Pacific Gas & Electric Co.

## 11401050 BUTT VALLEY RESERVOIR NEAR CARIBOU, CA

LOCATION.—Lat 40°06'59", long 121°08'42", in SE 1/4 SW 1/4 sec.12, T.26 N., R.7 E., Plumas County, Hydrologic Unit 18020121, on center intake tower in Butt Valley Reservoir, 2.5 mi north of Caribou, and 5.4 mi southwest of Canyon Dam.

DRAINAGE AREA.—83.5 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to current year. Unpublished records for water years 1983–85 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 10.23 ft below sea level (levels by Great Western Power Co.).

REMARKS.—Lake is formed by earthfill dam. Storage began in 1924. Usable capacity, 49,930 acre-ft between elevations 4,075.9 ft, invert of outlet tunnel, and 4,132.1 ft, crest of spillway. Water is diverted by tunnel and penstock to Caribou Powerplants (station 11401110). Figures given, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 52,667 acre-ft, Feb. 18, 19, 1986, elevation, 4,133.80 ft; minimum, 4,284 acre-ft, Mar. 3, 1997, elevation, 4,094.95 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 49,529 acre-ft, Nov. 24, elevation, 4,131.85 ft; minimum, 19,220 acre-ft, Oct. 1, elevation, 4,110.68 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on surveys by Great Western Power Co. in 1923 and 1924)

4,090	1,754	4,120	31,592
4,100	8,024	4,130	46,591
4,110	18,395	4,137	57,891

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19220	38546	49450	40022	37248	34679	41925	43311	46670	43698	40022	44321
2	20475	38546	49466	39720	37695	34388	42695	43157	47382	43080	40552	44321
3	21645	38531	49386	39342	38890	33811	40188	42310	47937	43234	40552	44476
4	22939	38576	49354	39720	39644	35993	40476	42310	48016	43080	40552	44165
5	24102	38546	49402	37545	40248	35847	40552	42772	46749	43543	40399	e44010
6	24536	38591	49418	35628	40933	34898	39720	42772	46828	43698	39946	43621
7	24694	38546	49242	34898	41467	34606	39569	42772	46512	43776	39493	43157
8	24694	38651	48732	34679	41772	34606	40173	43465	46749	44399	39403	43543
9	24602	38531	48095	34898	42387	34971	40552	44943	47541	44087	39720	44088
10	24602	38516	47857	35117	42772	35482	40857	45963	47620	44399	39569	44088
11	24589	38531	47462	35482	43157	35774	39946	46513	49210	44554	39493	43777
12	24589	38531	47066	36658	43465	36584	40097	45806	49290	45335	39116	43388
13	24563	38576	46591	37101	43777	37695	42541	45571	48812	46434	38890	43157
14	24378	39025	46355	37471	44243	38292	44865	44399	48732	46828	38666	42849
15	24431	40052	45963	37919	44399	39644	43621	44865	48732	47778	39720	42772
16	24391	41162	45570	38367	45021	40173	42541	45335	48732	48095	40248	42387
17	24339	42572	45178	39493	44554	40705	42079	45492	49130	48573	38516	42156
18	24378	43870	44943	40324	43621	41239	41010	45100	49370	48652	38292	42695
19	24444	45272	44554	40811	41620	41696	41467	44865	49131	48812	38741	43465
20	25269	46591	44165	41162	40476	42233	41925	44632	48812	47066	39342	44165
21	25534	47968	43777	40628	39267	42772	43234	44243	48493	45021	39720	45257
22	27801	49402	43465	38889	39569	43932	43543	44165	48333	44087	40324	47224
23	29111	49466	42926	36362	39493	45413	44010	44321	48413	43388	41239	45963
24	30310	49529	42541	34460	38741	45492	44321	44787	48652	42541	41391	47382
25	31663	49513	42079	34825	37396	45413	44321	45335	48891	41544	42233	45099
26	33003	49290	41620	35190	36436	44399	44865	46042	49130	40628	42618	44865
27	33710	49386	41162	35555	35482	45413	45257	45806	48095	40705	42926	44477
28	34898	49402	40705	35847	34825	46120	45806	46277	47066	40781	43311	44399
29	36259	49402	40324	36658	---	44710	45963	47303	46042	40705	43776	44865
30	37575	49481	39871	36805	---	43777	44165	45806	44788	40476	44321	45178
31	38531	---	39795	37175	---	42695	---	45884	---	39644	44321	---
MAX	38531	49529	49466	41162	45021	46120	45963	47303	49370	48812	44321	47382
MIN	19220	38516	39795	34460	34825	33811	39569	42310	44788	39644	38292	42156
a	4124.76	4131.82	4125.60	4123.85	4122.25	4127.50	4128.45	4129.55	4128.85	4125.50	4128.55	4129.10
b	+20420	+10950	-9686	-2620	-2350	+7870	+1470	+1719	-1096	-5144	+4677	+857
c	83610	85500	129800	12350	14940	33960	30110	29120	115100	101400	115700	110600

CAL YR 1997 MAX 49529 MIN 4284 b +31812 c 786100

WTR YR 1998 MAX 49529 MIN 19220 b +27067 c 862200

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Discharge, in acre-feet, through Caribou Powerplants, provided by Pacific Gas & Electric Co.

## 11401112 NORTH FORK FEATHER RIVER BELOW BELDEN DAM, CA

LOCATION.—Lat 40°04'17", long 121°09'49", in NE 1/4 NW 1/4 sec.35, T.26 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 0.4 mi downstream from Belden Dam, 0.5 mi upstream from Deadwood Canyon, and 6.4 mi northeast of Belden.

DRAINAGE AREA.—612 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1969 to current year. July 1959 to September 1969 in files of Pacific Gas & Electric Co.

REVISED RECORDS.—WDR CA-78-4: 1977 (monthly and yearly summaries).

GAGE.—Water-stage recorder. Datum of gage is 2,800.77 ft above sea level (levels by Pacific Gas & Electric Co.).

REMARKS.—Flow regulated by Butt Valley Reservoir (station 11401050), Lake Almanor (station 11399000), Belden Reservoir, and Mountain Meadows Reservoir, combined capacity, 1,267,000 acre-ft. Diversion to Belden Powerplant (station 11403050) began on Aug. 27, 1969. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 3,460 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 9.17 ft; minimum daily, 2.3 ft<sup>3</sup>/s, Oct. 25, 1981.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	64	63	65	64	63	64	144	143	144	143	143
2	65	64	64	64	64	65	65	140	143	144	143	143
3	65	64	64	64	500	67	64	141	142	143	144	144
4	93	64	64	64	361	66	64	141	144	144	144	143
5	83	64	64	63	112	64	65	143	143	144	144	144
6	66	64	64	64	66	65	64	142	144	144	144	144
7	65	64	64	66	66	64	63	144	144	145	144	123
8	65	64	64	66	68	64	64	143	144	144	143	64
9	66	64	64	65	66	64	63	143	144	144	144	63
10	65	64	64	65	86	63	63	143	143	143	144	62
11	65	64	64	65	136	65	64	142	144	144	144	63
12	65	64	64	66	132	65	65	142	143	145	143	64
13	66	64	64	66	65	64	74	142	144	144	144	64
14	66	64	64	65	65	64	66	142	144	144	144	64
15	66	64	64	65	64	65	65	143	144	143	143	63
16	66	64	64	63	63	64	67	143	144	143	144	63
17	65	64	64	65	63	66	67	142	144	144	144	64
18	65	64	64	65	70	66	66	143	144	144	143	63
19	65	64	64	66	68	66	64	143	144	145	143	63
20	63	64	64	65	68	63	63	142	143	144	143	64
21	64	64	64	66	68	63	65	142	144	145	144	63
22	64	64	64	64	67	64	68	142	144	144	143	63
23	64	64	66	64	64	63	120	143	144	144	144	64
24	64	64	65	64	64	64	148	143	144	144	143	64
25	64	64	69	64	63	64	152	144	143	144	143	64
26	64	64	67	64	64	64	154	142	144	144	144	63
27	64	64	67	64	63	64	150	143	144	143	143	63
28	64	64	67	64	63	63	147	142	145	144	144	63
29	64	65	65	65	---	63	145	143	144	144	144	63
30	64	64	64	64	---	63	144	143	144	144	143	64
31	64	---	64	64	---	63	---	142	---	144	144	---
TOTAL	2054	1921	2001	2004	2763	1991	2593	4417	4312	4463	4451	2442
MEAN	66.3	64.0	64.5	64.6	98.7	64.2	86.4	142	144	144	144	81.4
MAX	93	65	69	66	500	67	154	144	145	145	144	144
MIN	63	64	63	63	63	63	63	140	142	143	143	62
AC-FT	4070	3810	3970	3970	5480	3950	5140	8760	8550	8850	8830	4840
a	83510	85260	128800	17010	20330	42190	34840	29510	116600	98030	111600	109500

a Diversion, in acre-feet, to Belden Powerplant, provided by Pacific Gas & Electric Co.



## 11401112 NORTH FORK FEATHER RIVER BELOW BELDEN DAM, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1998, BY WATER YEAR (WY)

MEAN	135	146	124	141	114	104	162	171	147	139	135	126
MAX	1414	2487	1664	1200	616	591	743	549	374	199	173	1134
(WY)	1975	1975	1975	1997	1997	1975	1983	1995	1995	1970	1970	1987
MIN	57.8	38.4	45.2	51.6	51.2	50.0	63.1	62.2	56.5	64.2	89.0	61.9
(WY)	1985	1981	1976	1976	1976	1976	1972	1971	1971	1971	1972	1976

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1970 - 1998	
ANNUAL TOTAL	84569		35412			
ANNUAL MEAN	232		97.0		137	
HIGHEST ANNUAL MEAN					745	
LOWEST ANNUAL MEAN					76.3	
HIGHEST DAILY MEAN	2130		500		2800	
LOWEST DAILY MEAN	63		62		2.3	
ANNUAL SEVEN-DAY MINIMUM	64		63		3.5	
INSTANTANEOUS PEAK FLOW			1460		3460	
INSTANTANEOUS PEAK STAGE			7.05		9.17	
ANNUAL RUNOFF (AC-FT)	167700		70240		99370	
ANNUAL DIVERSION (AC-FT) a	917500		877100			
10 PERCENT EXCEEDS	701		144		150	
50 PERCENT EXCEEDS	139		66		68	
90 PERCENT EXCEEDS	64		64		60	

a Diversion, in acre-feet, to Belden Powerplant, provided by Pacific Gas & Electric Co.

## 11401165 SOUTH BRANCH WARD CREEK BELOW DIVERSION DAM, NEAR GENESEE, CA

LOCATION.—Lat 40°00'07", long 120°42'07", in SE 1/4 NE 1/4 sec.26, T.25 N., R.11 E., Plumas County, Hydrologic Unit 18020122, on left bank 20 ft downstream from diversion dam, 30 ft downstream from Nye Creek, 3.5 mi upstream from Indian Creek, and 3.8 mi southeast of Genesee.

DRAINAGE AREA.—6.74 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1990 to current year (low flow records only).

GAGE.—Water-stage recorder and V-notch sharp-crested weir in concrete control. Elevation of gage is 5,300 ft above sea level, from topographic map.

REMARKS.—Mar. 5–29 missing data due to malfunction of the recording equipment. No records computed above 12 ft<sup>3</sup>/s. Flow regulated at diversion dam 20 ft upstream. Some water is diverted to Five Bears Powerplant and bypasses this gage. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Henwood Energy Services, Inc., for Five Bears Hydro, Inc., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	3.1	3.9	3.0	3.0	3.2	11	---	---	5.7	3.1	3.2
2	3.2	3.1	3.2	3.0	3.0	5.0	11	---	---	3.5	3.1	3.1
3	3.1	3.1	3.4	3.0	3.9	5.1	11	---	---	3.8	3.1	3.5
4	3.1	3.1	3.1	3.0	3.9	5.0	10	---	---	3.5	3.2	3.3
5	3.2	3.1	3.1	3.0	3.8	---	10	---	---	3.5	3.3	3.4
6	3.1	3.1	3.1	3.0	3.9	---	9.9	---	---	5.0	3.3	3.7
7	3.1	3.1	3.1	3.0	3.8	---	9.6	---	---	4.9	3.3	3.3
8	3.2	3.1	3.2	3.0	3.7	---	9.2	---	---	3.5	3.3	3.3
9	3.3	3.1	4.0	3.0	3.6	---	9.1	---	---	3.4	3.3	3.3
10	3.2	3.1	4.3	3.0	3.6	---	9.0	---	---	3.4	3.3	3.2
11	3.2	3.1	3.6	3.0	3.5	---	9.0	---	---	3.7	3.3	3.2
12	3.1	3.1	3.1	3.0	3.5	---	8.8	---	---	3.4	3.3	3.2
13	3.3	3.1	3.0	3.0	3.4	---	8.7	---	---	3.3	3.3	3.2
14	3.1	3.1	3.0	3.0	3.4	---	8.4	---	---	3.3	3.3	3.2
15	3.1	3.1	3.0	3.1	3.3	---	8.2	---	---	3.5	3.3	3.2
16	3.1	3.1	3.0	3.3	3.3	---	8.2	---	---	3.3	3.3	3.2
17	3.1	3.2	3.0	7.7	3.2	---	8.7	---	---	3.5	3.3	3.2
18	3.1	3.1	3.0	6.6	3.2	---	9.8	---	---	3.2	3.3	3.2
19	3.1	3.4	3.0	3.2	3.2	---	11	---	---	3.2	3.3	3.2
20	3.1	3.1	3.0	3.1	3.2	---	12	---	---	3.2	3.2	3.2
21	3.1	3.1	3.1	3.1	3.2	---	12	---	---	3.2	3.2	3.2
22	3.1	3.1	3.0	3.0	3.1	---	---	---	---	3.2	3.2	3.5
23	3.5	3.3	3.0	3.1	3.2	---	---	---	---	4.0	3.2	3.2
24	3.1	3.2	3.1	3.2	3.2	---	---	---	10	4.1	3.2	3.2
25	3.1	3.2	3.1	3.0	3.1	---	---	---	8.9	3.2	3.2	3.3
26	3.0	3.2	3.0	3.0	3.1	---	---	---	7.0	3.2	3.2	3.4
27	3.1	3.2	3.1	3.0	3.1	---	---	---	6.0	3.2	3.2	3.4
28	3.1	3.6	3.1	3.0	3.1	---	---	---	5.2	3.2	3.2	3.3
29	3.1	3.4	3.0	3.0	---	---	---	---	4.6	3.1	3.2	3.3
30	3.1	3.9	3.0	3.0	---	11	---	---	4.9	3.2	3.2	3.3
31	3.1	---	3.0	3.0	---	11	---	---	---	3.1	3.2	---
TOTAL	97.3	95.6	98.6	102.4	94.5	---	---	---	---	110.5	100.4	98.4
MEAN	3.14	3.19	3.18	3.30	3.38	---	---	---	---	3.56	3.24	3.28
MAX	3.5	3.9	4.3	7.7	3.9	---	---	---	---	5.7	3.3	3.7
MIN	3.0	3.1	3.0	3.0	3.0	---	---	---	---	3.1	3.1	3.1
AC-FT	193	190	196	203	187	---	---	---	---	219	199	195

## 11402000 SPANISH CREEK ABOVE BLACKHAWK CREEK, AT KEDDIE, CA

LOCATION.—Lat 40°00' 11", long 120°57' 12", in SE 1/4 NE 1/4 sec.27, T.25 N., R.9 E., Plumas County, Hydrologic Unit 18020122, on right bank 200 ft upstream from Blackhawk Creek and 0.9 mi southeast of Keddle.

DRAINAGE AREA.—184 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1933 to current year.

REVISED RECORDS.—WSP 1041: 1938(M).

GAGE.—Water-stage recorder. Datum of gage is 3,129.86 ft above sea level.

REMARKS.—Records good. Low flow regulated by five small reservoirs having a combined capacity of 800 acre-ft. Approximately 4,600 acres irrigated upstream from station (from information provided by U.S. Forest Service). City of Quincy diverts about 450 acre-ft annually for municipal supply. See schematic diagram of North Fork Feather River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 22,100 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 15.68 ft, from rating curve extended above 5,200 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 3.0 ft<sup>3</sup>/s, Sept. 4, 5, 1988.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 1,700 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	1800	3,860	7.01	Mar. 24	0315	4,160	7.26
Feb. 3	0845	6,060	8.70				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	50	121	96	706	455	728	1040	747	278	79	51
2	46	50	110	156	1400	465	658	1120	808	259	76	47
3	46	50	102	574	4510	548	674	1010	786	244	76	46
4	44	50	96	702	2100	511	614	935	736	233	72	48
5	39	51	95	351	1380	470	584	825	710	224	67	50
6	44	52	113	259	1780	455	562	905	727	214	62	53
7	43	59	428	223	1960	395	503	824	782	209	58	51
8	46	55	386	207	1760	366	464	892	738	204	63	52
9	135	55	220	198	1160	346	444	958	727	195	65	55
10	79	55	172	245	920	339	465	793	794	182	63	53
11	72	57	150	783	820	350	470	669	828	172	54	53
12	62	57	137	2170	741	395	447	597	800	165	58	53
13	55	61	128	1510	708	444	477	534	864	166	58	53
14	55	82	131	809	1060	502	490	493	787	160	55	48
15	54	73	155	1590	1030	587	458	455	736	152	56	41
16	49	93	141	1300	792	882	441	471	700	143	54	44
17	51	112	167	1870	688	978	446	486	608	128	56	43
18	51	94	236	1660	563	823	469	445	571	125	53	51
19	51	146	188	1600	594	730	531	446	563	121	44	46
20	49	131	165	945	609	758	642	461	525	122	46	52
21	50	97	153	668	841	858	809	478	491	101	52	50
22	50	86	138	511	906	2290	1020	444	468	98	50	50
23	52	157	126	429	806	2600	1140	461	433	97	57	54
24	51	160	118	378	744	3390	1030	457	408	91	57	50
25	51	181	113	342	609	2110	901	877	394	98	54	51
26	51	431	103	687	508	1570	770	793	368	90	52	67
27	52	268	100	697	457	1370	777	720	339	85	51	85
28	53	170	99	577	445	1220	859	897	323	86	52	77
29	52	139	98	1100	---	1020	953	1000	311	84	49	63
30	49	130	97	993	---	872	1020	811	294	84	54	64
31	51	---	96	701	---	805	---	734	---	82	52	---
TOTAL	1673	3252	4682	24331	30597	28904	19846	22031	18366	4692	1795	1601
MEAN	54.0	108	151	785	1093	932	662	711	612	151	57.9	53.4
MAX	135	431	428	2170	4510	3390	1140	1120	864	278	79	85
MIN	39	50	95	96	445	339	441	444	294	82	44	41
AC-FT	3320	6450	9290	48260	60690	57330	39360	43700	36430	9310	3560	3180

## 11402000 SPANISH CREEK ABOVE BLACKHAWK CREEK, AT KEDDIE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 1998, BY WATER YEAR (WY)

MEAN	58.7	130	288	447	521	568	568	433	176	53.2	29.1	30.8
MAX	702	1015	1498	2657	2843	2043	1715	1301	755	187	74.6	63.8
(WY)	1963	1982	1956	1997	1986	1995	1952	1938	1983	1983	1983	1983
MIN	18.4	34.9	35.3	37.5	50.5	56.1	44.3	50.6	18.6	10.8	5.10	7.57
(WY)	1989	1991	1977	1937	1991	1977	1977	1977	1977	1934	1934	1934

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1934 - 1998	
ANNUAL TOTAL	138126		161770		274	
ANNUAL MEAN	378		443		641	
HIGHEST ANNUAL MEAN					34.1	
LOWEST ANNUAL MEAN					18000	
HIGHEST DAILY MEAN	18000	Jan 2	4510	Feb 3	18000	Jan 2 1997
LOWEST DAILY MEAN	19	Aug 15	39	Oct 5	3.0	Sep 4 1988
ANNUAL SEVEN-DAY MINIMUM	24	Aug 13	43	Oct 1	4.4	Aug 18 1934
INSTANTANEOUS PEAK FLOW			6060	Feb 3	22100	Jan 2 1997
INSTANTANEOUS PEAK STAGE			8.70	Feb 3	15.68	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	274000		320900		198400	
10 PERCENT EXCEEDS	490		966		656	
50 PERCENT EXCEEDS	115		244		89	
90 PERCENT EXCEEDS	34		51		24	

## 11403200 NORTH FORK FEATHER RIVER BELOW ROCK CREEK DIVERSION DAM, CA

LOCATION.—Lat 39°58'49", long 121°16'33", in SW 1/4 NW 1/4 sec.35, T.25 N., R.6 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 0.7 mi downstream from Rock Creek Diversion Dam and 5.0 mi northeast of Storrie.

DRAINAGE AREA.—1,773 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to February 1986, October 1986 to current year. Unpublished records for water years 1982–85 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Elevation of gage is 2,120 ft above sea level, from topographic map.

REMARKS.—Low and medium flow regulated by Rock Creek Forebay 0.7 mi upstream. Most of the flow is diverted to Rock Creek Powerplant (station 11403800). Diversion to Rock Creek Powerplant began Feb. 28, 1950. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 91,600 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 31.85 ft; minimum daily, 50 ft<sup>3</sup>/s, Feb. 7, 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	157	67	83	91	89	1540	3300	1650	602	149	149
2	133	150	80	86	534	84	501	3230	2050	144	154	147
3	129	147	82	86	10400	87	1250	3230	2420	123	143	140
4	128	148	81	88	6410	85	94	2200	2400	116	149	145
5	124	142	81	81	2380	83	86	1560	2520	116	149	146
6	121	152	83	79	3010	79	514	1810	2180	163	147	137
7	124	147	104	78	4250	81	88	1760	2210	181	147	136
8	165	140	115	76	3490	77	207	1720	2350	151	146	142
9	168	138	92	73	1170	73	78	2450	2610	140	147	148
10	156	128	82	79	347	70	74	1810	3460	143	144	148
11	160	122	83	91	246	68	77	1050	3720	148	145	154
12	161	125	80	2170	215	79	76	1280	3550	156	140	153
13	157	106	72	2410	210	75	78	661	3610	155	137	153
14	164	119	70	123	583	72	72	1210	3230	149	146	151
15	161	122	74	670	788	73	66	257	2960	157	148	149
16	146	122	71	1290	143	779	67	261	2820	155	146	135
17	150	129	76	3650	97	1380	71	255	2360	159	148	133
18	161	123	78	3030	87	763	69	242	1810	154	146	141
19	157	125	72	3120	88	417	70	199	2020	155	151	133
20	161	104	69	796	84	390	336	149	1890	161	145	144
21	155	90	69	217	144	813	1420	133	1680	147	146	142
22	160	87	67	192	243	5800	1700	126	1540	149	136	137
23	154	88	79	180	110	8750	2290	128	1450	145	137	142
24	154	92	88	169	103	13900	2220	126	1330	145	143	145
25	162	85	88	168	99	10900	1670	588	1200	153	153	147
26	167	84	87	185	89	7650	991	815	1130	152	149	144
27	158	68	87	163	84	4400	1060	532	911	155	145	140
28	158	70	85	175	82	2710	1170	2150	719	157	143	135
29	158	64	82	211	---	2950	1950	1980	728	148	142	136
30	161	69	80	299	---	1660	3610	1990	630	149	140	142
31	154	---	81	84	---	1530	---	1710	---	146	148	---
TOTAL	4688	3443	2505	20202	35577	65967	23495	38912	63138	5074	4509	4294
MEAN	151	115	80.8	652	1271	2128	783	1255	2105	164	145	143
MAX	168	157	115	3650	10400	13900	3610	3300	3720	602	154	154
MIN	121	64	67	73	82	68	66	126	630	116	136	133
AC-FT	9300	6830	4970	40070	70570	130800	46600	77180	125200	10060	8940	8520
a	100300	114500	170700	145800	168600	181600	184300	188100	187000	156500	136000	131300

a Diversion, in acre-feet, to Rock Creek Powerplant, provided by Pacific Gas & Electric Co.

## 11403200 NORTH FORK FEATHER RIVER BELOW ROCK CREEK DIVERSION DAM, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1998, BY WATER YEAR (WY)

MEAN	114	82.3	322	1379	704	1592	931	1004	498	117	115	125
MAX	175	171	3012	12700	3378	8612	5384	7371	2684	164	178	313
(WY)	1987	1989	1997	1997	1996	1995	1995	1995	1995	1998	1997	1997
MIN	52.7	53.2	52.4	52.0	52.9	52.9	54.2	55.3	55.7	55.3	53.0	53.0
(WY)	1988	1988	1995	1992	1994	1994	1990	1987	1987	1987	1987	1987

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1987 - 1998	
ANNUAL TOTAL	514576		271804			
ANNUAL MEAN	1410		745		583	
HIGHEST ANNUAL MEAN					2333	
LOWEST ANNUAL MEAN					77.7	
HIGHEST DAILY MEAN	74400	Jan 2	13900	Mar 24	74400	Jan 2 1997
LOWEST DAILY MEAN	64	Nov 29	64	Nov 29	50	Feb 7 1989
ANNUAL SEVEN-DAY MINIMUM	71	Nov 27	70	Apr 13	51	Dec 22 1993
INSTANTANEOUS PEAK FLOW			18100	Mar 25	91600	Jan 2 1997
INSTANTANEOUS PEAK STAGE			17.49	Mar 25	31.85	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	1021000		539100		422300	
ANNUAL DIVERSION (AC-FT) a	1417000		1865000			
10 PERCENT EXCEEDS	2320		2310		907	
50 PERCENT EXCEEDS	172		148		107	
90 PERCENT EXCEEDS	89		79		53	

a Diversion, in acre-feet, to Rock Creek Powerplant, provided by Pacific Gas & Electric Co.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 71 ft<sup>3</sup>/s, Apr. 29, 1995, May 17, 1996; minimum daily, no flow Jan. 2 to Sept. 30, 1997, Oct. 1 to Sept. 30, 1998.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

[illegible]

## 11403450 MILK RANCH CONDUIT AT OUTLET, NEAR BUCKS LODGE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1998, BY WATER YEAR (WY)

MEAN	3.27	3.69	6.71	6.24	9.74	17.8	29.1	30.4	15.5	6.65	3.22	3.20
MAX	6.96	8.15	27.5	19.2	38.7	42.7	59.6	66.6	57.3	30.5	7.35	6.82
(WY)	1994	1990	1997	1995	1996	1989	1989	1993	1993	1995	1992	1990
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1998	1998	1998	1998	1997	1997	1997	1997	1997	1997	1997	1997

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1987 - 1998

ANNUAL TOTAL	12.00											
ANNUAL MEAN	.033									11.3		
HIGHEST ANNUAL MEAN										21.6		1993
LOWEST ANNUAL MEAN										.000		1998
HIGHEST DAILY MEAN	12	Jan 1								71		Apr 29 1995
LOWEST DAILY MEAN	.00	Jan 2				.00	Oct 1			.00		Jan 2 1997
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 2				.00	Oct 1			.00		Jan 2 1997
ANNUAL RUNOFF (AC-FT)	24									8180		
10 PERCENT EXCEEDS	.00					.00				35		
50 PERCENT EXCEEDS	.00					.00				5.1		
90 PERCENT EXCEEDS	.00					.00				.00		



## 11403500 BUCKS LAKE NEAR BUCKS LODGE, CA

LOCATION.—Lat 39°53'45", long 121°12'08", in SE 1/4 NW 1/4 sec.33, T.24 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, in outlet structure 100 ft upstream from dam on Bucks Creek, 2.0 mi northwest of Bucks Lodge, and 15 mi west of Quincy.

DRAINAGE AREA.—28.6 mi<sup>2</sup>.

PERIOD OF RECORD.—1927–28 (year-end contents only, published in WSP 1315-A), October 1928 to current year. Prior to October 1954, published as Bucks Creek Reservoir near Bucks Ranch.

GAGE.—Water-stage recorder. Datum of gage is 3.50 ft below sea level (levels by Feather River Power Co.).

REMARKS.—Reservoir is formed by concrete-faced, rockfill dam, completed in 1927; storage began in May 1927. Capacity, 101,400 acre-ft between elevations 5,064.75 ft, sill of outlet gate, and 5,154.85 ft, spillway crest. Storage of 274 acre-ft is not available for release. Released water flows down Bucks Creek to Lower Bucks Lake (station 11403520), where most of the water is diverted to Bucks Creek Tunnel or Grizzly Powerplant (station 11304240), which discharges into Grizzly Creek. Figures given, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 107,278 acre-ft, May 17, 1996, elevation, 5,157.9 ft; minimum, 12,330 acre-ft, Feb. 27, 1929, elevation, 5,090.7 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 104,867 acre-ft, July 12, elevation, 5,156.6 ft; minimum, 45,611 acre-ft, Dec. 31, Jan. 1, elevation, 5,120.1 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)			
(Based on survey by Feather River Power Co. in 1927)			
5,090	11,742	5,130	59,997
5,095	16,183	5,140	75,894
5,100	21,180	5,150	92,950
5,110	32,519	5,160	111,220
5,120	45,472		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77383	64169	54597	45611	58177	62768	64481	66527	90843	104682	98839	84619
2	77052	63701	54302	45888	58934	62149	64325	67478	91895	104682	98297	84107
3	76390	63233	53861	46443	60304	61839	64169	68274	92950	104682	97938	83597
4	76059	62768	53568	46720	60917	61530	64013	69232	92950	104497	97579	83087
5	75566	62458	53276	46720	61377	61223	64013	69875	94189	104497	97041	82747
6	75073	61994	53130	46859	62149	60917	63857	70840	94898	104497	96502	82239
7	74745	61530	53276	46999	62458	60610	63701	71649	95967	104313	96146	81733
8	74580	61070	53130	47139	62304	60304	63389	72621	96682	104313	95611	81395
9	74416	60764	52691	47278	62304	60304	63233	73926	97220	104313	95255	80889
10	73926	60304	52401	47558	62613	59693	63233	74580	98118	104313	94720	80721
11	73600	59997	52112	48257	62922	59389	62922	75401	99020	104497	94366	80721
12	73110	59541	51678	49388	63223	59086	62768	76059	99924	104867	93835	80721
13	72621	59238	51245	49814	63545	58782	62768	76721	100833	104682	93481	80721
14	72135	58782	51245	50243	64013	58478	62613	77217	101744	104497	92950	80721
15	71811	58478	50814	50814	64169	58328	62613	77881	102293	104497	92423	80721
16	71325	58328	50528	51534	64481	58177	62768	78547	102659	104128	92071	80721
17	70840	57876	50386	52691	64637	57876	62613	79047	103026	103944	91544	80721
18	70357	57726	50100	53568	64637	57726	62458	79548	103392	103759	91017	80218
19	69875	57565	49814	54007	64637	57425	62304	80218	103392	103392	90668	79716
20	69553	57124	49530	54450	64325	57425	62149	80721	103576	103209	90144	79381
21	69073	56824	49105	54597	63857	57726	62149	81395	103576	102843	89621	78880
22	68594	56377	48681	54893	64325	58328	62149	81902	103576	102476	89273	78381
23	68114	56377	48398	55188	64169	59389	62304	82747	103759	102293	88752	77881
24	67637	56377	47977	55335	64013	60917	62613	83427	104128	101926	88406	77548
25	67161	56079	47698	55632	63701	61685	62613	84619	104497	101562	87885	77052
26	66686	56377	47278	56079	63389	62304	62768	85647	104682	101198	87367	76721
27	66369	56079	46859	56377	63077	63077	63389	86334	104682	100833	86851	76390
28	65895	55632	46582	56675	62768	63545	64013	87540	104682	100469	86334	75894
29	65424	55335	46166	57274	---	64013	64794	88406	104682	99924	85989	75401
30	64952	55040	45888	57425	---	64325	65581	89099	104682	99563	85475	75073
31	64637	---	45611	57726	---	64481	---	89970	---	99201	84962	---
MAX	77383	64169	54597	57726	64637	64481	65581	89970	104682	104867	98839	84619
MIN	64637	55040	45611	45611	58177	57425	62149	66527	90843	99201	84962	75073
a	5133.0	5126.7	5120.1	5128.5	5131.8	5132.9	5133.6	5148.3	5156.5	5153.5	5145.4	5139.5
b	-13244	-9597	-9429	+12115	+5042	+1713	+1100	+24389	+14712	+5481	-14239	-9889
CAL YR 1997	MAX 103759	MIN 45611	b -34105									
WTR YR 1998	MAX 104867	MIN 45611	b -2808									

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11403520 LOWER BUCKS LAKE NEAR BUCKS LODGE, CA

LOCATION.—Lat 39°53'59", long 121°13'32", in NE 1/4 NW 1/4 sec.32, T.24 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, in outlet tower for Bucks Creek Tunnel 900 ft upstream from Buck Diversion Dam, 1.3 mi downstream from Bucks Lake Dam, and 3.2 mi northwest of Bucks Lodge.

DRAINAGE AREA.—31.3 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to current year. Unpublished records for water years 1981–85 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 3.50 ft below sea level (levels by Pacific Gas & Electric Co.).

REMARKS.—Lake is formed by concrete dam. Storage began in October 1929. Usable capacity, 5,796 acre-ft between elevations 4,952 ft, point of lowest drawdown, and 5,021.95 ft, crest of spillway. Water is received from Bucks Lake (station 11403500) and from Milk Ranch Conduit (station 11403450). Most of the water is diverted through Bucks Creek Tunnel or Grizzly Powerplant (station 11404240) and discharges into Grizzly Creek for power development downstream. Figures given, including extremes, represent total contents at 2400 hours. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 6,203 acre-ft, May 18, 1996, elevation, 5,024.6 ft; minimum, 99 acre-ft, Sept. 9, 1993, elevation, 4,956.1 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 5,884 acre-ft, June 29, 30, elevation, 5,022.3 ft; minimum, 3,579 acre-ft, Sept. 7, elevation, 5,003.7 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Feather River Power Co. in 1928)

4,950	24	5,000	3,175
4,960	194	5,010	4,307
4,970	624	5,020	5,573
4,980	1,314	5,030	6,981
4,990	2,171		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4379	4296	4001	4094	4059	3748	4141	4331	4212	5871	4635	3966
2	4392	4272	3828	4094	4083	3794	4059	4379	4272	5857	4847	3794
3	4307	4212	3748	4106	4177	3828	4118	4428	4319	5857	4697	3636
4	4319	4130	3862	4106	4200	3908	4212	4464	4574	5857	4549	3591
5	4428	4248	3851	3920	4224	3748	4392	4513	4611	5857	4452	3692
6	4537	4248	4036	3737	4272	3794	4224	4562	4872	5857	4224	3714
7	4464	4094	4367	3703	4574	3897	4404	4562	4673	5843	4083	3579
8	4489	4083	4452	3680	4785	3920	4307	4611	4452	5667	4212	3955
9	4562	4201	4355	3680	4611	3920	4248	4685	4236	5560	4379	4440
10	4722	4094	4036	3692	4200	3839	4428	4697	4048	5708	4307	4673
11	4722	4130	3828	3714	4189	3771	4307	4635	3966	5257	4141	4660
12	4735	4001	3782	3771	4083	3782	4260	4464	3771	4835	4106	4660
13	4772	3794	3771	3782	4083	3839	4272	4379	3760	4722	4036	4660
14	4760	3828	3817	3794	4118	3874	4331	4307	3920	4660	4106	4648
15	4835	3748	3748	3828	4106	4001	4525	4224	3794	4660	4048	4648
16	4722	3851	3817	3862	4118	4094	3920	4141	3794	4501	4296	4623
17	4574	3885	3931	3908	3955	4106	3748	4059	3931	4549	4379	4404
18	4416	3839	3943	3943	3771	4048	3692	4013	4284	4452	4513	4272
19	4118	4153	4036	3966	3794	4094	3613	4013	4673	4379	4416	4118
20	4024	4094	3748	3966	3828	3851	3771	4071	5012	4248	4416	4001
21	3885	4094	3737	3978	3851	3885	3703	4094	5375	4224	4319	3851
22	4141	3874	3839	3978	3782	4307	3920	4130	5789	4165	4200	3737
23	4212	4118	3748	3966	3805	4835	4024	4153	5762	4036	4248	3782
24	4153	4355	3817	3978	3748	5012	4379	4189	5735	3955	4200	3737
25	4118	4488	3737	3978	3771	5050	4598	4260	5721	4177	4130	3714
26	4212	4562	3805	4001	3874	5089	4847	4307	5775	4153	4284	3669
27	4013	4428	3737	4001	3771	5127	4476	4343	5857	4141	4165	4118
28	3966	4296	3885	4001	3920	4513	4248	4416	5871	4260	4094	4165
29	3920	4048	3908	4036	---	4260	4248	4476	5884	4452	4013	4141
30	4118	3897	3920	4036	---	4177	4284	4428	5884	4428	4153	4130
31	4284	---	4094	4036	---	4118	---	4260	---	4379	4071	---
MAX	4835	4562	4452	4106	4785	5127	4847	4697	5884	5871	4847	4673
MIN	3885	3748	3737	3680	3748	3748	3613	4013	3760	3955	4013	3579
a	5009.8	5006.5	5008.2	5007.7	5006.7	5008.4	5009.8	5009.6	5022.3	5010.6	5008.0	5008.5
b	-108	-387	+197	-58	-116	+198	+166	-24	+1624	-1505	-308	+59

CAL YR 1997 MAX 5994 MIN 3636 b -1007

WTR YR 1998 MAX 5884 MIN 3579 b -262

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11403530 BUCKS CREEK BELOW DIVERSION DAM, NEAR BUCKS LODGE, CA

LOCATION.—Lat 39°54'16", long 121°13'47", in NW 1/4 SW 1/4 sec.29, T.24 N., R.7 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on left bank 20 ft upstream from unnamed tributary, 0.2 mi downstream from diversion dam, and 3.6 mi northwest of Bucks Lodge.

DRAINAGE AREA.—31.5 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1990 to current year. Unpublished records for water years 1981–90 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and concrete control with V-notch sharp-crested weir since Sept. 19, 1990. Elevation of gage is 4,850 ft above sea level, from topographic map.

REMARKS.—No record Oct. 1, 1997, to Sept. 24, 1998, due to damage from the January 1997 flood. June 23, 27–30, and July 1–7 computed from Bucks Lake spill. Flow regulated by diversion dam at lower Bucks Lake 0.2 mi upstream, where most of the flow is diverted to Grizzly Creek via Bucks Creek Tunnel outlet or Grizzly Powerplant (station 11404240). Prior to Sept. 19, 1990, low flows regulated by fixed-plate orifice at outlet of diversion dam. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	49	---	---
2	---	---	---	---	---	---	---	---	---	29	---	---
3	---	---	---	---	---	---	---	---	---	18	---	---
4	---	---	---	---	---	---	---	---	---	22	---	---
5	---	---	---	---	---	---	---	---	---	42	---	---
6	---	---	---	---	---	---	---	---	---	17	---	---
7	---	---	---	---	---	---	---	---	---	23	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	24	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	3.6
26	---	---	---	---	---	---	---	---	---	---	---	3.6
27	---	---	---	---	---	---	---	---	4.7	---	---	3.6
28	---	---	---	---	---	---	---	---	35	---	---	3.7
29	---	---	---	---	---	---	---	---	61	---	---	3.7
30	---	---	---	---	---	---	---	---	65	---	---	3.7
31	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---
a	13880	13150	12620	385	5990	10340	10940	1470	18140	18470	15230	10260

CAL YR 1997 a 119900

WTR YR 1998 a 130900

a Diversion, in acre-feet, to Grizzly Powerplant, provided by Pacific Gas & Electric Co.

## 11404250 GRIZZLY FOREBAY NEAR STORRIE, CA

LOCATION.—Lat 39°53'32", long 121°17'25", in SW 1/4 NE 1/4 sec.34, T.24 N., R.6 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, in outlet tower for Bucks Creek Powerplant 100 ft upstream from Grizzly Diversion Dam, 2.4 mi southeast of Storrie, and 6.2 mi west of Bucks Lodge.

DRAINAGE AREA.—14.4 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1986 to current year. Unpublished records for water years 1981–86 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 3.50 ft below sea level (levels by Pacific Gas & Electric Co.).

REMARKS.—Lake is formed by concrete dam. Storage began in July 1928. Usable capacity, 1,033 acre-ft between elevations 4,271 ft, bottom of diversion tunnel, and 4,316.0 ft, crest of spillway. Water is received from Bucks Creek via Bucks Creek Tunnel and Grizzly Powerplant (station 11404240) which enter Grizzly Creek upstream. Most of the water is diverted through tunnel to Bucks Creek Powerplant (station 11403700) for power development downstream on North Fork Feather River. Figures given, including extremes, represent total contents. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 1,329 acre-ft, Dec. 30, 1996, elevation, 4,321.5 ft; minimum, 216 acre-ft, Sept. 20, 1991, elevation, 4,282.8 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 1,197 acre-ft, Mar. 23, elevation, 4,318.2 ft; minimum, 706 acre-ft, Sept. 6, elevation, 4,304.0 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Feather River Power Co. in 1928)

4,290	350	4,305	736
4,295	464	4,310	898
4,300	592	4,320	1,268

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1027	851	841	857	786	864	946	904	1086	1147	730	877
2	974	884	918	949	821	884	1046	984	1082	1143	786	867
3	1017	874	815	770	1124	821	1009	935	1013	1143	792	942
4	1009	898	792	777	988	730	932	908	881	1139	841	808
5	995	908	792	844	724	792	773	761	1131	1135	935	724
6	928	851	831	802	739	773	977	808	1124	1135	995	706
7	1009	851	984	777	730	789	818	808	1150	1139	1017	786
8	1002	834	834	770	802	939	861	891	1162	1139	864	739
9	984	783	773	805	841	939	1006	1075	1162	1109	851	755
10	984	864	898	894	904	970	844	999	1166	935	867	767
11	970	815	894	939	712	918	1006	935	1162	981	1017	780
12	988	815	752	1135	749	786	1017	942	1162	1017	988	786
13	1013	864	808	946	749	715	970	828	1135	1053	1017	799
14	995	857	795	773	752	925	847	837	1162	1064	847	808
15	967	808	831	932	767	953	828	1006	1166	963	874	818
16	991	834	808	874	818	960	891	1024	1162	1006	786	851
17	911	841	847	1131	867	932	911	928	1158	1024	857	901
18	908	841	894	1101	777	949	988	854	1158	1046	857	915
19	963	851	777	898	736	861	1027	847	1158	1035	1009	942
20	837	854	851	789	780	918	891	761	1154	1068	854	942
21	891	821	904	755	915	789	1013	755	1154	988	789	901
22	799	780	799	783	854	1131	956	712	1150	939	894	821
23	857	802	789	795	898	1197	1060	752	1150	946	864	745
24	871	960	834	783	864	1139	1020	755	1150	915	894	767
25	864	789	767	780	749	1105	1009	1120	1170	795	963	780
26	844	935	824	758	831	967	721	981	1147	898	841	799
27	821	946	851	764	815	752	911	818	1147	1009	946	837
28	780	894	811	767	824	1042	970	915	1147	928	1013	901
29	928	949	805	718	---	942	946	831	1147	777	1053	946
30	824	939	808	761	---	730	988	786	1147	770	824	953
31	861	---	789	721	---	928	---	942	---	864	847	---
MAX	1027	960	984	1135	1124	1197	1060	1120	1170	1147	1053	953
MIN	780	780	752	718	712	715	721	712	881	770	730	706
a	4308.9	4311.2	4306.7	4304.5	4307.8	4310.9	4312.6	4311.3	4316.9	4309.0	4308.5	4311.6
b	-199	+78	-150	-68	+103	+104	+60	-46	+205	-283	-17	+106
CAL YR 1997	MAX 1280	MIN 736	b -479									
WTR YR 1998	MAX 1197	MIN 706	b -107									

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11404300 GRIZZLY CREEK BELOW DIVERSION DAM, NEAR STORRIE, CA

LOCATION.—Lat 39°53'29", long 121°17'35", in SW 1/4 NE 1/4 sec.34, T.24 N., R.6 E., Plumas County, Hydrologic Unit 18020121, Plumas National Forest, on right bank 0.2 mi downstream from diversion dam, and 2.4 mi southeast of Storrie.

DRAINAGE AREA.—14.4 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to current year. Unpublished records for water years 1976–85 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and concrete control with V-notch sharp-crested weir, since Oct. 8, 1987. Elevation of gage is 4,320 ft above sea level, from topographic map. Prior to Oct. 8, 1987, at datum 1.79 ft higher.

REMARKS.—Flow regulated by diversion dam 0.2 mi upstream. There is considerable inflow upstream from the diversion dam from Bucks Creek Tunnel outlet and Grizzly Powerplant (station 11404240). Most of the flow is diverted to Bucks Creek Powerplant (station 11403700) on North Fork Feather River. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 6,300 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 7.33 ft, from rating curve extended above 260 ft<sup>3</sup>/s on basis of computation of peak flow over dam; maximum gage height, 9.54 ft, Feb. 17, 1986, datum then in use; minimum daily, 1.9 ft<sup>3</sup>/s, June 14, 1988.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	4.6	3.7	3.1	3.7	3.5	5.7	5.3	5.6	250	4.6	4.6
2	4.8	4.5	3.1	3.3	4.5	3.5	5.7	5.1	5.7	243	4.6	4.6
3	4.7	4.5	3.1	3.6	195	3.6	5.9	5.1	5.7	227	4.6	4.7
4	4.7	4.5	3.1	3.5	65	3.5	5.7	5.1	5.2	206	4.6	4.6
5	4.7	4.5	3.1	3.3	4.7	3.5	5.4	5.0	90	179	4.7	4.5
6	4.7	4.6	3.2	3.3	5.0	3.5	5.3	5.0	183	182	4.8	4.5
7	4.7	4.5	3.5	3.3	4.7	3.4	5.4	4.9	131	173	4.8	4.4
8	4.8	4.5	3.4	3.2	4.6	3.5	5.1	5.0	390	212	4.8	4.5
9	4.9	4.5	3.3	3.2	4.3	3.6	5.4	5.9	399	113	4.7	4.4
10	4.8	4.5	3.2	3.4	4.2	3.5	5.3	5.7	461	5.0	4.6	4.4
11	4.8	4.5	3.2	3.7	4.0	3.5	5.4	5.4	416	4.8	4.7	4.4
12	4.7	4.5	3.1	147	3.9	3.5	5.5	5.3	436	4.9	4.8	4.5
13	4.7	4.6	3.1	23	3.9	3.4	5.4	5.1	345	4.9	4.8	4.5
14	4.7	4.5	3.2	4.0	4.1	3.5	5.1	5.1	200	5.0	4.7	4.5
15	4.7	4.6	3.1	4.1	3.9	3.6	5.0	5.3	397	4.8	4.6	4.5
16	4.8	4.6	3.2	4.0	3.9	3.7	5.0	5.5	423	4.8	4.6	4.5
17	4.7	4.6	3.2	114	3.8	3.7	5.1	5.3	461	4.9	4.6	4.6
18	4.6	4.6	3.2	17	3.7	3.7	5.1	5.1	320	4.9	4.7	4.6
19	4.7	4.8	3.2	4.2	3.7	3.8	5.1	5.0	343	4.9	4.7	4.6
20	4.6	4.6	3.2	3.9	3.6	3.7	5.1	5.0	359	4.9	4.7	4.6
21	4.5	4.5	3.1	3.8	3.8	3.8	5.1	4.9	350	4.8	4.5	4.6
22	4.6	4.5	3.1	3.6	3.7	16	5.1	4.9	337	4.8	4.6	4.6
23	4.5	4.6	3.1	3.6	3.6	234	5.4	4.9	317	4.8	4.6	4.5
24	4.6	4.6	3.1	3.6	3.6	480	5.7	4.9	262	4.7	4.6	4.5
25	4.5	4.7	3.1	3.5	3.5	49	5.7	30	522	4.8	4.7	4.5
26	4.6	5.5	3.0	3.6	3.5	4.6	5.1	7.2	345	4.7	4.7	4.5
27	4.6	4.9	3.1	3.6	3.5	4.4	5.0	5.1	276	4.8	4.7	4.5
28	4.5	4.8	3.1	3.5	3.5	4.2	5.1	5.4	274	4.8	4.7	4.6
29	4.6	4.8	3.1	3.7	---	4.1	5.1	5.7	269	4.7	4.8	4.6
30	4.6	4.7	3.1	3.6	---	4.4	5.1	5.2	261	4.6	4.6	4.6
31	4.5	---	3.1	3.6	---	5.5	---	5.1	---	4.6	4.6	---
TOTAL	144.6	138.7	98.4	397.8	362.9	881.2	159.1	187.5	8589.2	1890.9	144.8	136.0
MEAN	4.66	4.62	3.17	12.8	13.0	28.4	5.30	6.05	286	61.0	4.67	4.53
MAX	4.9	5.5	3.7	147	195	480	5.9	30	522	250	4.8	4.7
MIN	4.5	4.5	3.0	3.1	3.5	3.4	5.0	4.9	5.2	4.6	4.5	4.4
AC-FT	287	275	195	789	720	1750	316	372	17040	3750	287	270
a	14510	15150	15330	10450	13190	18280	18760	17070	19770	19400	15760	10580

a Diversion, in acre-feet, to Bucks Creek Powerplant, provided by Pacific Gas & Electric Co.

## 11404300 GRIZZLY CREEK BELOW DIVERSION DAM, NEAR STORRIE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

MEAN	4.63	3.92	26.1	62.0	72.6	53.0	22.7	39.1	39.2	10.2	3.76	3.62
MAX	11.8	19.2	284	650	396	174	215	277	286	61.0	5.49	4.96
(WY)	1996	1989	1997	1997	1997	1995	1995	1995	1998	1998	1991	1991
MIN	2.01	2.01	2.09	2.11	2.17	2.20	2.10	2.03	2.01	2.08	2.03	2.00
(WY)	1995	1988	1994	1994	1994	1988	1987	1987	1992	1992	1992	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1986 - 1998	
ANNUAL TOTAL	37038.3		13131.1			
ANNUAL MEAN	101		36.0		28.2	
HIGHEST ANNUAL MEAN					125	
LOWEST ANNUAL MEAN					2.58	
HIGHEST DAILY MEAN	4810	Jan 1	522	Jun 25	4810	Jan 1 1997
LOWEST DAILY MEAN	2.4	Apr 22	3.0	Dec 26	1.9	Jun 14 1988
ANNUAL SEVEN-DAY MINIMUM	2.5	Apr 16	3.1	Dec 21	2.0	May 2 1987
INSTANTANEOUS PEAK FLOW			900	Mar 23	6300	Jan 1 1997
INSTANTANEOUS PEAK STAGE			3.24	Mar 23	9.54	Feb 17 1986
ANNUAL RUNOFF (AC-FT)	73470		26050		20430	
ANNUAL DIVERSION (AC-FT) a	102300		188300			
10 PERCENT EXCEEDS	464		137		6.6	
50 PERCENT EXCEEDS	4.7		4.6		2.5	
90 PERCENT EXCEEDS	3.1		3.4		2.1	

a Diversion, in acre-feet, to Bucks Creek Powerplant, provided by Pacific Gas & Electric Co.

## 11404330 NORTH FORK FEATHER RIVER BELOW GRIZZLY CREEK, CA

LOCATION.—Lat 39°51'09", long 121°23'29", in NE 1/4 NW 1/4 sec.14, T.23 N., R.5 E., Butte County, Hydrologic Unit 18020121, Lassen National Forest, on left bank 0.7 mi upstream from Bear Ranch Creek, 1.6 mi downstream from Grizzly Creek, and 2.1 mi downstream from Cresta Dam.

DRAINAGE AREA.—1,914 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to February 1986, October 1986 to current year. Unpublished records for water years 1982–85 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Elevation of gage is 1,480 ft above sea level, from topographic map.

REMARKS.—Flow regulated by numerous reservoirs upstream, combined capacity, 1,386,000 acre-ft. Most of the flow bypasses this station through Cresta Powerplant (station 11404360). Diversion through Cresta Powerplant began in 1949. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 115,000 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 29.97 ft; minimum daily, 37 ft<sup>3</sup>/s, July 25, 1994.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	92	123	91	407	259	2190	4450	2850	1650	89	74
2	62	88	111	168	1560	250	1220	4760	3410	901	87	74
3	56	87	118	304	14000	251	2030	4340	3620	327	86	77
4	54	98	128	313	7420	240	792	3460	3410	263	85	73
5	85	118	127	184	4160	233	468	2740	3760	227	81	69
6	104	117	151	155	4780	215	896	2950	3690	244	82	69
7	94	125	495	149	5730	199	571	2940	3550	212	79	71
8	103	116	313	140	4970	208	523	2860	3850	237	78	70
9	158	104	199	140	2660	194	462	4510	4150	198	79	68
10	98	101	149	278	1510	186	354	3200	5100	107	78	69
11	107	105	137	667	1020	192	360	2370	5310	101	81	68
12	101	102	129	5080	751	199	365	2250	5120	106	80	68
13	90	111	121	4490	428	225	391	1570	4960	105	80	68
14	82	114	152	1280	911	213	386	2050	4570	104	78	69
15	76	119	154	2230	1700	223	337	734	4520	102	80	70
16	89	144	140	3130	541	1100	317	362	4310	100	78	67
17	109	152	178	6990	492	2060	312	733	3860	100	78	63
18	109	120	176	5700	744	1640	308	558	3270	95	80	68
19	102	204	155	5110	859	1030	335	645	3490	98	78	68
20	103	126	135	2080	696	1000	634	564	3340	95	78	70
21	104	105	133	921	747	1510	2190	552	3080	93	76	67
22	101	98	122	692	1110	6260	2730	530	2900	91	75	64
23	101	157	119	551	805	10100	3340	531	2760	93	71	65
24	102	139	128	385	787	16500	3500	494	2580	94	70	65
25	103	132	134	261	673	11800	2750	1570	2470	88	74	64
26	101	331	130	328	314	8280	2000	1730	2390	87	77	68
27	96	193	124	321	269	5440	2060	1310	2090	91	73	67
28	91	135	107	284	247	3910	2310	3000	1870	89	74	64
29	94	116	102	615	---	3730	3030	3360	1950	87	76	64
30	93	143	98	1050	---	2670	4360	3070	1730	92	75	64
31	95	---	93	396	---	2330	---	2780	---	89	75	---
TOTAL	2923	3892	4681	44483	60291	82647	41521	66973	103960	6366	2431	2045
MEAN	94.3	130	151	1435	2153	2666	1384	2160	3465	205	78.4	68.2
MAX	158	331	495	6990	14000	16500	4360	4760	5310	1650	89	77
MIN	54	87	93	91	247	186	308	362	1730	87	70	63
AC-FT	5800	7720	9280	88230	119600	163900	82360	132800	206200	12630	4820	4060
a	122000	139200	197200	185900	206400	216500	219600	226100	213600	198800	159700	145800

a Diversion, in acre-feet, to Cresta Powerplant, provided by Pacific Gas & Electric Co.

## 11404330 NORTH FORK FEATHER RIVER BELOW GRIZZLY CREEK, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

MEAN	82.9	103	517	1924	1330	2400	1292	1418	691	98.1	78.1	65.3
MAX	182	256	5071	16310	6576	10220	6777	9322	3842	221	205	88.8
(WY)	1986	1989	1997	1997	1997	1995	1995	1995	1995	1995	1997	1997
MIN	57.4	57.8	59.0	55.7	61.5	86.0	78.0	67.7	55.6	55.4	55.5	56.0
(WY)	1992	1993	1990	1991	1991	1988	1988	1992	1988	1988	1988	1991

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR			FOR 1998 WATER YEAR			WATER YEARS 1986 - 1998		
ANNUAL TOTAL	822494			422213					
ANNUAL MEAN	2253			1157			843		
HIGHEST ANNUAL MEAN							3115		
LOWEST ANNUAL MEAN							75.2		
HIGHEST DAILY MEAN	96900	Jan 1		16500	Mar 24		96900	Jan 1	1997
LOWEST DAILY MEAN	54	Oct 4		54	Oct 4		37	Jul 25	1994
ANNUAL SEVEN-DAY MINIMUM	60	Sep 28		65	Sep 24		52	Dec 10	1989
INSTANTANEOUS PEAK FLOW				22500	Mar 24		115000	Jan 1	1997
INSTANTANEOUS PEAK STAGE				17.40	Mar 24		29.97	Jan 1	1997
ANNUAL RUNOFF (AC-FT)	1631000			837500			611000		
ANNUAL DIVERSION (AC-FT) a	1234000			2231000					
10 PERCENT EXCEEDS	6550			3650			1980		
50 PERCENT EXCEEDS	144			199			79		
90 PERCENT EXCEEDS	72			74			56		

a Diversion, in acre-feet, to Cresta Powerplant, provided by Pacific Gas & Electric Co.



## 11404500 NORTH FORK FEATHER RIVER AT PULGA, CA

LOCATION.—Lat 39°47'40", long 121°27'02", in SE 1/4 NE 1/4 sec.6, T.22 N., R.5 E., Butte County, Hydrologic Unit 18020121, Plumas National Forest, on left bank between railroad and highway bridges, 0.6 mi downstream from Flea Valley Creek and Pulga, and 1.6 mi downstream from Poe Dam.

DRAINAGE AREA.—1,953 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1910 to current year. Monthly discharge only for some periods and yearly estimates for water years 1911 and 1938, published in WSP 1315-A. Prior to October 1960, published as "at Big Bar."

CHEMICAL DATA: Water years 1963–66, 1972, 1977.

WATER TEMPERATURE: Water years 1963–83.

REVISED RECORDS.—WSP 931: 1938(M), 1940. WSP 1515: 1935. WDR CA-77-4: 1976 (yearly summaries).

GAGE.—Water-stage recorder. Datum of gage is 1,305.62 ft above sea level. Prior to Oct. 1, 1937, at site 1.1 mi upstream at different datum. Oct. 1, 1937, to Sept. 30, 1958, at present site at datum 5.00 ft higher.

REMARKS.—Flow regulated by Lake Almanor, Bucks Lake, Butt Valley Reservoir (stations 11399000, 11403500, 11401050), Mountain Meadows Reservoir, and five forebays, combined capacity, 1,386,000 acre-ft. Diversion through Poe Powerplant (station 11404900) began on May 29, 1958. See schematic diagram of North Fork Feather River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 105,400 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 41.65 ft, from rating curve extended above 32,000 ft<sup>3</sup>/s on basis of slope area measurement of peak discharge; minimum daily, 5.4 ft<sup>3</sup>/s, Sept. 18, 1977.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	116	130	119	700	2820	4290	6320	5170	4120	129	121
2	118	115	126	146	2250	2780	3820	6700	5760	3320	127	125
3	118	115	121	183	15300	2770	4570	6290	5920	2620	129	126
4	117	115	118	217	9070	2740	3500	5770	5700	2260	113	123
5	116	117	118	164	5190	2420	3080	5390	6050	2100	127	123
6	117	119	121	147	6180	2280	3400	5330	5940	261	128	125
7	117	118	386	139	7230	1710	3260	5410	5840	338	124	125
8	121	118	474	135	6280	1960	3070	5300	6080	366	125	123
9	134	113	1040	135	3770	2240	2980	7170	6360	203	126	502
10	116	116	309	203	2440	1460	2790	5740	7340	128	129	461
11	117	121	125	668	1930	1720	2780	4880	7700	124	124	578
12	116	116	121	6370	1650	2320	2790	4710	7490	120	126	619
13	117	123	121	5520	1320	2670	2880	4140	7310	126	130	591
14	117	120	138	2000	1990	2630	2850	4480	6880	126	129	434
15	116	126	134	3100	2670	2680	2730	3340	7240	121	125	126
16	115	127	130	3810	1470	3710	2680	2880	6550	120	125	125
17	116	128	256	8260	1330	4370	2670	3200	6110	121	127	120
18	118	121	510	6590	1380	3970	2670	3020	5530	122	126	125
19	118	135	459	5980	1760	3450	2720	3090	5730	117	127	125
20	119	472	172	2820	1580	3410	3080	2810	5580	121	128	127
21	119	529	122	1550	1760	3850	5110	2910	5350	124	128	124
22	116	119	114	1350	1980	8940	4920	2940	5160	129	129	124
23	118	128	112	1170	1690	12300	5630	2410	5010	134	124	122
24	117	127	113	899	1650	18000	5800	2550	4930	131	127	127
25	116	475	112	166	1480	13200	5070	3600	4970	133	126	125
26	115	420	112	305	888	9360	4210	4130	4820	131	122	127
27	117	539	111	509	2560	6770	4280	3700	4610	134	125	126
28	117	186	111	179	2670	5300	4480	5220	4380	131	126	125
29	117	124	113	703	---	5040	5130	6010	4470	130	124	125
30	115	133	117	1610	---	4050	6270	5440	4290	133	123	125
31	116	---	115	631	---	3690	---	5080	---	131	123	---
TOTAL	3643	5531	6361	55778	90168	144610	113510	139960	174270	18375	3901	6174
MEAN	118	184	205	1799	3220	4665	3784	4515	5809	593	126	206
MAX	134	539	1040	8260	15300	18000	6270	7170	7700	4120	130	619
MIN	115	113	111	119	700	1460	2670	2410	4290	117	113	120
AC-FT	7230	10970	12620	110600	178800	286800	225100	277600	345700	36450	7740	12250
a	109100	128800	179900	173100	174100	103800	99930	103700	98440	171200	147000	126600

a Diversion, in acre-feet, to Poe Powerplant, provided by Pacific Gas & Electric Co.

## 11404500 NORTH FORK FEATHER RIVER AT PULGA, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1998, BY WATER YEAR (WY)

MEAN	959	1154	1713	2281	2773	2907	3522	3054	1634	971	912	868
MAX	2943	4594	10690	14120	14320	11960	13580	12460	7690	2771	2441	2430
(WY)	1963	1951	1956	1997	1986	1995	1952	1922	1911	1952	1952	1952
MIN	16.4	26.4	50.7	52.6	56.0	58.2	54.9	41.7	34.0	32.6	13.3	14.2
(WY)	1978	1978	1977	1977	1990	1977	1990	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1911 - 1998	
ANNUAL TOTAL	613803		762281			
ANNUAL MEAN	1682		2088			
HIGHEST ANNUAL MEAN					1866	
LOWEST ANNUAL MEAN					5320	1952
HIGHEST DAILY MEAN	101000	Jan 1	18000	Mar 24	42.7	1977
LOWEST DAILY MEAN	94	Apr 15	111	Dec 27	101000	Jan 1 1997
ANNUAL SEVEN-DAY MINIMUM	111	Aug 26	112	Dec 23	5.4	Sep 18 1977
INSTANTANEOUS PEAK FLOW			22500	Mar 23	12	Aug 10 1977
INSTANTANEOUS PEAK STAGE			19.51	Mar 23	105000	Jan 1 1997
ANNUAL RUNOFF (AC-FT)	1217000		1512000		41.65	Jan 1 1997
ANNUAL DIVERSION (AC-FT) a	1659000		1616000		1352000	
10 PERCENT EXCEEDS	3250		5780		4650	
50 PERCENT EXCEEDS	119		474		1310	
90 PERCENT EXCEEDS	113		117		55	

a Diversion, in acre-feet, to Poe Powerplant, provided by Pacific Gas & Electric Co.

## 11405120 PHILBROOK CREEK BELOW PHILBROOK DAM, NEAR BUTTE MEADOWS, CA

LOCATION.—Lat 40°01'48", long 121°28'36", unsurveyed, T.25 N., R.4 E., Butte County, Hydrologic Unit 18020121, Lassen National Forest, on right bank 500 ft downstream from outlet structure on Philbrook Dam, and 5.4 mi southeast of Butte Meadows.

DRAINAGE AREA.—5.05 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1989 to current year (no winter records). Unpublished records for water years 1986–89 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder, Parshall flume, and V-notch sharp-crested weir. Elevation of gage is 5,490 ft above sea level, from topographic map. October 1985 to July 1989, nonrecording gage at same site and datum. In June 1989, V-notch sharp-crested weir installed in flume to be used at low flows.

REMARKS.—Records not computed for winter months. Flow completely regulated by Philbrook Reservoir, usable capacity, 5,370 acre-ft, 500 ft upstream. Spillwater from Philbrook Reservoir bypasses this station.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	3.1	---	---	---	---	4.2	4.1	4.2	4.3	4.0	30
2	3.2	3.1	---	---	---	---	4.2	4.2	4.3	4.4	4.0	30
3	3.2	3.1	---	---	---	---	4.2	4.2	4.3	4.4	14	30
4	3.2	3.1	---	---	---	---	4.2	4.2	4.2	4.4	35	30
5	3.2	3.1	---	---	---	---	4.2	4.2	4.2	4.3	45	30
6	3.2	3.1	---	---	---	---	4.2	4.2	4.2	4.3	45	30
7	3.2	3.1	---	---	---	---	4.2	4.2	4.3	4.3	45	30
8	3.2	3.0	---	---	---	---	4.2	4.2	4.2	4.3	45	19
9	3.2	3.0	---	---	---	---	4.2	4.4	4.2	4.3	45	12
10	3.1	3.0	---	---	---	---	3.9	4.3	4.3	4.3	44	12
11	3.1	3.0	---	---	---	---	3.8	4.2	4.4	4.3	43	12
12	3.1	3.0	---	---	---	---	3.8	4.2	4.3	4.3	42	11
13	3.1	3.0	---	---	---	---	3.8	4.2	4.3	4.3	42	11
14	3.1	3.0	---	---	---	---	3.8	4.2	4.2	4.3	42	11
15	3.1	3.0	---	---	---	---	3.8	4.2	4.3	4.2	42	12
16	3.1	3.0	---	---	---	---	3.8	4.2	4.3	4.2	42	28
17	3.1	3.1	---	---	---	---	3.8	4.2	4.2	4.2	38	44
18	3.1	3.1	---	---	---	---	3.8	4.1	4.3	4.2	2.8	44
19	3.1	3.2	---	---	---	---	3.8	4.0	4.3	4.3	2.8	44
20	3.1	3.1	---	---	---	---	3.8	4.2	4.3	4.3	5.2	44
21	3.1	3.1	---	---	---	---	3.9	4.2	4.3	4.3	9.0	44
22	3.1	3.1	---	---	---	---	3.9	4.1	4.4	4.3	9.0	43
23	3.1	3.2	---	---	---	---	4.0	4.0	4.4	4.3	9.0	43
24	3.1	3.3	---	---	---	---	4.0	4.1	4.3	4.3	9.0	43
25	3.1	3.3	---	---	---	---	4.0	4.4	4.4	4.2	9.0	43
26	3.1	3.4	---	---	---	---	4.0	4.2	4.4	4.2	9.0	42
27	3.1	3.3	---	---	---	---	4.0	4.2	4.3	4.1	9.0	42
28	3.1	3.3	---	---	---	---	4.0	4.3	4.3	4.0	9.0	42
29	3.1	3.3	---	---	---	---	4.0	4.2	4.3	4.0	9.0	42
30	3.1	3.3	---	---	---	---	4.0	4.2	4.3	4.0	9.0	42
31	3.1	---	---	---	---	---	---	4.2	---	4.0	22	---
TOTAL	97.0	93.8	---	---	---	---	119.5	130.0	128.7	131.6	739.8	940
MEAN	3.13	3.13	---	---	---	---	3.98	4.19	4.29	4.25	23.9	31.3
MAX	3.2	3.4	---	---	---	---	4.2	4.4	4.4	4.4	45	44
MIN	3.1	3.0	---	---	---	---	3.8	4.0	4.2	4.0	2.8	11
AC-FT	192	186	---	---	---	---	237	258	255	261	1470	1860

LOCATION.—Lat 39°56'03", long 121°31'43", in NW 1/4 SE 1/4 sec.16, T.24 N., R.4 E., Butte County, Hydrologic Unit 18020121, on right bank 200 ft upstream from road bridge, 1,800 ft downstream from Hendricks Diversion Dam, and 1.9 mi north of Stirling City.

PERIOD OF RECORD.—August 1986 to current year (low-flow records only).

REMARKS.—No records computed above 40 ft<sup>3</sup>/s. Most of the water is diverted at Hendricks Diversion Dam to the Hendricks Canal and Toadtown Canal (station 11389800) and then to De Sabla Powerplant (station 11389750) on Butte Creek.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

### DAILY MEAN VALUES

[illegible]

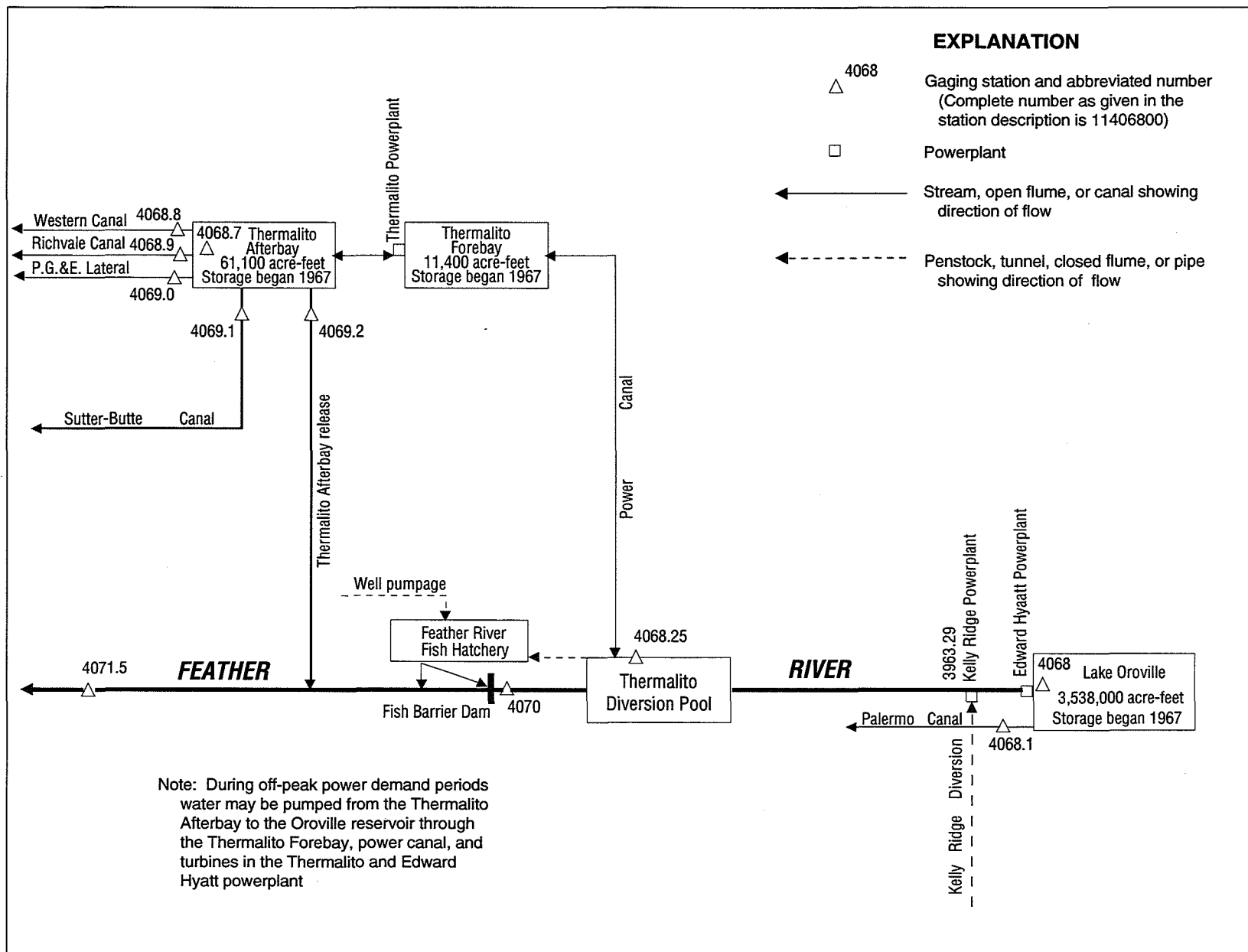


Figure 30. Diversions and storage from Feather River at Lake Oroville.

## 11406800 LAKE OROVILLE NEAR OROVILLE, CA

LOCATION.—Lat 39°32'06", long 121°28'25", in NE 1/4 SW 1/4 sec.1, T.19 N., R.4 E., Butte County, Hydrologic Unit 18020123, near intake structure at left end of Oroville Dam on Feather River, 1.0 mi downstream from North Fork Feather River, and 4.2 mi east of Oroville.

DRAINAGE AREA.—3,607 mi<sup>2</sup>.

PERIOD OF RECORD.—November 1967 to current year.

GAGE.—Water-stage recorder. Datum of gage is 0.47 ft above sea level (levels by California Department of Water Resources). Contents based on capacity table in use since Sept. 21, 1967.

REMARKS.—Reservoir is formed by an earthfill dam with concrete chute-type sidehill spillway completed May 13, 1968; storage began Nov. 14, 1967. Usable capacity, 2,685,385 acre-ft between elevations 640.0 ft, minimum power pool, and 900.0 ft, normal maximum pool. Dead storage, 852,192 acre-ft. Total capacity at normal maximum pool, 3,537,577 acre-ft; temporary detention storage occurred at times during construction; maximum was 155,200 acre-ft, Dec. 23, 1964. Water is released to Edward Hyatt Powerplant through penstock in left abutment of dam and to Palermo Canal (station 11406810) through concrete tunnel also in left abutment of dam. Three of the total of six turbines in the Edward Hyatt Powerplant are reversible and during periods of low power demand water is pumped at times from the river back into Lake Oroville. Records, including extremes, represent total contents at 2400 hours. See schematic diagram showing diversions and storage from Feather River at Lake Oroville. Maximum inflow of 266,000 ft<sup>3</sup>/s during a 2-hour period Feb. 17, 1986.

COOPERATION.—Records were collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 3,536,000 acre-ft, June 4, 1973, gage height, 899.88 ft; minimum since initial storage began, 882,395 acre-ft, Sept. 7, 1977, gage height, 645.11 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 3,525,895 acre-ft, June 28, gage height, 899.26 ft; minimum, 2,002,239 acre-ft, Nov. 21, gage height, 782.66 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on table provided by California Department of Water Resources, dated Sept. 21, 1967)

640	852,192	710	1,332,547	780	1,974,240	850	2,808,349
650	911,975	720	1,413,685	790	2,080,969	860	2,944,741
660	974,560	730	1,498,175	800	2,191,742	870	3,085,747
670	1,040,003	740	1,586,086	810	2,306,597	880	3,231,454
680	1,108,406	750	1,677,554	820	2,425,571	890	3,382,038
690	1,179,915	760	1,772,690	830	2,548,850	900	3,537,577
700	1,254,634	770	1,871,511	840	2,676,446		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2131089	2035975	2057684	2231018	2678652	2706000	2812104	3045795	3312309	3509682	3341502	3046363
2	2124129	2041655	2056713	2232503	2695428	2698818	2808348	3078298	3323632	3502772	3344690	3032749
3	2115865	2038546	2059410	2250839	2763268	2691520	2811434	3113353	3332104	3496342	3333316	3021154
4	2113335	2036939	2060382	2269974	2773226	2690219	2826227	3131565	3339681	3490546	3320459	3008182
5	2109929	2031375	2058655	2270437	2768443	2686186	2834724	3145057	3345449	3489294	3308843	3010013
6	2103566	2027103	2056353	2274370	2777749	2682807	2840263	3159317	3361573	3484445	3296955	3006071
7	2098640	2024222	2088483	2277961	2792017	2685146	2844321	3166319	3380201	3477415	3287797	2992444
8	2095906	2027956	2094704	2279236	2793220	2687747	2847164	3182992	3392456	3474605	3281802	2981797
9	2093721	2033192	2100172	2276223	2780945	2688787	2849196	3218738	3400131	3472577	3284049	2975087
10	2089465	2030413	2104334	2293062	2763002	2688007	2846487	3249860	3408435	3467277	3274468	2963509
11	2089465	2026889	2109270	2332416	2745141	2687356	2845269	3264012	3418604	3469926	3258942	2957523
12	2091647	2024862	2114875	2399523	2725127	2685016	2845269	3265264	3430494	3466654	3245252	2954047
13	2090228	2020068	2125784	2437101	2707045	2684756	2845404	3262521	3445050	3464629	3234714	2952935
14	2086085	2015068	2138286	2463821	2710315	2684236	2844727	3264908	3455603	3459649	3223171	2943081
15	2080426	2014962	2144945	2505091	2716862	2702864	2844998	3263266	3460738	3450325	3211507	2939894
16	2076624	2023050	2150394	2527091	2717648	2705085	2844321	3269984	3466654	3441019	3208706	2931729
17	2070658	2016344	2155183	2576421	2716075	2709530	2847977	3277760	3475697	3432350	3198109	2920408
18	2072934	2010078	2161656	2614529	2710838	2710838	2855027	3275815	3483194	3431422	3188269	2914346
19	2080753	2006367	2167471	2645683	2713325	2708876	2863585	3268192	3490859	3430803	3175378	2913657
20	2076515	2005838	2178347	2658061	2714242	2713849	2869708	3260135	3503870	3425240	3164130	2916411
21	2069574	2002239	2188810	2654317	2721582	2708353	2877751	3251348	3517073	3417524	3152327	2905819
22	2062866	2007533	2191516	2648387	2727228	2737624	2889229	3242726	3519907	3409051	3148254	2891282
23	2056713	2018046	2195128	2640794	2729726	2771897	2905133	3241093	3518490	3402898	3144912	2877342
24	2051003	2014962	2199083	2633088	2731567	2834724	2929656	3239460	3516444	3393837	3131566	2872433
25	2050250	2014962	2209843	2622454	2729463	2864945	2954537	3246589	3515185	3390003	3119994	2863313
26	2056713	2025289	2209616	2619000	2725390	2870389	2979839	3249711	3512826	3384487	3105427	2861273
27	2052726	2035440	2221210	2616572	2720795	2864944	2990480	3249860	3520537	3373628	3092057	2859371
28	2045412	2044016	2231589	2621814	2713849	2853127	2993322	3257154	3525895	3364622	3079157	2851977
29	2042513	2053156	2230789	2635142	---	2838100	3009168	3268192	3524003	3355787	3073722	2839317
30	2037260	2061894	2227479	2647099	---	2818957	3025674	3284799	3515500	3345297	3068436	2831485
31	2032123	---	2224172	2654963	---	2812374	---	3301917	---	3340440	3059166	---
MAX	2131089	2061894	2231589	2658061	2793220	2870389	3025674	3301917	3525895	3509682	3344690	3046363
MIN	2032123	2002239	2056713	2231018	2678652	2682807	2808348	3045795	3312309	3340440	3059166	2831485
a	785.47	788.24	802.86	838.34	842.87	850.30	865.78	884.72	898.60	887.27	868.14	851.72
b	-107605	+29771	+162278	+430791	+58886	+98525	+213300	+276243	+213583	-175060	-281274	-227681
c	4506	1559	1475	799	1157	2537	3624	3749	6957	11473	12054	8249

CAL YR 1997 b -704931

WTR YR 1998 b +691757

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, provided by California Department of Water Resources; not reviewed by the U.S. Geological Survey

## 11406810 PALERMO CANAL NEAR OROVILLE, CA

LOCATION.—Lat 39°31'59", long 121°28'54", in SW 1/4 SW 1/4 sec.1, T.19 N., R.4 E., Butte County, Hydrologic Unit 18020106, on right bank 50 ft downstream from Oroville Dam and 4.4 mi east of Oroville.

PERIOD OF RECORD.—April 1965 to current year. Daily discharge records of diversion from Kelly Ridge Penstock for period April 1965 to October 1968, when Kelly Ridge Penstock supplied the entire flow of Palermo Canal, are in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and Parshall flume. Datum of gage is 547.67 ft above sea level (levels by California Department of Water Resources). April 1965 to October 1968, water-stage recorder and Parshall flume at site of diversion from Kelly Ridge Penstock, 0.4 mi downstream at different datum.

REMARKS.—Canal diverts from left end of Oroville Dam. Water is used for irrigation near Oroville. During period of construction of Oroville Dam, water was released from Kelly Ridge Penstock to meet irrigation requirements. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records were provided by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 28 ft<sup>3</sup>/s, several days during July to September 1967; no flow at times in some years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	4.0	1.9	2.7	2.2	.00	1.0	4.7	6.9	18	20	20
2	15	4.0	10	2.7	.71	.00	1.0	4.7	7.8	18	20	20
3	15	4.0	12	2.7	.00	.00	1.0	4.9	7.9	18	20	20
4	15	4.0	2.1	2.7	.00	.32	1.0	5.1	7.9	18	20	20
5	15	4.0	.00	2.7	.00	1.2	1.1	5.1	8.0	18	20	20
6	12	4.0	.00	2.7	.00	1.1	1.1	5.1	7.9	18	20	20
7	9.2	3.5	.00	2.7	.00	1.2	1.1	5.1	7.9	18	20	20
8	8.2	2.9	.00	2.7	.00	1.2	1.1	5.1	8.0	18	20	20
9	5.9	3.0	.00	2.7	.00	.45	1.2	5.2	8.0	18	20	20
10	4.9	3.0	6.1	2.7	.00	1.1	1.2	5.3	8.0	18	20	20
11	4.9	3.0	3.4	2.7	.00	1.2	1.2	5.2	8.0	18	20	20
12	4.9	2.9	.00	.83	.00	1.3	1.2	5.1	8.1	18	20	20
13	4.9	2.9	.00	.00	.00	1.3	.99	5.1	8.2	18	20	20
14	5.0	1.9	.00	.00	.00	1.3	.99	5.1	7.9	18	20	20
15	5.0	1.6	.00	.00	.00	1.2	.99	5.2	7.6	19	20	20
16	6.5	1.7	.00	.00	.00	1.2	1.0	5.2	7.7	20	20	20
17	8.0	2.0	.00	.00	.00	.69	1.0	5.2	9.1	20	20	20
18	8.0	2.0	.00	.00	.00	1.1	1.0	5.1	9.9	20	20	20
19	8.0	2.0	2.2	.00	.00	1.4	.99	5.1	13	20	20	20
20	7.9	2.0	2.6	.00	.00	1.1	3.5	5.2	14	20	20	20
21	7.8	2.0	2.6	.00	.00	1.1	4.6	9.7	14	20	20	20
22	7.8	2.0	2.6	1.0	.00	1.1	4.6	12	14	20	20	20
23	6.5	2.0	2.6	2.2	.00	1.2	4.6	12	15	20	20	20
24	5.8	2.0	2.6	2.2	.00	1.2	4.6	12	17	20	20	20
25	5.9	2.0	2.6	2.2	.00	1.1	4.6	12	18	20	20	20
26	5.8	1.3	2.6	2.2	.00	1.2	4.6	12	18	20	20	20
27	5.7	1.0	2.6	2.2	.00	1.3	4.6	12	18	20	20	20
28	4.4	1.0	2.6	2.2	.00	1.3	4.6	9.3	18	20	20	20
29	3.5	1.0	2.6	2.2	---	1.2	4.7	5.6	18	20	20	20
30	3.7	1.0	2.7	2.2	---	1.0	4.7	5.1	18	20	20	20
31	4.0	---	2.7	2.2	---	1.0	---	5.0	---	20	20	---
TOTAL	239.2	73.7	69.10	51.33	2.91	31.06	69.86	208.5	339.8	591	620	600
MEAN	7.72	2.46	2.23	1.66	.10	1.00	2.33	6.73	11.3	19.1	20.0	20.0
MAX	15	4.0	12	2.7	2.2	1.4	4.7	12	18	20	20	20
MIN	3.5	1.0	.00	.00	.00	.00	.99	4.7	6.9	18	20	20
AC-FT	474	146	137	102	5.8	62	139	414	674	1170	1230	1190

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	12.3	5.16	3.29	2.68	2.28	2.75	6.15	14.3	18.7	19.5	19.8	18.9
MEAN	12.3	5.16	3.29	2.68	2.28	2.75	6.15	14.3	18.7	19.5	19.8	18.9
MAX	18.0	8.56	5.94	5.12	5.33	6.22	19.1	22.3	24.5	24.5	24.5	22.8
(WY)	1979	1994	1975	1971	1974	1988	1970	1976	1976	1975	1978	1975
MIN	6.85	2.04	.000	.21	.000	.000	.000	3.21	11.3	16.0	16.2	13.8
(WY)	1973	1983	1982	1995	1975	1979	1991	1995	1998	1991	1991	1985

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1969 - 1998

ANNUAL TOTAL	3773.30	2896.46	
ANNUAL MEAN	10.3	7.94	10.5
HIGHEST ANNUAL MEAN			13.3
LOWEST ANNUAL MEAN			7.54
HIGHEST DAILY MEAN	19	Jul 16	26
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Dec 12	.00
ANNUAL RUNOFF (AC-FT)	7480	5750	7620
10 PERCENT EXCEEDS	19	20	21
50 PERCENT EXCEEDS	8.8	4.7	8.4
90 PERCENT EXCEEDS	2.0	.00	1.3

## 11406870 THERMALITO AFTERBAY NEAR OROVILLE, CA

LOCATION.—Lat 39°27'30", long 121°38'17", in NE 1/4 SE 1/4 sec.33, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020106, at dam 195 ft northeast of centerline of outlet structure and 5.7 mi southwest of Oroville.

PERIOD OF RECORD.—October 1967 to current year.

GAGE.—Water-stage recorder. Datum of gage is 100.47 ft above sea level (levels by California Department of Water Resources). Auxiliary water-stage recorder 90 ft southwest of centerline of Western Canal outlet, and 7.2 mi west of Oroville.

REMARKS.—Reservoir is formed by an earthfill dam completed in 1967. Diversion from the reservoir began Oct. 12, 1967. Usable capacity, 61,144 acre-ft between gage heights 120.0 and 139.0 ft, extreme operating levels. Normal operating range is 123 to 136.5 ft. Water is released to four canals (stations 11406880, 11406890, 11406900, and 11406910) and to the Feather River (station 11406920) from the reservoir. Total maximum release to the four canals is approximately 4,000 ft<sup>3</sup>/s. Water is pumped, at times, from Thermalito Afterbay back into Thermalito Forebay during off-peak periods to be re-released through Thermalito Powerplant for power generation during peak-demand periods. Records, including extremes, represent total contents at 2400 hours. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records were collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 57,300 acre-ft, May 24, 1969, gage height, 136.56 ft; minimum since initial operation began, 5,590 acre-ft, Mar. 1, 1968, gage height, 119.09 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 50,453 acre-ft, Sept. 4, gage height, 134.93 ft; minimum, 16,567 acre-ft, Oct. 13, gage height, 124.59 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on table provided by California Department of Water Resources, dated Oct. 10, 1968)

119	5,465	124	15,157	130	32,150
120	7,054	126	20,171	134	46,719
122	10,792	128	25,832	139	68,198

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31721	30154	31031	32218	26889	33731	38178	44568	32954	42387	35625	43185
2	31886	23145	34896	35660	32285	33190	39631	38394	32987	44529	25831	46681
3	31589	25741	37033	31227	33936	32385	38358	26676	36045	46523	30900	48390
4	26707	25921	38720	27627	33392	32685	27844	27196	37854	43185	36291	50453
5	21442	27906	47972	35104	33257	34106	23774	29036	42576	39047	42311	38756
6	20654	30283	39925	38070	33833	36115	22411	31195	37211	37890	45893	31853
7	21966	33257	32618	37926	33936	32987	22355	40072	29609	41636	47512	34586
8	22946	28468	37460	39925	32987	31721	22271	45228	28941	39485	41709	32451
9	24558	21744	39412	46050	32151	31162	22748	37104	32285	36679	28124	26041
10	26312	23259	40998	41972	31260	31886	24998	28317	38286	32416	26585	28563
11	22974	24295	39888	35521	30380	31985	26828	30251	44801	29513	30348	27473
12	17883	26464	39705	35975	30542	33325	27906	34312	47155	28000	35800	27349
13	16567	30998	35069	38684	30348	35139	28312	39962	45306	25205	37033	25116
14	20493	34724	29481	35765	31391	36962	31688	41897	43252	26859	37247	32285
15	25413	33223	29769	36573	31886	22355	32954	43299	45267	31523	38214	34655
16	29131	25891	30510	35208	32786	27534	35870	35695	44723	35940	30316	38034
17	32719	30025	32485	31688	33257	34621	37282	28000	41148	38250	30802	42425
18	28846	33765	34209	31195	35173	42236	33629	26342	39120	34175	30219	41222
19	21799	37389	35905	27596	36679	44878	28846	30348	39375	28720	32551	35104
20	23803	38720	32151	25771	37140	42425	30478	34827	34243	28406	33156	26767
21	26494	41679	27782	25502	37818	44840	35208	38684	27627	30154	36538	28625
22	30058	35660	30575	25621	36573	34175	37890	42274	30025	32019	31227	35800
23	32887	26859	33426	25264	38647	34517	40220	39120	33902	33494	23516	41372
24	35905	27844	32887	24558	37890	36927	37211	32585	40257	34449	27226	40442
25	33088	31293	28093	24237	37854	37318	29865	28187	44878	33663	28531	39888
26	25413	36010	31589	26524	36679	37140	20870	26981	48791	33697	33799	35590
27	29865	34724	26342	30737	34517	36962	25801	32385	40405	38070	38901	30026
28	30705	32752	21005	32285	33867	36962	32685	39412	34690	39011	42652	29705
29	32151	28468	24822	34277	---	36820	40516	45776	34038	39852	40405	33325
30	32518	25087	32052	35208	---	36150	43605	42274	39925	42842	37532	33970
31	35451	---	36891	37603	---	36962	---	34586	---	43147	39266	---
MAX	35905	41679	47972	46050	38647	44878	43605	45776	48791	46523	47512	50453
MIN	16567	21744	21005	24237	26889	22355	20870	26342	27627	25205	23516	25116
a	130.97	127.75	131.38	131.58	130.51	131.40	133.20	130.72	132.22	133.08	132.04	130.54
b	+5103	-10365	+11804	+712	-3736	+3095	+6643	-9019	+5339	+3222	-3881	-5296
c	1157	429	393	223	254	697	858	960	1662	2166	2196	1738

CAL YR 1997 b +2921

WTR YR 1998 b +3622

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, provided by California Department of Water Resources; not reviewed by the U.S. Geological Survey.



## 11406880 WESTERN CANAL AT INTAKE, NEAR OROVILLE, CA

LOCATION.—Lat 39°30'19", long 121°41'06", in SW 1/4 NW 1/4 sec.18, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020105, on left bank 500 ft downstream from Thermalito Afterbay Dam and 7.3 mi west of Oroville.

PERIOD OF RECORD.—October 1967 to current year.

GAGE.—Water-stage recorder. Datum of gage is 100.47 ft above sea level (levels by California Department of Water Resources).

REMARKS.—Water is diverted from Thermalito Afterbay and is used for irrigation. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 1,200 ft<sup>3</sup>/s, May 12, 1981, May 6, 7, 1984, May 6–8, 1990, May 3–5, 1994, May 10–13, 1996, May 3–9, 1997; no flow at times each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	225	223	74	193	.00	.00	.00	71	348	862	855	542
2	238	223	121	179	.00	.00	.00	86	348	836	832	512
3	238	223	122	168	.00	.00	.00	72	348	823	828	471
4	237	256	123	168	.00	.00	.00	72	348	822	828	439
5	237	292	123	153	.00	.00	.00	90	363	823	837	428
6	238	303	123	120	.00	.00	.00	99	356	823	838	414
7	237	295	108	91	.00	.00	.00	99	322	851	828	382
8	238	283	99	32	.00	.00	.00	151	323	873	828	338
9	222	310	99	.00	.00	.00	.00	226	296	888	828	293
10	188	390	113	.00	.00	.00	.00	276	247	897	828	261
11	187	498	135	.00	.00	.00	.00	387	223	897	822	224
12	188	634	147	.00	.00	.00	.00	461	222	897	818	177
13	217	698	148	.00	.00	.00	.00	457	223	898	818	158
14	257	698	147	.00	.00	.00	.00	448	237	897	818	159
15	268	698	133	.00	.00	.00	.00	514	293	908	813	158
16	268	671	119	.00	.00	.00	.00	668	354	923	801	135
17	268	632	106	.00	.00	.00	.00	748	397	940	798	100
18	268	598	98	.00	.00	.00	.00	828	504	963	798	76
19	268	598	98	.00	.00	.00	.00	939	601	972	795	67
20	280	524	98	.00	.00	.00	.00	1020	636	973	777	68
21	288	394	98	.00	.00	.00	.00	1110	647	973	757	69
22	288	348	112	.00	.00	.00	.00	1170	648	973	731	69
23	288	333	124	.00	.00	.00	.00	1150	664	973	706	69
24	277	303	123	.00	.00	.00	.00	1130	697	956	698	69
25	255	273	122	.00	.00	.00	.00	1150	754	927	710	86
26	248	175	124	.00	.00	.00	.00	1090	768	900	719	117
27	248	50	121	.00	.00	.00	.00	999	772	893	709	88
28	248	50	122	.00	.00	.00	33	891	799	885	680	68
29	248	50	157	.00	---	.00	49	589	864	878	643	68
30	248	50	193	.00	---	.00	49	371	889	872	605	69
31	235	---	193	.00	---	.00	---	347	---	868	570	---
TOTAL	7638	11073	3823	1104.00	0.00	0.00	131.00	17709	14491	27864	23916	6174
MEAN	246	369	123	35.6	.000	.000	4.37	571	483	899	771	206
MAX	288	698	193	193	.00	.00	49	1170	889	973	855	542
MIN	187	50	74	.00	.00	.00	.00	71	222	822	570	67
AC-FT	15150	21960	7580	2190	.00	.00	260	35130	28740	55270	47440	12250

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	MEAN	258	233	110	26.1	.000	.43	146	679	688	779	655	167
	MAX	539	607	365	155	.000	12.4	566	930	959	1032	890	305
	(WY)	1975	1975	1977	1977	1968	1972	1977	1985	1981	1981	1981	1995
	MIN	95.2	38.9	.000	.000	.000	.000	1.00	271	477	504	456	49.9
	(WY)	1990	1974	1971	1969	1968	1968	1982	1995	1983	1970	1970	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1968 - 1998			
ANNUAL TOTAL	131882.00				113923.00							
ANNUAL MEAN	361				312				314			
HIGHEST ANNUAL MEAN									403			
LOWEST ANNUAL MEAN									217			
HIGHEST DAILY MEAN	1200 May 3				1170 May 22				1200 May 12 1981			
LOWEST DAILY MEAN	.00 Jan 1				.00 Jan 9				.00 Dec 4 1967			
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 1				.00 Jan 9				.00 Jan 5 1968			
ANNUAL RUNOFF (AC-FT)	261600				226000				227200			
10 PERCENT EXCEEDS	928				863				828			
50 PERCENT EXCEEDS	197				188				206			
90 PERCENT EXCEEDS	.00				.00				.00			

## 11406890 RICHVALE CANAL AT INTAKE, NEAR OROVILLE, CA

LOCATION.—Lat 39°30'19", long 121°41'06", in SW 1/4 NW 1/4 sec.18, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020105, on right bank 500 ft downstream from axis of Thermalito Afterbay Dam and 7.3 mi west of Oroville.

PERIOD OF RECORD.—April 1968 to current year.

REVISED RECORDS.—WDR CA-91-4: 1990.

GAGE.—Water-stage recorder. Datum of gage is 100.47 ft above sea level (levels by California Department of Water Resources).

REMARKS.—Canal diverts from Thermalito Afterbay; water is used for irrigation. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 511 ft<sup>3</sup>/s, May 16, 1974; no flow for many days each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	232	228	168	.00	.00	.00	61	309	350	392	343
2	97	233	229	169	.00	.00	.00	91	270	370	392	299
3	127	247	228	167	.00	.00	.00	79	259	379	393	266
4	139	226	228	168	.00	.00	.00	58	292	377	394	258
5	138	214	228	169	.00	.00	.00	54	309	379	394	240
6	118	213	228	152	.00	.00	.00	61	322	378	393	233
7	151	214	228	143	.00	.00	.00	106	328	379	393	234
8	183	212	229	143	.00	.00	.00	134	278	378	393	233
9	189	212	228	143	.00	.00	.00	175	254	389	392	232
10	185	224	228	144	.00	.00	.00	236	254	393	393	200
11	178	229	229	144	.00	.00	.00	259	227	393	394	167
12	178	229	222	95	.00	.00	.00	260	214	393	394	125
13	178	228	218	70	.00	.00	.00	232	214	393	393	108
14	179	229	218	70	.00	.00	.00	173	212	393	393	109
15	179	228	219	23	.00	.00	.00	154	215	393	393	109
16	178	227	219	.00	.00	.00	.00	188	214	393	392	98
17	189	229	196	.00	.00	.00	.00	214	213	394	393	82
18	192	229	178	.00	.00	.00	.00	205	213	393	393	74
19	192	229	178	.00	.00	.00	.00	220	231	392	394	62
20	193	229	177	.00	.00	.00	.00	229	237	393	393	53
21	204	228	178	.00	.00	.00	.00	300	237	393	393	54
22	248	228	179	.00	.00	.00	.00	389	239	394	393	53
23	275	227	178	.00	.00	.00	.00	418	239	394	393	53
24	279	229	178	.00	.00	.00	.00	456	260	393	393	35
25	278	228	177	.00	.00	.00	.00	473	283	393	393	23
26	278	228	179	.00	.00	.00	.00	473	289	393	394	23
27	279	228	177	.00	.00	.00	.00	448	301	393	393	24
28	255	229	177	.00	.00	.00	16	404	308	393	393	27
29	244	228	173	.00	---	.00	25	341	322	393	372	31
30	250	228	169	.00	---	.00	31	322	339	393	363	32
31	240	---	169	.00	---	.00	---	337	---	393	363	---
TOTAL	6066	6794	6270	1968.00	0.00	0.00	72.00	7550	7882	12027	12104	3880
MEAN	196	226	202	63.5	.000	.000	2.40	244	263	388	390	129
MAX	279	247	229	169	.00	.00	31	473	339	394	394	343
MIN	73	212	169	.00	.00	.00	.00	54	212	350	363	23
AC-FT	12030	13480	12440	3900	.00	.00	143	14980	15630	23860	24010	7700

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

MEAN	28.1	51.4	44.9	11.7	.000	.25	69.5	278	287	313	272	74.8
MAX	196	268	247	84.3	.000	6.32	201	436	400	402	390	154
(WY)	1998	1997	1997	1996	1969	1972	1972	1974	1979	1997	1998	1995
MIN	.000	.000	.000	.000	.000	.000	.000	104	129	140	130	8.43
(WY)	1972	1969	1969	1969	1969	1969	1983	1991	1991	1991	1991	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1968 - 1998

ANNUAL TOTAL	68446.80	64613.00	
ANNUAL MEAN	188	177	121
HIGHEST ANNUAL MEAN			192
LOWEST ANNUAL MEAN			66.4
HIGHEST DAILY MEAN	439	473	511
LOWEST DAILY MEAN	.00 Jan 2	.00 Jan 16	.00 May 16 1974
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 25	.00 Jan 16	.00 Sep 25 1968
ANNUAL RUNOFF (AC-FT)	135800	128200	87600
10 PERCENT EXCEEDS	401	393	353
50 PERCENT EXCEEDS	212	189	43
90 PERCENT EXCEEDS	.00	.00	.00

## 11406900 PACIFIC GAS &amp; ELECTRIC CO. LATERAL AT INTAKE, NEAR OROVILLE, CA

LOCATION.—Lat 39°29'22", long 121°41'12", in SE 1/4 NW 1/4 sec.19, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020106, on right bank 82 ft downstream from axis of Thermalito Afterbay Dam and 7.2 mi west of Oroville.

PERIOD OF RECORD.—April 1968 to current year.

GAGE.—Water-stage recorder. Datum of gage is 113.47 ft above sea level (levels by California Department of Water Resources).

REMARKS.—Flow regulated at outlet works from Thermalito Afterbay; water is used for irrigation. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 46 ft<sup>3</sup>/s, Apr. 24, 1977, May 16, 1978; no flow for many days each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	20	.49	1.3	.00	.00	.00	.00	3.7	20	15	9.0
2	.00	19	.00	1.1	.00	.00	.00	.00	7.6	20	15	9.2
3	.00	19	.00	1.0	.00	.00	.00	.00	5.4	19	15	9.4
4	.00	19	.00	.95	.00	.00	.00	.00	2.6	17	15	9.9
5	.00	11	.00	.93	.00	.00	.00	12	3.0	16	15	6.5
6	.00	4.2	.00	1.0	.00	.00	.00	12	4.2	15	15	2.9
7	.00	1.8	.00	1.0	.00	.00	.00	15	5.0	16	16	2.8
8	.00	1.1	.00	.42	.00	.00	.00	14	5.8	17	16	1.9
9	.00	1.1	.00	.00	.00	.00	.00	9.6	7.2	15	16	.42
10	.00	1.1	.00	.00	.00	.00	.00	9.0	6.3	13	16	.00
11	.00	1.1	.00	.00	.00	.00	.00	8.5	5.3	13	16	.00
12	.00	1.1	.00	.00	.00	.00	.00	5.2	5.4	13	16	.00
13	.00	1.2	.00	.00	.00	.00	.00	2.0	4.9	14	16	.00
14	.00	1.2	.00	.00	.00	.00	.00	1.3	2.1	16	16	.00
15	.00	1.3	.00	.00	.00	.00	.00	1.3	1.3	15	16	.00
16	.00	1.2	.00	.00	.00	.00	.00	2.6	1.3	14	16	.00
17	.00	1.1	.00	.00	.00	.00	.00	10	1.2	14	15	.00
18	.00	1.2	.00	.00	.00	.00	.00	16	1.1	14	15	.00
19	.00	7.8	.00	.00	.00	.00	.00	26	2.8	15	15	.00
20	.00	12	.00	.00	.00	.00	.00	33	5.6	16	15	.00
21	.00	12	.00	.00	.00	.00	.00	30	6.6	17	15	.00
22	.00	12	.56	.00	.00	.00	.00	27	5.8	17	15	.00
23	1.8	12	.56	.00	.00	.00	.00	24	9.7	17	15	.00
24	2.9	5.6	.54	.00	.00	.00	.00	17	18	17	15	.00
25	2.8	1.0	.53	.00	.00	.00	.00	5.6	25	16	15	.00
26	2.7	1.0	.52	.00	.00	.00	.00	1.6	27	15	14	.00
27	2.6	.97	.53	.00	.00	.00	.00	2.1	23	15	13	.00
28	10	.93	.51	.00	.00	.00	.00	1.8	18	15	13	.00
29	16	.94	.51	.00	---	.00	.00	.52	18	15	12	.00
30	15	.91	1.0	.00	---	.00	.00	.00	19	15	9.8	.00
31	18	---	1.3	.00	---	.00	---	.60	---	15	8.8	---
TOTAL	71.80	173.85	7.05	7.70	0.00	0.00	0.00	287.72	251.9	486	455.6	52.02
MEAN	2.32	5.80	.23	.25	.000	.000	.000	9.28	8.40	15.7	14.7	1.73
MAX	18	20	1.3	1.3	.00	.00	.00	33	27	20	16	9.9
MIN	.00	.91	.00	.00	.00	.00	.00	.00	1.1	13	8.8	.00
AC-FT	142	345	14	15	.00	.00	.00	571	500	964	904	103

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

MEAN	.28	1.67	.67	.065	.000	.000	3.64	12.6	12.4	13.4	10.7	1.24
MAX	3.47	6.58	3.49	.51	.000	.000	14.8	23.2	18.3	17.1	14.7	2.62
(WY)	1997	1996	1987	1994	1969	1969	1977	1975	1981	1981	1998	1972
MIN	.000	.000	.000	.000	.000	.000	.000	6.55	8.40	9.37	7.12	.000
(WY)	1969	1969	1969	1969	1969	1969	1974	1994	1998	1970	1988	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1968 - 1998	
ANNUAL TOTAL	1943.52		1793.64			
ANNUAL MEAN	5.32		4.91		4.80	
HIGHEST ANNUAL MEAN					5.93	1981
LOWEST ANNUAL MEAN					3.67	1983
HIGHEST DAILY MEAN	43	Apr 23	33	May 20	46	Apr 24 1977
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 1	.00	Sep 9 1968
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00	Oct 1	.00	Sep 9 1968
ANNUAL RUNOFF (AC-FT)	3850		3560		3480	
10 PERCENT EXCEEDS	16		16		15	
50 PERCENT EXCEEDS	.00		.49		.00	
90 PERCENT EXCEEDS	.00		.00		.00	

## 11406910 SUTTER-BUTTE CANAL AT INTAKE, NEAR OROVILLE, CA

LOCATION.—Lat 39°27'01", long 121°39'27", in NW corner of Boga Fernandez Grant, T.18 N., R.3 E., Butte County, Hydrologic Unit 18020105, on left bank 675 ft downstream from Thermalito Afterbay Dam and 6.8 mi southwest of Oroville.

PERIOD OF RECORD.—November 1967 to current year.

GAGE.—Water-stage recorder. Datum of gage is 109.97 ft above sea level (levels by California Department of Water Resources). Prior to May 1, 1970, at datum 109.50 ft lower.

REMARKS.—Water is diverted from Thermalito Afterbay and is used for irrigation. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 2,110 ft<sup>3</sup>/s, Apr. 22–24, 1968; no flow for many days each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	504	696	436	438	.00	.00	.00	255	1060	1480	1520	1300
2	512	699	415	439	.00	.00	.00	335	1020	1470	1500	1260
3	539	634	419	438	.00	.00	.00	378	983	1480	1510	1240
4	544	684	429	436	.00	.00	.00	352	998	1480	1520	1210
5	539	637	419	439	.00	.00	.00	396	1060	1480	1520	1170
6	541	568	418	412	.00	.00	.00	344	1110	1490	1520	1140
7	605	545	413	412	.00	.00	.00	341	1080	1520	1520	1130
8	633	543	418	411	.00	.00	.00	423	1010	1520	1520	1090
9	642	543	409	412	.00	.00	.00	497	1010	1520	1510	1020
10	630	551	406	245	.00	.00	.00	591	1050	1510	1480	1010
11	625	545	407	192	.00	.00	.00	728	1020	1500	1460	991
12	624	542	406	207	.00	.00	.00	801	973	1480	1460	930
13	602	532	406	212	.00	.00	.00	771	956	1470	1450	885
14	588	502	406	64	.00	.00	.00	761	943	1520	1450	893
15	611	477	407	.00	.00	.00	.00	762	977	1530	1450	910
16	605	458	407	.00	.00	.00	.00	817	1060	1540	1460	866
17	608	457	407	.00	.00	.00	.00	901	1120	1550	1460	826
18	597	460	408	.00	.00	.00	.00	917	1170	1560	1470	750
19	581	468	408	.00	.00	.00	.00	1020	1250	1550	1460	711
20	557	481	404	.00	.00	.00	.00	1150	1280	1550	1470	681
21	568	484	406	.00	.00	.00	.00	1260	1280	1550	1460	645
22	587	469	408	.00	.00	.00	.00	1340	1320	1550	1460	626
23	589	464	408	.00	.00	.00	.00	1400	1440	1550	1440	634
24	592	469	406	.00	.00	.00	.00	1430	1490	1560	1410	631
25	589	489	404	.00	.00	.00	.00	1460	1510	1550	1410	602
26	587	487	408	.00	.00	.00	.00	1460	1530	1530	1410	548
27	601	459	405	.00	.00	.00	.00	1470	1530	1520	1420	513
28	654	451	404	.00	.00	.00	149	1440	1500	1530	1390	492
29	688	451	407	.00	---	.00	226	1230	1490	1540	1360	487
30	730	450	408	.00	---	.00	227	1100	1480	1540	1340	482
31	692	---	429	.00	---	.00	---	1060	---	1530	1330	---
TOTAL	18564	15695	12741	4757.00	0.00	0.00	602.00	27190	35700	47150	45140	25673
MEAN	599	523	411	153	.000	.000	20.1	877	1190	1521	1456	856
MAX	730	699	436	439	.00	.00	227	1470	1530	1560	1520	1300
MIN	504	450	404	.00	.00	.00	.00	255	943	1470	1330	482
AC-FT	36820	31130	25270	9440	.00	.00	1190	53930	70810	93520	89540	50920

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

MEAN	379	134	99.7	24.5	24.3	98.0	546	1388	1376	1475	1356	724
MAX	661	527	412	216	374	571	1294	1815	1643	1709	1608	893
(WY)	1975	1996	1996	1996	1977	1976	1968	1975	1975	1981	1982	1995
MIN	77.2	.000	.000	.000	.000	.000	.000	519	826	834	776	283
(WY)	1978	1975	1971	1969	1969	1978	1983	1977	1992	1991	1991	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1968 - 1998

ANNUAL TOTAL	267935.00	233212.00	
ANNUAL MEAN	734	639	637
HIGHEST ANNUAL MEAN			765
LOWEST ANNUAL MEAN			401
HIGHEST DAILY MEAN	1710	May 8	2110
LOWEST DAILY MEAN	.00	Jan 2	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 16	.00
ANNUAL RUNOFF (AC-FT)	531400	462600	461200
10 PERCENT EXCEEDS	1510	1490	1560
50 PERCENT EXCEEDS	568	513	417
90 PERCENT EXCEEDS	.00	.00	.00

## 11406920 THERMALITO AFTERBAY RELEASE TO FEATHER RIVER, NEAR OROVILLE, CA

LOCATION.—Lat 39°27'23", long 121°38'10", in NW 1/4 SE 1/4 sec.33, T.19 N., R.3 E., Butte County, Hydrologic Unit 18020106, on left bank of outlet channel 955 ft downstream from centerline of Thermalito Afterbay Dam and 5.7 mi southwest of Oroville.

PERIOD OF RECORD.—November 1967 to current year.

WATER TEMPERATURE: Water years 1969–92.

GAGE.—Water-stage recorder. Datum of gage is 113.47 ft above sea level (levels by California Department of Water Resources). Prior to May 1, 1970, at datum 13.00 ft lower.

REMARKS.—Flow regulated by gates of Thermalito Afterbay outlet 955 ft upstream. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 21,600 ft<sup>3</sup>/s, Jan. 28, 1970, gage height, 23.30 ft, datum then in use, 21,600 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 11.45 ft; no flow for many days during 1968.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3720	1500	899	743	5140	13200	13500	5400	9440	7420	4390	5380
2	3700	1500	900	694	6790	13200	13500	5400	8530	7420	4390	5870
3	3700	1500	898	693	14400	13200	13500	5400	8440	7430	4400	6340
4	3690	1500	901	696	15100	9980	10500	5560	8440	7420	4400	6920
5	3690	1500	898	696	15100	9450	9440	6410	8440	7420	4400	6920
6	3690	1500	900	698	15100	9450	9450	6430	8440	6930	4400	6920
7	3200	1500	898	899	15100	7490	9450	5820	8440	5910	4570	7050
8	3190	1500	899	901	15100	7430	9440	3770	8430	5920	6070	7420
9	3190	1490	897	899	15100	7430	9450	3390	8440	5910	6410	7140
10	3190	1500	896	900	15100	7430	9440	3380	8440	5660	6400	5960
11	3190	1500	896	899	15100	7430	9450	5080	8440	4650	5400	5030
12	3190	1500	893	902	15100	7430	9450	9420	8930	4390	5400	4050
13	2420	1500	898	1120	15100	7430	9450	9450	10200	4400	5400	3460
14	1780	1500	899	3450	14500	7430	9450	9450	11500	4400	5400	3400
15	1730	1500	900	4880	13200	7410	9440	9450	11500	4390	5410	3400
16	1500	1500	895	9170	13200	7410	9240	9440	11000	4400	5410	4020
17	1500	1500	897	8600	13200	5650	7420	9440	9940	4390	5410	4760
18	1500	1500	899	8300	13200	6580	7420	9440	8940	4390	5400	5410
19	1500	1500	901	8530	13200	9440	7420	9450	7930	4390	5420	5400
20	1500	1500	894	10500	13200	9590	6310	9450	7420	4400	5410	5400
21	1500	1500	897	13200	13200	12900	5410	9450	7420	4400	5410	5410
22	1500	1500	899	13200	13200	13400	5400	9450	7420	4400	5400	5410
23	1500	1500	902	13200	13200	13500	5410	9440	7430	4400	5400	5400
24	1500	1500	896	13200	13200	13500	5410	9440	7050	4400	5410	5410
25	1500	1300	901	11500	13200	14500	5400	9440	6420	4400	5410	5410
26	1500	1100	900	11200	13200	15100	5400	9310	6920	4390	4910	5410
27	1500	898	901	9140	13200	15100	5410	6870	7420	4400	4910	5400
28	1500	900	900	5130	13200	15100	5410	6760	7420	4400	4910	5400
29	1500	899	900	5130	---	15100	5410	9000	7420	4400	4900	5400
30	1500	898	902	5130	---	15100	5410	9450	7430	4400	4900	5410
31	1500	---	899	5140	---	14300	---	9440	---	4400	4910	---
TOTAL	71270	41985	27855	169340	376630	331660	246790	239080	253630	160030	160360	164310
MEAN	2299	1400	899	5463	13450	10700	8226	7712	8454	5162	5173	5477
MAX	3720	1500	902	13200	15100	15100	13500	9450	11500	7430	6410	7420
MIN	1500	898	893	693	5140	5650	5400	3380	6420	4390	4390	3400
AC-FT	141400	83280	55250	335900	747000	657800	489500	474200	503100	317400	318100	325900

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	1927	2386	4061	4654	5213	5691	4685	3649	3209	3718	3446	2929
MEAN	1927	2386	4061	4654	5213	5691	4685	3649	3209	3718	3446	2929
MAX	5867	11020	15120	14700	14600	16890	15410	12340	9717	6805	7043	7085
(WY)	1975	1974	1984	1997	1983	1983	1983	1983	1983	1997	1974	1974
MIN	145	336	56.7	391	345	239	207	549	337	.13	116	398
(WY)	1978	1978	1968	1993	1968	1992	1992	1977	1990	1968	1968	1968

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1968 - 1998
ANNUAL TOTAL	1505982	2242940	
ANNUAL MEAN	4126	6145	3892
HIGHEST ANNUAL MEAN			9352
LOWEST ANNUAL MEAN			970
HIGHEST DAILY MEAN	16700	Jan 14	15100
LOWEST DAILY MEAN	566	May 11	693
ANNUAL SEVEN-DAY MINIMUM	570	May 6	731
INSTANTANEOUS PEAK FLOW			15200
INSTANTANEOUS PEAK STAGE		8.38	Feb 3
ANNUAL RUNOFF (AC-FT)	2987000	4449000	2820000
10 PERCENT EXCEEDS	12500	13200	9450
50 PERCENT EXCEEDS	1890	5410	2260
90 PERCENT EXCEEDS	573	900	500

## 11407000 FEATHER RIVER AT OROVILLE, CA

LOCATION.—Lat 39°31'18", long 121°32'48", in Boga Fernandez Grant, T.19 N., R.4 E., Butte County, Hydrologic Unit 18020106, on right bank 300 ft upstream from fish barrier dam on Feather River, 0.4 mi downstream from Thermalito Diversion Dam, 0.8 mi northeast of Oroville Post Office, and 4.8 mi downstream from Oroville Dam.

DRAINAGE AREA.—3,624 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1901 to current year. Monthly discharge only for some periods, published in WSP 1315-A. October 1934 to September 1961 published as "near Oroville."

CHEMICAL DATA: Water years 1906–07, 1951–77.

SPECIFIC CONDUCTANCE: Water years 1972–78.

WATER TEMPERATURE: Water years 1954–92.

SEDIMENT DATA: Water years 1957–79.

REVISED RECORDS.—WSP 843: 1907(M), 1909(M), 1914–15(M), 1919(M), 1927–28(M). WSP 881: 1913–28 (yearly summaries). WSP 1515: 1906–8. WSP 1931: Drainage area. WDR CA-74-2: 1968–70, adjusted monthly discharge.

GAGE.—Water-stage recorder. Datum of gage is 148.97 ft above sea level (levels by California Department of Water Resources). See WSP 1931 for history of changes prior to Oct. 1, 1964.

REMARKS.—Flow completely regulated by Lake Oroville (station 11406800), beginning November 1967, and Thermalito Diversion Pool (station 11406825), capacity 13,500 acre-ft. Diversions upstream from station for power and irrigation. Feather River Fish Hatchery diverts up to 120 ft<sup>3</sup>/s at Thermalito Diversion Dam 0.4 mi upstream from gage. Daily figures shown are combined figures of river flow and diversion to fish hatchery. See schematic diagram showing diversions and storage from Feather River at Lake Oroville.

COOPERATION.—Records were collected by California Department of Water Resources, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Prior to completion of Oroville Dam: Maximum discharge observed, 230,000 ft<sup>3</sup>/s Mar. 19, 1907, elevation, 167.5 ft above sea level, site and datum then in use, maximum discharge (since completion of Oroville Dam), 161,000 ft<sup>3</sup>/s, Jan. 2, 1997, gage height 25.45 ft; minimum, 300 ft<sup>3</sup>/s, estimated, Nov. 9, 1931.

Combined flow (since completion of Oroville Dam): Maximum daily discharge, 132,000 ft<sup>3</sup>/s, Feb. 18, 1986; minimum daily, 222 ft<sup>3</sup>/s, Sept. 19, 1972.

EXTREMES FOR CURRENT YEAR.—River only: Maximum discharge, 10,200 ft<sup>3</sup>/s, Feb. 6, gage height, 5.07 ft; minimum daily, 515 ft<sup>3</sup>/s, Aug. 25.

Combined flow: Maximum daily discharge, 10,200 ft<sup>3</sup>/s, several days during February and March; minimum daily, 602 ft<sup>3</sup>/s, Aug. 25.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	627	933	923	939	957	906	636	634	628	625	610	616
2	628	922	907	933	1010	906	636	630	656	627	611	618
3	624	913	926	933	4450	768	636	625	651	628	611	623
4	618	946	945	933	10100	638	636	624	634	629	612	623
5	629	932	915	939	10100	630	636	618	650	629	611	616
6	629	937	933	946	10200	634	625	618	633	625	623	616
7	629	967	931	912	10100	630	633	615	635	624	626	621
8	629	938	906	931	10100	636	626	617	637	624	649	625
9	638	953	922	940	10200	632	632	618	632	627	644	628
10	618	935	956	942	10200	626	634	623	642	631	638	628
11	617	933	932	956	10200	628	635	615	644	637	627	626
12	627	932	941	990	10200	631	635	615	638	626	635	616
13	628	951	941	952	8390	640	636	615	643	626	645	621
14	622	960	935	944	3270	632	636	619	640	626	618	619
15	759	933	915	944	916	638	637	626	642	621	622	622
16	913	935	915	966	915	642	628	631	623	621	626	623
17	909	932	919	959	892	636	624	628	619	620	628	626
18	907	933	923	965	903	636	624	624	622	619	629	629
19	909	934	931	959	919	634	624	625	626	619	630	629
20	917	933	934	956	933	631	627	624	618	622	621	629
21	911	933	929	966	931	630	631	624	618	627	610	645
22	920	933	933	971	922	638	633	621	629	623	603	649
23	918	918	922	972	931	636	635	621	631	617	604	655
24	916	923	933	970	920	638	636	623	639	622	612	655
25	912	944	932	972	904	4810	634	624	630	619	602	655
26	916	952	915	979	903	10100	625	629	624	624	613	654
27	932	935	917	981	903	10100	625	631	653	615	608	645
28	917	933	918	970	904	10100	625	642	651	623	606	633
29	919	936	938	967	---	10100	627	641	627	652	607	631
30	909	941	937	970	---	10200	627	632	628	625	609	633
31	915	---	935	962	---	4650	---	621	---	622	616	---
TOTAL	24162	28100	28759	29619	122273	75956	18934	19353	19043	19375	19206	18909
MEAN	779	937	928	955	4367	2450	631	624	635	625	620	630
MAX	932	967	956	990	10200	10200	637	642	656	652	649	655
MIN	617	913	906	912	892	626	624	615	618	615	602	616
AC-FT	47930	55740	57040	58750	242500	150700	37560	38390	37770	38430	38100	37510
MEAN a	2580	3850	5456	13682	18848	14875	12672	14463	14881	6116	4071	3608
AC-FTa	158600	229100	335400	841300	1047000	914600	754100	889300	885500	376100	250300	214700

a Adjusted for unreviewed evaporation, change in contents, and diversions in and out of Lake Oroville, Thermalito Diversion Pool, Thermalito Forebay, and Thermalito Afterbay.

## 11407000 FEATHER RIVER AT OROVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1902 - 1967, BY WATER YEAR (WY)

MEAN	2085	3069	5296	6790	9463	10080	12120	9930	5176	2505	1980	1792
MAX	12370	19710	28410	39860	28030	39760	30100	25150	15650	5999	3265	2883
(WY)	1963	1904	1956	1909	1904	1904	1911	1938	1911	1907	1967	1967
MIN	745	853	1102	1350	1714	1564	2146	1246	924	852	956	992
(WY)	1933	1933	1950	1947	1933	1924	1924	1924	1924	1924	1924	1924

## SUMMARY STATISTICS

## WATER YEARS 1902 - 1967

ANNUAL MEAN	5834	
HIGHEST ANNUAL MEAN	12860	1907
LOWEST ANNUAL MEAN	1623	1924
HIGHEST DAILY MEAN	187000	Mar 19 1907
LOWEST DAILY MEAN	577	Oct 3 1932
ANNUAL SEVEN-DAY MINIMUM	652	Sep 30 1932
INSTANTANEOUS PEAK FLOW	230000	Mar 19 1907
INSTANTANEOUS PEAK STAGE	167.5	Mar 19 1907
ANNUAL RUNOFF (AC-FT)	4226000	
10 PERCENT EXCEEDS	13300	
50 PERCENT EXCEEDS	2870	
90 PERCENT EXCEEDS	1470	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

MEAN	557	758	1237	3247	2381	2169	1024	775	507	502	489	490
MAX	1580	3313	7728	26750	25180	18870	7064	7916	998	775	640	644
(WY)	1996	1982	1997	1997	1986	1995	1982	1995	1989	1992	1997	1988
MIN	399	397	392	401	399	404	401	387	405	404	393	389
(WY)	1969	1979	1979	1976	1978	1978	1977	1969	1974	1981	1979	1972

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1969 - 1998

ANNUAL TOTAL	1193623		423689	
ANNUAL MEAN	3270		1161	1174
ANNUAL MEAN ADJUSTED a	7852		9525	b 6273
HIGHEST ANNUAL MEAN				3936
LOWEST ANNUAL MEAN				404
HIGHEST DAILY MEAN	126000	Jan 2	10200	Feb 6
LOWEST DAILY MEAN	601	Feb 22	602	Aug 25
ANNUAL SEVEN-DAY MINIMUM	608	Feb 21	607	Aug 22
INSTANTANEOUS PEAK FLOW				161000
INSTANTANEOUS PEAK STAGE				25.45
ANNUAL RUNOFF (AC-FT)	2368000		840400	850600
ANNUAL RUNOFF (AC-FT) ADJUSTED a	5685000		6896000	b 4545000
10 PERCENT EXCEEDS	1020		959	650
50 PERCENT EXCEEDS	637		637	422
90 PERCENT EXCEEDS	618		618	401

a Adjusted for unreviewed evaporation, change in contents, and diversions in and out of Lake Oroville, Thermalito Diversion Pool, Thermalito Forebay, and Thermalito Afterbay.

b Includes water year 1968.

## 11407150 FEATHER RIVER NEAR GRIDLEY, CA

LOCATION.—Lat 39°22'00", long 121°38'46", in Boga Fernandez Grant, T.18 N., R.3 E., Butte County, Hydrologic Unit 18020106, on right bank 300 ft upstream from highway bridge and 2.7 mi east of Gridley.

DRAINAGE AREA.—3,676 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1964 to September 1998 (discontinued). January 1944 to September 1964 are published in reports by California Department of Water Resources.

CHEMICAL DATA: Water years 1979–81.

WATER TEMPERATURE: Water years 1965–93.

SEDIMENT DATA: Water years 1965–93.

REVISED RECORDS.—WDR CA-80-4: 1967(M), 1968(M).

GAGE.—Water-stage recorder. Datum of gage is 2.91 ft below sea level. Prior to Mar. 13, 1966, water-stage recorder on left bank, at same datum. Mar. 14, 1966, to Sept. 30, 1973, gage at present location, with datum 47.09 ft above sea level.

REMARKS.—Records good. Flow regulated by Lake Oroville since November 1967 (station 11406800) and Thermalito Afterbay release to Feather River since December 1967 (station 11406920). See schematic diagrams showing diversions and storage from Feather River at Lake Oroville and lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 151,000 ft<sup>3</sup>/s, Dec. 23, 1964, gage height, 100.43 ft, present datum; minimum daily, 117 ft<sup>3</sup>/s, June 27, 1966. Since completion of Oroville Dam in 1967, maximum discharge, 163,000 ft<sup>3</sup>/s, Jan. 2, 1997, gage height recorded, 98.83 ft, 100.42 ft, from outside gage; minimum daily, 366 ft<sup>3</sup>/s, July 26, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of Dec. 23, 1955, reached a stage of 102.25 ft, present datum, discharge unknown.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4230	2270	1790	1760	6680	14100	13900	6670	9910	7820	5040	6020
2	4170	2270	1770	1740	7320	14000	13600	6620	9210	7790	5070	6430
3	4130	2260	1730	1750	16500	14000	13500	6640	9010	7790	5130	6790
4	4140	2270	1770	1770	25400	10900	11200	6680	9010	7800	5160	7360
5	4080	2270	1740	1710	25100	10100	10000	7510	9030	7810	5170	7310
6	4030	2270	1770	1680	25100	10100	9950	7510	9020	7510	5140	7350
7	3530	2270	1840	1830	25800	8650	9950	7160	8930	6630	5150	7440
8	3480	2240	1790	1880	25600	8410	9920	5360	8910	6560	6370	7730
9	3530	2210	1740	1920	25000	8420	9930	4780	8970	6510	6760	7420
10	3440	2200	1760	1990	24900	8460	9960	4780	8950	6270	6790	6470
11	3420	2200	1780	2100	24800	8500	9940	5790	8920	5490	6090	5680
12	3410	2250	1750	2250	24700	8480	9890	9740	9210	5200	6030	4840
13	2880	2290	1720	2270	24400	8450	9910	9960	10200	5210	6050	4290
14	2260	2270	1790	4270	19700	8440	9920	10000	11400	5190	6060	4170
15	2260	2250	1760	5570	14800	8480	9960	10100	11400	5190	6030	4160
16	2240	2250	1770	9760	14400	8460	9970	10100	11100	5180	6000	4590
17	2250	2270	1770	9710	14300	7090	8430	10000	10200	5160	5970	5250
18	2240	2270	1790	9220	14200	7310	8410	e10000	9410	5160	5930	5830
19	2240	2300	1810	9280	14300	10000	8410	e10000	8590	5170	5940	5840
20	2220	2250	1810	10100	14200	10100	7700	e9990	8010	5140	5940	5880
21	2240	2270	1780	13100	14400	12700	6750	e10000	7950	5060	5950	5880
22	2250	2260	1770	12900	14400	13600	6740	e9960	7930	4970	5960	5840
23	2250	2280	1790	13200	14300	13600	6670	e9960	7920	4980	5980	5820
24	2180	2290	1780	13400	14200	13700	6610	e9930	7680	5000	6010	5820
25	2190	2170	1800	12200	14100	16300	6570	e9910	7050	5040	6000	5790
26	2210	2070	1790	11800	14100	24100	6610	e9860	7350	5090	5600	5780
27	2240	1830	1790	10900	14100	24300	6710	e7990	7890	5110	5590	5800
28	2210	1790	1820	6770	14100	24300	6730	e7620	7930	5070	5610	5780
29	2230	1760	1860	6730	---	24300	6730	e9260	7850	5020	5620	5820
30	2240	1840	1840	6650	---	24300	6730	9790	7850	4960	5650	5800
31	2290	---	1840	6630	---	20800	---	9870	---	4980	5670	---
TOTAL	88710	65690	55310	196840	500900	404450	271300	263540	266790	179860	179460	178980
MEAN	2862	2190	1784	6350	17890	13050	9043	8501	8893	5802	5789	5966
MAX	4230	2300	1860	13400	25800	24300	13900	10100	11400	7820	6790	7730
MIN	2180	1760	1720	1680	6680	7090	6570	4780	7050	4960	5040	4160
AC-FT	176000	130300	109700	390400	993500	802200	538100	522700	529200	356800	356000	355000

e Estimated.



## 11407150 FEATHER RIVER NEAR GRIDLEY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2425	3093	5494	8131	7822	8100	5836	4440	3723	4333	4008	3461
MAX	6520	12940	22700	40630	34170	33530	22630	19010	9996	7364	7565	7872
(WY)	1975	1974	1984	1997	1986	1983	1982	1995	1983	1997	1974	1974
MIN	853	855	832	936	905	895	804	809	913	1708	1059	1002
(WY)	1978	1978	1978	1992	1991	1992	1991	1977	1990	1970	1991	1990

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1969 - 1998			
ANNUAL TOTAL	2706880				2651830							
ANNUAL MEAN	7416				7265				5063			
HIGHEST ANNUAL MEAN									11880			
LOWEST ANNUAL MEAN									1394			
HIGHEST DAILY MEAN	150000				Jan 2	25800	Feb 7	150000	Jan 2	1997		
LOWEST DAILY MEAN	1040				Apr 10	1680	Jan 6	602	May 21	1977		
ANNUAL SEVEN-DAY MINIMUM	1060				Apr 8	1750	Jan 1	611	May 18	1977		
INSTANTANEOUS PEAK FLOW						26400	Feb 7	150000	Feb 19	1986		
INSTANTANEOUS PEAK STAGE						83.53	Feb 7	100.06	Feb 19	1986		
ANNUAL RUNOFF (AC-FT)	5369000				5260000				3668000			
10 PERCENT EXCEEDS	15500				13900				10200			
50 PERCENT EXCEEDS	2690				6370				2780			
90 PERCENT EXCEEDS	1330				1830				1090			

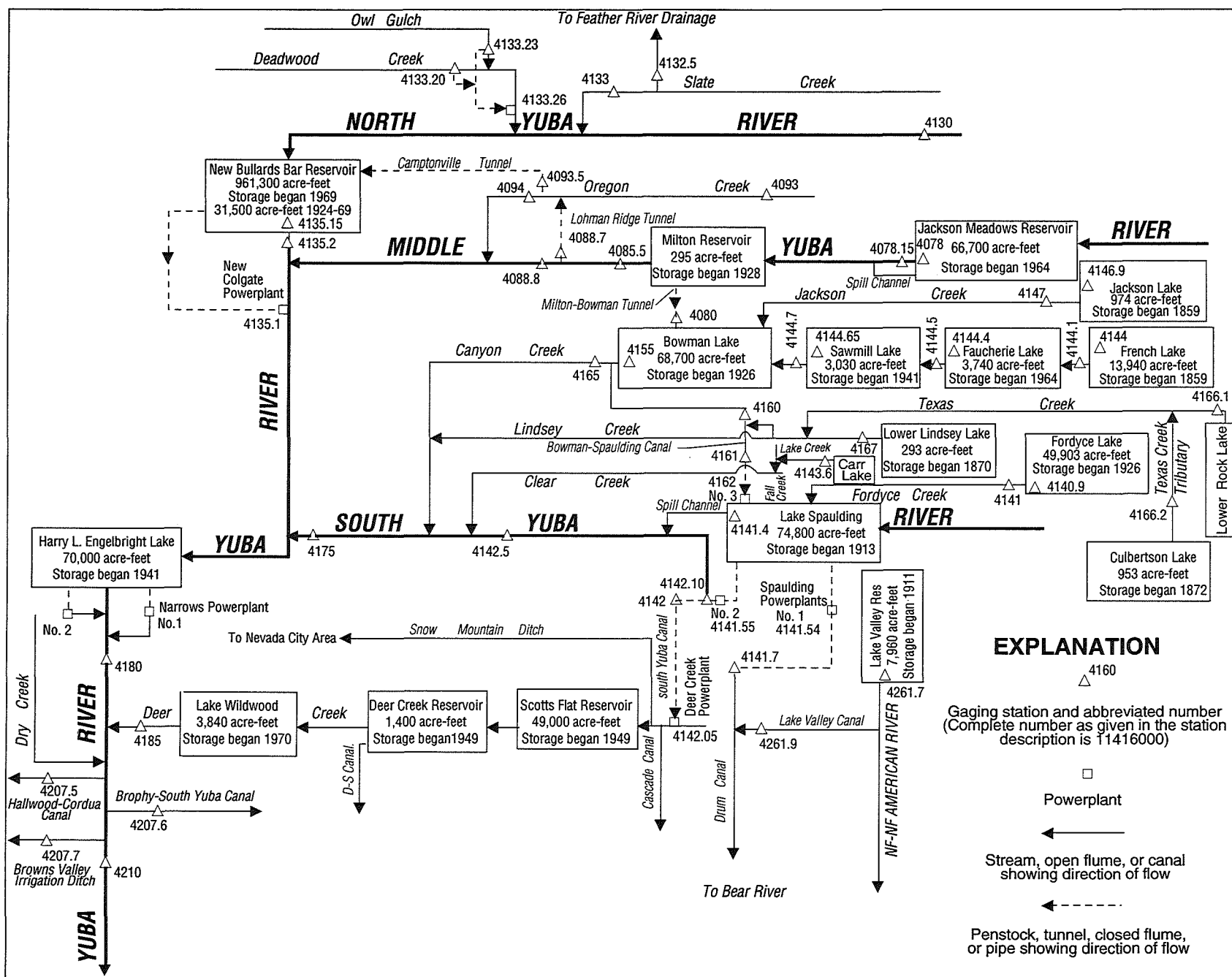


Figure 31. Diversions and storage in Yuba River Basin.

## 11407800 JACKSON MEADOWS RESERVOIR NEAR SIERRA CITY, CA

LOCATION.—Lat 39°30'33", long 120°33'08", in NW 1/4 SE 1/4 sec.18, T.19 N., R.13 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank at Jackson Meadows Dam on Middle Yuba River, 0.7 mi downstream from Pass Creek, and 5.7 mi southeast of Sierra City.

DRAINAGE AREA.—37.6 mi<sup>2</sup>.

PERIOD OF RECORD.—November 1964 to current year.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Nevada Irrigation District).

REMARKS.—Reservoir is formed by an earthfill dam. Storage began Nov. 9, 1964. Usable capacity, 66,700 acre-ft between elevations 5,933.0 ft, bottom of intake tower, and 6,036.0 ft, top of radial spillway gates. Dead contents, 2,500 acre-ft. Records, including extremes, represent total contents. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 71,100 acre-ft, May 31 and June 1, 1993, elevation, 6,037.78 ft; minimum since reservoir first filled, 2,500 acre-ft, Sept. 27–29, 1976, elevation, 5,933.1 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 69,300 acre-ft, July 17–19, elevation, 6,036.09 ft; minimum, 31,800 acre-ft, Nov. 18, elevation, 5,995.60 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Nevada Irrigation District, dated February 1965)

5,930	2,000	5,990	27,600
5,940	3,920	6,000	35,300
5,950	6,760	6,010	43,900
5,960	10,600	6,020	53,200
5,970	15,400	6,030	63,000
5,980	21,000	6,040	73,500

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48100	37500	32300	32700	37300	41200	40700	38300	48100	66000	67800	62800
2	47800	37100	32300	32800	37600	41300	40500	39400	49100	66300	67600	62500
3	47500	36600	32300	32800	38000	41400	40400	40200	50000	66600	67300	62200
4	47100	36200	32300	32900	38200	41300	40200	40700	50800	66900	67100	61800
5	46800	35700	32300	32900	38500	41100	40000	41000	51700	67200	66800	61500
6	46500	35300	32400	32900	38700	40900	39800	41300	52800	67500	66500	61200
7	46100	34900	32600	33000	39000	40600	39600	41600	54000	67800	66300	60900
8	45800	34400	32600	33000	39100	40400	39400	42400	55100	68200	66000	60500
9	45600	33900	32600	33000	39200	40100	39200	43000	55600	68500	65700	60200
10	45400	33500	32600	33000	39400	39900	38900	43200	55700	68700	65600	59900
11	45100	33100	32600	33200	39500	39600	38700	43300	55600	68900	65600	59500
12	44700	32700	32600	33400	39600	39200	38500	43300	55700	69000	65500	59200
13	44400	32400	32700	33500	39700	38900	38400	43300	55900	69100	65500	58800
14	44100	32300	32600	33600	39900	38600	38100	43200	56000	69200	65500	58500
15	43800	32100	32700	34000	40000	38300	37800	43000	55900	69200	65500	58200
16	43500	32000	32700	34400	40100	38100	37300	42900	55800	69200	65500	57800
17	43100	31900	32700	35200	40200	37800	36900	42800	56200	69300	65400	57500
18	42800	31800	32700	35700	40300	37600	36500	42600	57200	69300	65400	57100
19	42500	31900	32700	36000	40400	37400	36200	42700	58400	69300	65400	56800
20	42200	31900	32700	36100	40500	37200	35900	43000	59400	69200	65400	56500
21	41800	31900	32700	36300	40700	37100	35900	43200	60300	69200	65400	56100
22	41500	31900	32700	36400	40800	37500	36000	43400	61200	69200	65300	55800
23	41200	32000	32700	36500	40900	38300	36300	43700	62000	69100	65300	55400
24	40800	32000	32700	36600	41000	40000	36300	44100	62700	69000	65300	55100
25	40500	32100	32700	36600	41000	40600	36300	45200	63300	68900	65100	54700
26	40200	32300	32700	36700	41100	40900	36300	45700	63800	68800	64900	54400
27	39800	32300	32700	36800	41100	41000	36400	46000	64300	68800	64600	54100
28	39400	32300	32700	36900	41200	41100	36600	46300	64700	68700	64200	53700
29	38900	32300	32700	37000	---	41000	37100	46500	65100	68500	63900	53400
30	38400	32300	32700	37100	---	40900	37700	46700	65600	68300	63500	53100
31	38000	---	32700	37200	---	40800	---	47200	---	68000	63200	---
MAX	48100	37500	32700	37200	41200	41400	40700	47200	65600	69300	67800	62800
MIN	38000	31800	32300	32700	37300	37100	35900	38300	48100	66000	63200	53100
a	6003.19	5996.25	5996.67	6002.23	6006.88	6006.53	6002.82	6013.62	6032.52	6034.92	6030.19	6019.87
b	-10600	-5700	+400	+4500	+4000	-400	-3100	+9500	+18400	+2400	-4800	-10100

CAL YR 1997 MAX 70300 MIN 31800 b -22200

WTR YR 1998 MAX 69300 MIN 31800 b +4500

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11407815 MIDDLE YUBA RIVER CONTROLLED RELEASE AT JACKSON MEADOWS DAM, NEAR SIERRA CITY, CA

LOCATION.—Lat 39°30'36", long 120°33'15", in NW 1/4 SE 1/4 sec.18, T.19 N., R.13 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, in outlet structure near right bank below Jackson Meadows Dam on Middle Yuba River, 0.7 mi downstream from Pass Creek, and 5.7 mi southeast of Sierra City.

DRAINAGE AREA.—37.6 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1994 to current year.

GAGE.—Ultrasonic meter measures flow in two outlet pipes. Elevation of gage is 5,910 ft above sea level, from topographic map.

REMARKS.—Flow regulated by Jackson Meadows Reservoir (station 11407800). Flow over the spillway bypasses this station. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 415 ft<sup>3</sup>/s, May 23, 28, 1996; minimum daily, 7.9 ft<sup>3</sup>/s, several days November 1994.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	178	242	9.2	e9.2	e9.2	e9.2	e227	277	186	131	125	e168
2	178	241	e9.2	e9.2	e9.2	e9.2	e225	278	186	131	125	e168
3	177	240	e9.2	e9.2	e9.2	e9.2	e224	279	187	131	124	e168
4	177	239	e9.2	e9.2	e9.2	e70	e221	280	188	131	124	e168
5	176	240	e9.2	e9.2	e9.2	e166	e220	281	189	131	124	e170
6	176	242	e9.2	e9.2	e9.2	e166	e219	281	189	131	124	e170
7	175	241	e9.2	e9.2	e9.2	e165	e217	281	190	100	124	e168
8	175	240	e9.2	e9.2	e9.2	e165	e216	282	191	74	124	154
9	175	239	e9.2	e9.2	e9.2	e164	e216	284	192	74	123	152
10	174	239	e9.2	e9.2	e9.2	e163	e216	284	192	74	76	151
11	174	238	e9.2	e9.2	e9.2	e185	e215	284	191	74	11	151
12	173	189	e9.2	e9.2	e9.2	e212	e213	284	192	74	11	151
13	173	125	e9.2	e9.2	e9.2	e212	e214	284	191	74	11	150
14	172	103	e9.2	e9.2	e9.2	e213	e211	284	192	74	11	150
15	172	80	e9.2	e9.2	e9.2	e214	e243	284	192	74	11	148
16	171	79	e9.2	e9.2	e9.2	e216	e275	283	191	74	11	e148
17	171	80	e9.2	e9.2	e9.2	e217	e275	283	191	74	11	e147
18	171	42	e9.2	e9.2	e9.2	e218	e275	282	192	74	e11	e147
19	170	9.1	e9.2	e9.2	e9.2	e219	e275	231	193	74	e11	e147
20	169	9.1	e9.2	e9.2	e9.2	e220	e275	183	193	74	e11	e146
21	168	9.1	e9.2	e9.2	e9.2	e221	e275	183	194	74	e11	e146
22	167	9.1	e9.2	e9.2	e9.2	e222	e275	183	195	74	e11	e152
23	167	9.1	e9.2	e9.2	e9.2	e222	e275	183	195	73	e11	e161
24	167	9.1	e9.2	e9.2	e9.2	e223	e276	183	172	73	e11	e187
25	166	9.1	e9.2	e9.2	e9.2	e224	e276	184	199	73	e58	e186
26	165	9.2	e9.2	e9.2	e9.2	e225	e276	185	199	73	e136	e186
27	205	9.2	e9.2	e9.2	e9.2	e226	e276	185	199	73	e146	e186
28	245	9.2	e9.2	e9.2	e9.2	e227	e276	185	199	73	e170	e184
29	244	9.2	e9.2	e9.2	---	e228	e276	185	200	98	e170	e184
30	243	9.2	e9.2	e9.2	---	e229	276	185	163	125	e168	184
31	242	---	e9.2	e9.2	---	e229	---	185	---	125	e167	---
TOTAL	5656	3448.7	285.2	285.2	257.6	5688.6	7429	7515	5723	2782	2362	4878
MEAN	182	115	9.20	9.20	9.20	184	248	242	191	89.7	76.2	163
MAX	245	242	9.2	9.2	9.2	229	276	284	200	131	170	187
MIN	165	9.1	9.2	9.2	9.2	9.2	211	183	163	73	11	146
AC-FT	11220	6840	566	566	511	11280	14740	14910	11350	5520	4690	9680

CAL YR 1997 TOTAL 42479.9 MEAN 116 MAX 262 MIN 9.1 AC-FT 84260  
WTR YR 1998 TOTAL 46310.3 MEAN 127 MAX 284 MIN 9.1 AC-FT 91860

e Estimated.

## 11408000 MILTON-BOWMAN TUNNEL OUTLET NEAR GRANITEVILLE, CA

LOCATION.—Lat 39°27'37", long 120°36'37", in NW 1/4 NE 1/4 sec.3, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on right bank 100 ft downstream from tunnel outlet near upper end of Bowman Lake, and 6.9 mi east of Graniteville.

PERIOD OF RECORD.—May 1928 to September 1930, February 1931 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to October 1962, published as "Milton-Bowman tunnel at outlet."

GAGE.—Water-stage recorder and Parshall flume. Datum of gage is 5,592.51 ft above sea level. Prior to Sept. 22, 1964, at datum 0.56 ft higher.

REMARKS.—Tunnel diverts from Middle Yuba River at Milton Reservoir, in sec.12, T.19 N., R.12 E., and discharges into Bowman Lake. Nearly the entire flow of Middle Yuba River is diverted during low and medium flows. Middle Yuba River is regulated by Jackson Meadows Reservoir (station 11407800) since November 1964. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 492 ft<sup>3</sup>/s, Feb. 11, 1941; minimum daily, 0.4 ft<sup>3</sup>/s, Oct. 7, 1944.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	231	9.7	9.0	16	12	227	340	249	32	135	168
2	164	230	9.4	9.6	17	12	225	351	254	30	134	167
3	162	229	9.4	10	25	12	224	351	246	29	134	167
4	161	228	9.2	9.9	21	67	221	343	243	29	134	168
5	161	229	9.6	9.9	20	165	220	338	245	27	133	169
6	161	232	11	9.7	20	165	219	338	247	25	133	170
7	160	232	11	9.8	20	164	217	339	251	24	133	168
8	161	230	11	9.6	19	164	216	354	271	23	133	168
9	171	229	11	9.4	19	163	216	353	380	22	133	168
10	164	229	11	9.8	18	162	216	342	391	21	109	167
11	162	229	11	11	18	184	215	333	391	20	15	166
12	160	202	11	17	17	212	213	330	390	19	11	166
13	160	123	11	15	17	212	214	326	393	19	10	166
14	159	110	11	14	17	213	211	323	394	19	10	165
15	159	79	10	32	16	214	125	321	392	18	10	165
16	158	78	10	33	15	216	34	323	391	17	10	165
17	158	79	11	41	15	217	34	321	365	17	9.9	164
18	158	51	11	30	14	218	34	319	243	17	9.9	164
19	157	17	10	25	14	219	34	298	238	16	10	164
20	157	16	10	23	13	220	36	223	236	95	10	164
21	157	12	10	22	13	221	38	222	236	93	9.9	164
22	156	9.4	9.8	21	13	222	172	219	234	81	9.8	168
23	156	13	9.6	20	13	222	331	221	232	81	9.8	181
24	155	11	9.3	20	13	223	318	224	206	81	9.8	182
25	155	13	9.1	19	12	224	314	266	232	80	55	182
26	155	15	9.1	18	12	225	312	242	231	80	135	182
27	179	15	9.1	17	12	226	317	230	229	80	145	185
28	233	14	9.1	17	12	227	324	230	228	79	169	181
29	233	13	9.4	17	---	228	330	230	228	95	169	180
30	232	10	9.3	17	---	229	335	228	125	135	168	180
31	231	---	9.0	16	---	229	---	236	---	135	167	---
TOTAL	5256	3408.4	311.1	541.7	451	5687	6142	9114	8391	1539	2464.1	5114
MEAN	170	114	10.0	17.5	16.1	183	205	294	280	49.6	79.5	170
MAX	233	232	11	41	25	229	335	354	394	135	169	185
MIN	155	9.4	9.0	9.0	12	12	34	219	125	16	9.8	164
AC-FT	10430	6760	617	1070	895	11280	12180	18080	16640	3050	4890	10140

## 11408000 MILTON-BOWMAN TUNNEL OUTLET NEAR GRANITEVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1964, BY WATER YEAR (WY)

MEAN	8.00	14.6	31.4	35.3	51.6	72.9	176	242	142	28.6	6.77	3.88
MAX	101	65.4	118	124	143	213	294	414	272	90.9	26.8	10.1
(WY)	1963	1951	1956	1942	1963	1940	1936	1937	1933	1938	1952	1952
MIN	.50	.50	.70	1.00	4.28	9.19	19.7	45.6	24.8	4.21	2.06	1.00
(WY)	1931	1931	1931	1931	1931	1933	1938	1936	1934	1939	1964	1931

## SUMMARY STATISTICS

## WATER YEARS 1928 - 1964

ANNUAL MEAN	67.9
HIGHEST ANNUAL MEAN	97.2
LOWEST ANNUAL MEAN	33.5
HIGHEST DAILY MEAN	492
LOWEST DAILY MEAN	.40
ANNUAL SEVEN-DAY MINIMUM	.50
ANNUAL RUNOFF (AC-FT)	49180
10 PERCENT EXCEEDS	220
50 PERCENT EXCEEDS	20
90 PERCENT EXCEEDS	3.0

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

MEAN	150	128	60.4	38.1	37.0	53.8	52.0	92.6	79.8	63.7	88.0	155
MAX	310	368	357	211	197	265	205	333	280	174	253	300
(WY)	1981	1973	1973	1985	1985	1986	1998	1969	1998	1976	1968	1974
MIN	1.52	1.34	1.25	1.17	1.20	1.68	5.38	7.69	5.23	3.95	2.20	1.72
(WY)	1977	1977	1977	1977	1977	1977	1977	1986	1976	1977	1993	1981

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1966 - 1998

ANNUAL TOTAL	42208.5	48419.3	
ANNUAL MEAN	116	133	83.4
HIGHEST ANNUAL MEAN			133
LOWEST ANNUAL MEAN			14.5
HIGHEST DAILY MEAN	384	Jan 2	394
LOWEST DAILY MEAN	9.0	Dec 31	9.0
ANNUAL SEVEN-DAY MINIMUM	9.2	Dec 25	9.1
ANNUAL RUNOFF (AC-FT)	83720		60420
10 PERCENT EXCEEDS	231		282
50 PERCENT EXCEEDS	89		25
90 PERCENT EXCEEDS	13		5.2

## 11408550 MIDDLE YUBA RIVER BELOW MILTON DAM, NEAR SIERRA CITY, CA

LOCATION.—Lat 39°31'19", long 120°34'57", in SW 1/4 SW 1/4 sec.12, T.19 N., R.12 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 350 ft downstream from Milton Dam, and 4.1 mi southeast of Sierra City.

DRAINAGE AREA.—39.9 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year. Unpublished records for water years 1965–87 available in files of the U.S. Geological Survey.

REVISED RECORDS.—WDR CA-88-4: Drainage area.

GAGE.—Water-stage recorder, sharp-crested weir, and crest-stage gage. Elevation of gage is 5,690 ft above sea level, from topographic map. Prior to October 1987, nonrecording gage 450 ft downstream at different datum.

REMARKS.—Middle Yuba River is regulated by Jackson Meadows Reservoir (station 11407800) since November 1964 and Milton Reservoir. Tunnel diverts from Middle Yuba River at Milton Dam, in sec.12, T.19 N., R.12 E., and discharges into Bowman Lake via Milton–Bowman Tunnel (station 11408000). Practically the entire flow of Middle Yuba River is diverted during low and medium flows. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 8,610 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 17.1 ft, from flood marks; minimum daily, 0.77 ft<sup>3</sup>/s, Nov. 3, 1990.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	4.0	3.5	3.5	4.6	4.5	4.1	4.4	4.0	107	4.2	3.7
2	3.9	4.0	3.5	3.6	4.7	4.5	4.1	4.5	4.0	107	4.2	3.8
3	3.9	4.0	3.5	3.6	16	4.4	4.1	4.5	3.9	109	4.2	3.8
4	3.8	4.0	3.5	3.7	9.7	4.2	4.1	4.4	3.9	113	4.3	3.8
5	3.9	3.9	3.6	3.7	8.2	4.0	4.1	4.5	3.9	112	4.3	3.8
6	3.9	3.9	3.6	3.6	9.3	4.0	4.1	4.4	3.8	114	3.8	3.8
7	3.9	3.9	3.7	3.6	8.1	3.9	4.1	4.5	3.9	92	3.8	3.8
8	3.9	3.9	3.7	3.6	6.5	4.0	4.1	4.7	3.9	61	3.9	3.8
9	4.0	3.9	3.7	3.6	4.8	4.1	4.1	4.6	149	61	3.9	3.8
10	3.9	4.0	3.7	3.6	4.7	4.1	4.1	4.5	325	61	3.8	3.8
11	3.9	3.9	3.7	3.8	4.6	4.1	4.1	4.5	320	61	3.7	3.8
12	3.9	3.9	3.7	4.1	4.6	4.2	4.1	4.5	310	61	3.7	3.8
13	3.9	3.8	3.6	4.2	4.6	4.2	4.1	4.5	363	60	3.7	3.7
14	3.9	3.8	3.6	4.3	4.7	4.2	4.1	4.5	425	60	3.6	3.7
15	3.9	3.7	3.6	12	4.6	4.2	73	4.6	439	60	3.6	3.7
16	3.9	3.7	3.6	28	4.6	4.2	247	4.7	421	61	3.5	3.8
17	3.9	3.8	3.6	49	4.6	4.2	247	4.6	183	61	3.5	3.7
18	3.9	3.7	3.6	24	4.6	4.2	251	4.7	4.2	61	3.5	3.7
19	3.9	3.8	3.6	14	4.6	4.2	252	4.5	4.1	61	3.5	3.7
20	3.9	3.7	3.6	8.5	4.6	4.2	258	4.1	4.1	39	3.5	3.7
21	3.9	3.6	3.6	6.8	4.6	4.2	265	4.1	4.0	4.1	3.5	3.7
22	3.9	3.5	3.5	5.1	4.6	4.4	154	4.1	4.0	4.0	3.5	3.7
23	3.9	3.6	3.5	4.7	4.6	4.5	5.3	4.0	4.0	3.9	3.4	3.8
24	3.8	3.6	3.5	4.6	4.6	4.8	5.1	4.0	3.9	3.9	3.4	3.7
25	3.8	3.6	3.5	4.6	4.5	4.4	4.9	4.1	4.0	3.9	3.5	3.7
26	3.8	3.8	3.5	4.6	4.5	4.3	4.7	4.1	4.0	3.9	3.7	3.7
27	3.9	3.7	3.5	4.6	4.5	4.2	4.6	4.1	4.0	4.0	3.7	3.8
28	4.0	3.6	3.5	4.6	4.5	4.2	4.4	4.1	4.1	4.0	3.8	3.7
29	4.0	3.6	3.5	4.6	---	4.2	4.3	4.0	4.1	4.0	3.8	3.7
30	4.0	3.5	3.5	4.6	---	4.2	4.3	3.9	21	4.1	3.8	3.7
31	4.0	---	3.5	4.6	---	4.2	---	3.9	---	4.1	3.7	---
TOTAL	120.9	113.4	110.8	241.4	159.1	131.2	1842.0	134.6	3035.8	1565.9	116.0	112.4
MEAN	3.90	3.78	3.57	7.79	5.68	4.23	61.4	4.34	101	50.5	3.74	3.75
MAX	4.0	4.0	3.7	49	16	4.8	265	4.7	439	114	4.3	3.8
MIN	3.8	3.5	3.5	3.5	4.5	3.9	4.1	3.9	3.8	3.9	3.4	3.7
AC-FT	240	225	220	479	316	260	3650	267	6020	3110	230	223

## 11408550 MIDDLE YUBA RIVER BELOW MILTON DAM, NEAR SIERRA CITY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1998, BY WATER YEAR (WY)

MEAN	4.15	3.79	3.59	60.0	28.9	11.2	45.5	127	113	23.2	3.97	3.94
MAX	7.02	4.94	3.98	620	195	61.3	213	723	631	119	5.36	4.68
(WY)	1994	1994	1997	1997	1993	1995	1996	1995	1995	1995	1993	1993
MIN	3.55	3.21	3.26	3.24	3.19	3.45	3.09	3.58	3.38	3.37	3.39	3.42
(WY)	1989	1996	1989	1996	1989	1990	1994	1990	1990	1988	1995	1990

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1988 - 1998	
ANNUAL TOTAL	23991.2		7683.5			
ANNUAL MEAN	65.7		21.1		35.7	
HIGHEST ANNUAL MEAN					146	
LOWEST ANNUAL MEAN					3.53	
HIGHEST DAILY MEAN	6860	Jan 2	439	Jun 15	6860	Jan 2 1997
LOWEST DAILY MEAN	3.5	Nov 22	3.4	Aug 23	.77	Nov 3 1990
ANNUAL SEVEN-DAY MINIMUM	3.5	Dec 22	3.5	Aug 18	1.8	Apr 9 1994
INSTANTANEOUS PEAK FLOW			497	Jun 15	8610	Jan 2 1997
INSTANTANEOUS PEAK STAGE			7.70	Jun 15	17.10	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	47590		15240		25840	
10 PERCENT EXCEEDS	94		53		31	
50 PERCENT EXCEEDS	4.0		4.0		3.9	
90 PERCENT EXCEEDS	3.7		3.6		3.3	



## 11408870 LOHMAN RIDGE TUNNEL AT INTAKE, NEAR CAMPTONVILLE, CA

LOCATION.—Lat 39°24'25", long 120°59'43", in SW 1/4 NE 1/4 sec.20, T.18 N., R.8 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, at tunnel intake at Our House Dam and 4.0 mi southeast of Camptonville.

PERIOD OF RECORD.—October 1988 to current year. Records of monthly diversion published with Middle Yuba River below Our House Dam, near Camptonville (station 11408880), for water years 1969–88.

GAGE.—Water-stage recorder. Datum of gage is 2,014.77 ft above sea level.

REMARKS.—Records good except for period of estimated daily discharge, which are fair. Tunnel diverts water from Middle Yuba River to New Bullards Bar Reservoir (station 11413515) for power development. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 839 ft<sup>3</sup>/s, Mar. 25, 1989; no flow for many days in most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	49	39	427	397	581	793	502	395	59	27
2	.00	.00	30	83	681	392	549	807	343	411	55	26
3	.00	.00	35	304	780	437	576	802	342	394	52	25
4	.00	.00	32	449	696	421	574	794	343	377	49	25
5	.00	.00	35	227	697	402	577	788	348	362	50	25
6	.00	.00	59	160	743	389	603	792	348	351	52	31
7	.00	.00	e480	150	767	352	574	786	348	338	50	31
8	.00	.00	e430	156	753	336	545	795	347	274	48	28
9	.00	.00	e200	151	681	320	532	796	350	245	47	35
10	.00	.00	119	259	648	314	528	782	355	228	46	29
11	.37	.00	96	733	658	326	516	703	355	209	45	26
12	7.8	.00	80	774	663	363	500	633	352	198	43	24
13	6.8	.00	71	699	746	389	517	616	352	195	42	23
14	4.0	10	74	681	789	410	499	607	354	187	41	21
15	.83	17	81	725	791	455	455	561	354	179	39	18
16	.07	27	68	676	732	539	591	566	356	176	37	14
17	.00	49	83	689	620	577	634	568	352	175	33	14
18	.00	31	110	615	539	563	652	538	345	172	40	14
19	.00	88	89	673	556	552	690	536	344	165	42	14
20	.00	76	76	649	555	576	751	550	342	161	41	15
21	.00	35	70	586	636	606	783	549	343	124	40	15
22	.00	21	60	535	748	766	792	506	340	95	39	16
23	.00	44	55	444	696	814	787	515	336	93	37	16
24	.00	68	50	374	685	722	789	492	396	87	36	18
25	.00	64	46	329	552	684	782	732	443	84	34	22
26	.00	264	42	333	484	766	745	775	431	80	33	26
27	.00	184	40	341	441	752	744	706	394	77	33	41
28	.00	110	38	328	411	734	776	727	369	74	32	37
29	.00	76	39	468	---	711	785	785	360	71	30	27
30	.00	65	39	445	---	674	790	746	345	68	29	24
31	.00	---	39	395	---	637	---	707	---	61	28	---
TOTAL	19.87	1229.00	2815	13470	18175	16376	19217	21053	10889	6106	1282	707
MEAN	.64	41.0	90.8	435	649	528	641	679	363	197	41.4	23.6
MAX	7.8	264	480	774	791	814	792	807	502	411	59	41
MIN	.00	.00	30	39	411	314	455	492	336	61	28	14
AC-FT	39	2440	5580	26720	36050	32480	38120	41760	21600	12110	2540	1400

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1998, BY WATER YEAR (WY)

	MEAN	10.6	34.7	121	206	292	383	449	311	198	71.0	12.3	6.35
MAX	51.4	112	486	509	649	644	688	701	503	269	41.4	23.6	
(WY)	1990	1997	1997	1995	1998	1993	1995	1996	1993	1995	1998	1998	
MIN	.000	1.42	1.36	.66	16.6	206	182	38.0	10.6	.86	.000	.000	
(WY)	1989	1991	1991	1997	1991	1997	1994	1995	1992	1994	1992	1992	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1989 - 1998	
ANNUAL TOTAL	24469.91		111338.87			
ANNUAL MEAN	67.0		305			
HIGHEST ANNUAL MEAN					174	
LOWEST ANNUAL MEAN					305	
HIGHEST DAILY MEAN	480		814		73.1	
LOWEST DAILY MEAN	.00		.00		.00	
ANNUAL SEVEN-DAY MINIMUM	.00		.00		.00	
ANNUAL RUNOFF (AC-FT)	48540		220800		125900	
10 PERCENT EXCEEDS	199		743		566	
50 PERCENT EXCEEDS	17		274		50	
90 PERCENT EXCEEDS	.00		.00		.00	

e Estimated.

## 11408880 MIDDLE YUBA RIVER BELOW OUR HOUSE DAM, NEAR CAMPTONVILLE, CA

LOCATION.—Lat 39°24'42", long 120°59'49", in SW 1/4 NW 1/4 sec.20, T.18 N., R.9 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 300 ft downstream from Our House Dam, and 4.0 mi southeast of Camptonville.

DRAINAGE AREA.—145 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1968 to current year.

GAGE.—Water-stage recorder, sharp-crested weir since Oct. 16, 1990, and crest-stage gage. Datum of gage is 1,957.51 ft above sea level. Prior to Nov. 4, 1970, water-stage recorder at datum 10 ft higher. Prior to Oct. 1, 1987, at site 75 ft downstream.

REMARKS.—Records good except for periods of spill, which are considered fair, and estimated daily discharges, which are poor. Natural flow of stream affected by Jackson Meadows Reservoir (station 11407800), Milton Bowman Tunnel (station 11408000), which diverts upstream from station to Bowman Lake (station 11415500), and Lohman Ridge Tunnel (station 11408870), which diverts 300 ft upstream to Oregon Creek and then to New Bullards Bar Reservoir (station 11413515) via Camptonville Tunnel (station 11409350). Other small diversions upstream from station. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 27,500 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 30.7 ft, from floodmark, present datum, from rating curve extended above 8,600 ft<sup>3</sup>/s on basis of theoretical rating of Our House Dam spillway; minimum daily, 2.1 ft<sup>3</sup>/s, Jan. 10, 1982.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	39	36	33	36	32	40	270	291	46	35	34
2	38	37	36	34	263	32	40	483	500	46	35	34
3	39	36	36	39	1910	33	40	427	477	46	35	34
4	35	36	36	42	904	32	40	290	376	46	35	34
5	32	36	35	37	398	32	40	192	382	46	35	34
6	31	35	36	35	624	32	40	244	395	45	35	34
7	34	39	78	35	833	32	41	157	431	45	35	34
8	34	39	42	35	729	32	40	272	391	44	35	34
9	104	37	37	35	302	32	40	285	458	44	35	34
10	70	36	36	37	120	33	40	122	686	44	35	34
11	74	43	35	592	97	33	40	62	610	44	35	34
12	44	45	35	1690	37	33	40	62	567	44	35	34
13	37	36	35	687	41	33	40	63	658	43	35	34
14	36	43	35	102	327	33	43	63	751	42	35	34
15	39	43	36	1660	222	34	55	62	777	38	35	34
16	39	43	35	1480	38	35	60	62	684	36	35	34
17	41	44	36	2200	32	35	61	62	523	35	35	33
18	38	43	36	1440	33	35	61	62	245	36	34	33
19	37	44	36	897	34	35	62	62	248	38	33	33
20	36	44	36	358	34	35	66	62	221	38	33	34
21	37	42	35	139	52	36	161	62	187	38	33	34
22	37	40	35	57	58	472	297	62	155	37	33	34
23	37	37	35	49	46	824	230	63	113	37	33	34
24	37	35	35	48	37	e2320	238	63	73	37	33	34
25	36	35	35	47	34	e1270	154	238	55	36	33	34
26	35	43	34	45	33	556	70	113	49	36	33	34
27	35	41	34	44	33	426	69	70	46	36	33	34
28	36	38	34	43	32	272	107	127	46	36	33	34
29	30	37	34	42	---	122	168	169	46	36	34	34
30	35	36	33	40	---	49	221	77	46	36	34	34
31	37	---	33	39	---	41	---	70	---	35	34	---
TOTAL	1259	1182	1140	12061	7339	7051	2644	4478	10487	1246	1061	1017
MEAN	40.6	39.4	36.8	389	262	227	88.1	144	350	40.2	34.2	33.9
MAX	104	45	78	2200	1910	2320	297	483	777	46	35	34
MIN	29	35	33	33	32	32	40	62	46	35	33	33
AC-FT	2500	2340	2260	23920	14560	13990	5240	8880	20800	2470	2100	2020

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	30.9	77.7	170	387	235	250	165	227	123	33.4	29.9	29.7																		
MAX	52.7	462	1040	2973	1521	1228	1368	1697	994	49.6	42.1	39.6																		
(WY)	1983	1982	1982	1997	1986	1995	1982	1995	1995	1983	1984	1986																		
MIN	16.6	20.4	20.7	7.10	28.0	31.3	33.9	32.5	28.8	17.5	13.0	14.3																		
(WY)	1978	1978	1987	1987	1977	1976	1970	1970	1977	1977	1977	1977																		

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1969 - 1998
ANNUAL TOTAL	121502	50965	
ANNUAL MEAN	333	140	146
HIGHEST ANNUAL MEAN			481
LOWEST ANNUAL MEAN			26.3
HIGHEST DAILY MEAN	21000	Jan 2	21000
LOWEST DAILY MEAN	28	Sep 29	2.1
ANNUAL SEVEN-DAY MINIMUM	29	Sep 25	3.2
INSTANTANEOUS PEAK FLOW			27500
INSTANTANEOUS PEAK STAGE		unknown	106100
10 PERCENT EXCEEDS	641		182
50 PERCENT EXCEEDS	41		35
90 PERCENT EXCEEDS	34		26

e Estimated.

## 11409300 OREGON CREEK AT CAMPTONVILLE, CA

LOCATION.—Lat 39°26'46", long 121°02'43", in SE 1/4 NE 1/4 sec.11, T.18 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 25 ft downstream from county bridge, 0.5 mi southeast of Camptonville, and 5.5 mi upstream from mouth.

DRAINAGE AREA.—23.0 mi<sup>2</sup>.

PERIOD OF RECORD.—August 1967 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 2,230 ft above sea level, from topographic map.

REMARKS.—Records good. No regulation or diversion upstream from station. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 5,170 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 11.31 ft, from rating curve extended above 4,000 ft<sup>3</sup>/s, maximum gage height, 11.56 ft, Feb. 17, 1986; minimum daily, 0.53 ft<sup>3</sup>/s, Aug. 14–16, 1977, Sept. 6, 1988.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	1700	1,260	7.76	Mar. 24	0545	827	7.04
Feb. 3	0815	989	7.35				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	2.9	12	9.6	155	135	183	165	167	30	9.7	3.9
2	3.2	2.8	9.9	21	311	134	169	191	159	29	9.1	3.9
3	3.2	2.8	8.7	133	820	146	179	199	150	28	8.6	3.8
4	2.5	2.7	8.0	153	534	145	182	193	138	27	8.2	3.8
5	2.3	2.7	8.4	80	414	138	188	184	127	26	7.8	4.0
6	2.3	2.9	13	57	496	132	199	195	128	24	7.5	4.5
7	2.6	3.4	153	51	539	121	188	185	125	24	7.2	4.6
8	3.2	3.1	97	50	491	116	173	179	119	23	7.0	4.2
9	22	3.1	47	49	336	109	173	182	115	21	6.9	4.5
10	7.7	3.2	30	139	273	106	175	169	113	21	6.8	4.6
11	8.7	5.0	24	658	311	106	170	156	118	20	6.6	4.2
12	5.3	4.6	21	1010	279	113	163	150	121	20	6.4	4.0
13	4.2	4.2	19	611	312	118	162	153	117	19	6.2	3.8
14	3.7	7.0	19	355	439	127	150	154	110	18	6.0	3.7
15	3.4	8.0	21	924	387	135	141	144	102	18	5.8	3.6
16	3.2	9.5	19	712	290	159	143	141	95	17	5.6	3.6
17	3.0	15	22	852	240	174	147	157	87	16	5.6	3.5
18	3.0	12	24	657	195	171	149	156	80	16	5.6	3.5
19	2.9	22	22	547	212	162	152	144	74	15	5.6	3.5
20	2.9	20	20	354	206	158	156	136	68	14	5.6	3.6
21	2.9	11	19	260	229	162	169	131	62	14	5.5	3.5
22	2.9	7.5	18	200	273	256	186	123	57	13	5.2	3.5
23	2.9	15	16	169	250	355	209	117	53	13	5.1	3.7
24	2.8	16	15	148	236	676	229	111	48	13	5.0	4.0
25	2.7	12	14	132	191	487	219	168	47	12	4.9	4.2
26	2.7	80	13	122	164	354	190	168	44	12	4.8	4.7
27	2.8	54	12	119	148	348	174	164	41	11	4.8	7.2
28	2.8	24	11	113	139	306	169	197	37	10	4.7	6.4
29	2.9	18	11	175	---	256	166	235	35	10	4.6	5.0
30	2.9	15	10	170	---	219	164	216	32	9.9	4.3	4.7
31	2.9	---	10	149	---	200	---	186	---	9.9	4.2	---
TOTAL	122.2	389.4	747.0	9179.6	8870	6324	5217	5149	2769	553.8	190.9	125.7
MEAN	3.94	13.0	24.1	296	317	204	174	166	92.3	17.9	6.16	4.19
MAX	22	80	153	1010	820	676	229	235	167	30	9.7	7.2
MIN	1.7	2.7	8.0	9.6	139	106	141	111	32	9.9	4.2	3.5
AC-FT	242	772	1480	18210	17590	12540	10350	10210	5490	1100	379	249

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	MEAN	5.27	33.3	85.3	166	159	171	113	64.3	20.0	6.05	2.89	2.81
MAX	16.9	214	407	555	664	453	391	198	92.3	17.9	6.16	9.12	
(WY)	1982	1974	1984	1997	1986	1989	1982	1995	1998	1998	1998	1983	
MIN	.84	3.03	2.30	3.88	6.28	10.8	7.64	9.45	3.61	1.11	.68	.67	
(WY)	1989	1991	1977	1991	1991	1977	1977	1987	1987	1977	1977	1988	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1968 - 1998			
ANNUAL TOTAL	24082.6				39637.6				68.6			
ANNUAL MEAN	66.0				109				146			
HIGHEST ANNUAL MEAN									5.38			
LOWEST ANNUAL MEAN									1977			
HIGHEST DAILY MEAN	3730				Jan 1				3730			
LOWEST DAILY MEAN	1.7				Sep 10				.53			
ANNUAL SEVEN-DAY MINIMUM	1.8				Sep 8				.54			
INSTANTANEOUS PEAK FLOW									Aug 11 1977			
INSTANTANEOUS PEAK STAGE									Jan 1 1997			
ANNUAL RUNOFF (AC-FT)	47770				78620				11.56			
10 PERCENT EXCEEDS	94				244				175			
50 PERCENT EXCEEDS	11				35				14			
90 PERCENT EXCEEDS	2.1				3.5				2.1			

## 11409350 CAMPTONVILLE TUNNEL AT INTAKE, NEAR CAMPTONVILLE, CA

LOCATION.—Lat 39°26'25", long 121°03'30", in NW 1/4 SW 1/4 sec.11, T.18 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Tahoe National Forest, at tunnel intake at Log Cabin Dam 1.0 mi southwest of town of Camptonville.

PERIOD OF RECORD.—October 1988 to current year. Records of monthly diversion published with Oregon Creek below Log Cabin Dam near Camptonville (station 11409400) for water years 1969–88.

GAGE.—Water-stage recorder. Datum of gage is 1,952.00 ft above sea level (from contractor's drawings).

REMARKS.—Records fair. Water is diverted to Oregon Creek from the Middle Yuba River through Lohman Ridge Tunnel (station 11408870) 1,000 ft upstream. Camptonville Tunnel diverts water from Oregon Creek to New Bullards Bar Reservoir (station 11413515) for power development. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 1,090 ft<sup>3</sup>/s, Mar. 25, 1989, and Feb. 3, 1998; no flow for many days each year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	55	36	586	557	758	843	391	518	71	21
2	.00	.00	44	87	867	550	715	867	52	530	66	20
3	.00	.00	36	450	1090	e610	750	871	62	509	62	19
4	.00	.00	31	617	1050	582	757	862	65	490	58	19
5	.00	.00	32	341	966	558	764	854	64	471	54	19
6	.00	.00	61	222	1030	544	789	868	63	454	52	23
7	.00	.00	516	199	1060	497	761	855	74	436	49	24
8	.00	.00	464	207	1040	475	724	853	81	369	46	21
9	19	.00	221	199	906	454	709	855	97	338	44	28
10	.97	.00	144	384	844	443	705	840	111	316	43	24
11	1.9	.00	112	946	875	453	692	800	126	296	41	21
12	3.4	.00	93	849	856	497	673	763	150	275	39	20
13	3.4	.00	81	898	933	523	688	754	173	256	37	19
14	.58	6.9	81	892	1020	547	667	751	186	239	36	18
15	.02	15	95	964	1040	601	627	706	181	225	35	17
16	.00	29	77	901	913	689	726	706	158	214	32	16
17	.00	53	93	988	815	735	768	727	148	204	31	14
18	.00	38	126	983	732	e718	780	697	152	194	31	13
19	.00	98	101	979	749	704	796	683	166	184	33	13
20	.00	110	87	882	753	725	824	687	179	177	32	13
21	.00	39	79	786	816	747	845	682	174	140	31	13
22	.00	20	67	718	933	892	859	640	158	105	30	13
23	.00	46	60	647	871	974	872	641	137	104	28	13
24	.00	79	55	586	859	1060	883	617	382	99	27	15
25	.00	68	48	532	747	1020	873	813	572	94	26	18
26	.00	460	43	495	670	984	837	839	569	90	25	22
27	.00	296	39	483	614	963	829	808	e520	85	24	40
28	.00	133	37	467	574	919	840	845	e510	81	24	36
29	.00	89	37	635	---	869	840	904	e500	77	23	22
30	.00	71	38	622	---	829	841	863	e490	74	22	20
31	.00	---	37	555	---	802	---	831	---	73	21	---
TOTAL	29.27	1650.90	3090	18550	24209	21521	23192	24325	6691	7717	1173	594
MEAN	.94	55.0	99.7	598	865	694	773	785	223	249	37.8	19.8
MAX	19	460	516	988	1090	1060	883	904	572	530	71	40
MIN	.00	.00	31	36	574	443	627	617	52	73	21	13
AC-FT	58	3270	6130	36790	48020	42690	46000	48250	13270	15310	2330	1180

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1998, BY WATER YEAR (WY)

	10.4	40.6	143	289	391	541	540	365	214	81.3	9.78	4.08
MEAN	54.9	125	628	695	865	793	867	820	542	347	37.8	19.8
MAX	(WY) 1990	1997	1997	1995	1998	1993	1995	1996	1993	1995	1998	1998
MIN	.000	1.28	.83	1.16	16.7	308	173	53.2	7.22	.11	.000	.000
(WY)	1989	1991	1991	1991	1991	1994	1994	1992	1992	1994	1992	1991

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1989 - 1998	
ANNUAL TOTAL	41269.82		132742.17			
ANNUAL MEAN	113		364		218	
HIGHEST ANNUAL MEAN					364	
LOWEST ANNUAL MEAN					75.7	
HIGHEST DAILY MEAN	557 Jan 28		1090 Feb 3		1090 Mar 25 1989	
LOWEST DAILY MEAN	.00 Aug 2		.00 Oct 1		.00 Oct 1 1988	
ANNUAL SEVEN-DAY MINIMUM	.00 Aug 13		.00 Oct 1		.00 Oct 1 1988	
ANNUAL RUNOFF (AC-FT)	81860		263300		158000	
10 PERCENT EXCEEDS	354		868		732	
50 PERCENT EXCEEDS	42		181		60	
90 PERCENT EXCEEDS	.00		.00		.00	

e Estimated.

## 11409400 OREGON CREEK BELOW LOG CABIN DAM, NEAR CAMPTONVILLE, CA

LOCATION.—Lat 39°26'22", long 121°03'29", in SW 1/4 SW 1/4 sec.11, T.18 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 500 ft downstream from Log Cabin Dam, 670 ft upstream from High Point Ravine, and 1.1 mi southwest of Camptonville.

DRAINAGE AREA.—29.1 mi<sup>2</sup>.

PERIOD OF RECORD.—August 1968 to current year.

WATER TEMPERATURE: Water years 1972–79.

REVISED RECORDS.—WDR CA-81-4; 1980(M).

GAGE.—Water-stage recorder, sharp-crested weir since Nov. 13, 1990, and crest-stage gage. Datum of gage is 1,912.73 ft above sea level (levels by Yuba County Water Agency). Prior to July 24, 1973, at site 470 ft downstream at datum 8.40 ft lower. July 24, 1973, to Sept. 30, 1986, at site on right bank. Oct. 1, 1986, to Nov. 13, 1990, a sharp-crested weir was put in at same location and gage house located on left bank. The weir was deemed too shallow so a new sharp-crested weir was put in 70 ft downstream at a datum 7.24 ft lower.

REMARKS.—Records good. Lohman Ridge Tunnel (station 11408870) diverts water into the basin from the Middle Yuba River. Camptonville Tunnel (station 11409350), maximum capacity, about 1,000 ft<sup>3</sup>/s, 520 ft upstream, diverts water out of the basin to New Bullards Bar Reservoir (station 11413515); diversion began October 1968. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 6,400 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 11.24 ft, datum then in use, from rating curve extended above 50 ft<sup>3</sup>/s based on flow-over-dam computation, maximum gage height 15.70 ft (from floodmark), Jan. 1, 1997; minimum daily, 0.34 ft<sup>3</sup>/s, Sept. 18, 1972.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	5.0	13	13	12	10	13	16	318	11	8.9	8.4
2	4.0	5.0	13	13	49	10	13	16	568	11	8.6	8.4
3	5.4	5.0	12	17	462	11	13	16	553	11	8.3	8.5
4	4.5	4.8	12	19	83	10	13	16	540	11	8.4	8.8
5	4.2	4.8	12	16	19	10	13	16	530	11	8.6	9.1
6	4.0	4.8	13	15	92	10	13	16	535	11	8.5	9.3
7	4.5	5.8	18	15	164	9.7	13	16	531	11	8.2	9.4
8	4.9	5.4	18	15	98	9.8	13	16	524	10	8.1	9.2
9	13	5.2	16	15	16	10	13	16	519	9.9	8.2	9.5
10	12	4.9	15	17	15	11	13	16	524	9.9	8.2	9.3
11	12	6.9	14	365	16	11	13	16	535	10	8.3	9.1
12	11	8.0	14	962	14	11	12	15	536	9.9	8.8	9.0
13	11	6.6	14	358	13	12	12	15	536	9.8	8.1	8.9
14	11	9.7	14	40	118	12	13	15	526	9.6	8.3	8.9
15	8.7	12	14	668	49	12	14	15	517	9.9	8.8	9.1
16	5.9	13	13	444	13	13	15	15	509	10	9.1	9.5
17	5.3	13	14	484	12	13	15	15	493	9.8	9.0	10
18	5.0	13	14	198	11	13	15	15	473	9.7	9.0	11
19	4.9	13	14	133	11	13	16	15	468	9.8	9.1	11
20	4.7	14	13	24	11	13	16	14	461	9.8	9.1	11
21	4.7	13	13	23	12	13	16	14	455	9.3	9.0	11
22	4.8	12	13	22	13	15	16	14	448	9.5	9.0	11
23	4.8	13	13	22	12	55	16	14	439	9.5	9.0	11
24	4.7	14	13	22	12	280	16	13	218	9.2	8.9	11
25	4.5	13	13	21	11	35	16	15	14	9.0	9.0	12
26	4.5	17	13	17	11	17	16	15	11	9.0	9.2	12
27	4.8	16	13	14	10	16	16	15	11	8.8	9.2	11
28	4.8	15	13	13	10	15	16	15	10	8.7	9.2	11
29	4.9	14	13	13	---	14	16	16	10	8.5	9.2	11
30	5.0	13	13	13	---	14	16	16	10	8.6	9.1	11
31	5.0	---	13	12	---	14	---	15	---	8.8	9.0	---
TOTAL	191.1	299.9	423	4023	1369	712.5	431	472	11822	304.0	271.4	299.4
MEAN	6.16	10.0	13.6	130	48.9	23.0	14.4	15.2	394	9.81	8.75	9.98
MAX	13	17	18	962	462	280	16	16	568	11	9.2	12
MIN	2.6	4.8	12	12	10	9.7	12	13	10	8.5	8.1	8.4
AC-FT	379	595	839	7980	2720	1410	855	936	23450	603	538	594

## SACRAMENTO RIVER BASIN

## 11409400 OREGON CREEK BELOW LOG CABIN DAM, NEAR CAMPTONVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6.49	16.3	51.0	103	63.0	47.3	29.8	19.6	24.2	8.42	6.58	5.92
MAX	12.8	72.5	273	604	617	189	268	111	394	15.2	13.1	14.3
(WY)	1972	1982	1982	1969	1986	1969	1969	1969	1998	1983	1983	1984
MIN	1.95	2.27	1.97	4.57	3.39	7.14	8.11	8.00	4.89	1.82	1.32	1.37
(WY)	1989	1977	1977	1977	1977	1977	1986	1986	1987	1977	1977	1988

## SUMMARY STATISTICS                      FOR 1997 CALENDAR YEAR                      FOR 1998 WATER YEAR                      WATER YEARS 1968 - 1998

ANNUAL TOTAL	18890.5	20618.3	
ANNUAL MEAN	51.8	56.5	31.7
HIGHEST ANNUAL MEAN			128                      1969
LOWEST ANNUAL MEAN			4.20                      1977
HIGHEST DAILY MEAN	4160      Jan 1	962      Jan 12	5340      Feb 17 1986
LOWEST DAILY MEAN	2.6      Oct 1	2.6      Oct 1	.34      Sep 18 1972
ANNUAL SEVEN-DAY MINIMUM	3.0      Sep 25	4.2      Oct 1	.74      Sep 18 1972
INSTANTANEOUS PEAK FLOW		1220      Jan 12	6400      Feb 17 1986
INSTANTANEOUS PEAK STAGE		10.80      Jan 12	15.70      Jan 1 1997
ANNUAL RUNOFF (AC-FT)	37470	40900	22980
10 PERCENT EXCEEDS	16	106	19
50 PERCENT EXCEEDS	12	13	10
90 PERCENT EXCEEDS	3.8	7.6	3.4

## 11413000 NORTH YUBA RIVER BELOW GOODYEARS BAR, CA

LOCATION.—Lat 39°31'30", long 120°56'13", in NE 1/4 SW 1/4 sec.11, T.19 N., R.9 E., Sierra County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 200 ft downstream from St. Catherine Creek, 3.1 mi southwest of Goodyears Bar, and 6.4 mi southwest of Downieville.

DRAINAGE AREA.—250 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1930 to current year. Prior to October 1949, published as North Fork Yuba River below Goodyears Bar. Monthly and yearly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.—WSP 1041: 1944. WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 2,453 ft above sea level (river-profile survey).

REMARKS.—Records good. Several small diversions upstream from station for irrigation and mining. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 45,500 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 25.65 ft, from rating curve extended above 11,900 ft<sup>3</sup>/s on basis of one float measurement at 17,900 ft<sup>3</sup>/s and slope-area measurements at gage heights 19.15 and 23.8 ft; minimum daily, 60 ft<sup>3</sup>/s, Sept. 7–14, 1977.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 3,200 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	1715	4,880	9.32	May 2	0215	4,080	8.66
Jan. 17	1000	5,940	10.10	May 25	1045	4,350	8.89
Feb. 3	0830	4,920	9.35	June 14	2200	4,470	8.99
Mar. 24	0615	9,140	12.01				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	143	150	245	225	953	779	1470	3180	2680	2010	474	254
2	164	149	229	330	1540	782	1370	3870	3190	1890	450	252
3	161	148	216	691	3950	919	1370	3470	3120	1820	437	247
4	152	148	208	793	2380	865	1320	3100	2810	1770	419	248
5	149	148	215	505	1850	832	1300	2790	3010	1700	405	252
6	147	147	286	395	2120	799	1300	2980	3200	1650	394	317
7	150	156	955	372	2200	737	1230	2740	3360	1700	384	279
8	154	154	666	360	2070	715	1160	3290	3310	1550	372	264
9	352	150	416	366	1580	686	1140	3480	3430	1450	359	280
10	234	149	330	621	1350	677	1140	2730	3500	1370	353	269
11	224	157	293	1640	1300	699	1130	2270	3420	1250	346	259
12	187	158	267	3260	1230	770	1090	2050	3480	1130	339	252
13	176	159	257	2170	1270	820	1110	1890	3710	1070	333	248
14	174	186	264	1360	1560	858	1050	1770	3810	1020	329	243
15	173	180	266	3520	1480	971	999	1670	3750	948	321	240
16	170	190	250	3450	1250	1250	970	1740	3700	899	315	238
17	166	216	362	5210	1130	1370	972	1670	3330	870	309	235
18	160	190	390	3530	1010	1310	1020	1620	3360	829	306	231
19	157	359	315	2600	1040	1270	1110	1720	3490	787	305	230
20	156	281	293	1830	1030	1380	1270	1850	3320	749	302	228
21	154	206	277	1430	1170	1500	1620	1850	3200	715	298	226
22	153	190	250	1210	1260	2960	2060	1680	3080	685	293	226
23	154	389	245	1080	1210	4070	2510	1820	2820	665	289	226
24	153	388	239	981	1140	7050	2310	1810	2650	637	283	230
25	151	481	230	899	992	4150	2080	3430	2720	615	279	240
26	150	920	222	849	894	3040	1900	2720	2530	578	276	254
27	150	525	218	859	830	2580	2020	2220	2290	565	273	350
28	150	352	216	840	789	2230	2300	2250	2260	543	269	290
29	150	292	220	1040	---	1920	2610	2300	2240	517	266	255
30	151	267	224	996	---	1710	2940	2120	2150	501	260	244
31	150	---	224	914	---	1600	---	2240	---	486	257	---
TOTAL	5215	7585	9288	44326	40578	51299	45871	74320	92920	32969	10295	7607
MEAN	168	253	300	1430	1449	1655	1529	2397	3097	1064	332	254
MAX	352	920	955	5210	3950	7050	2940	3870	3810	2010	474	350
MIN	143	147	208	225	789	677	970	1620	2150	486	257	226
AC-FT	10340	15040	18420	87920	80490	101800	90990	147400	184300	65390	20420	15090

## 11413000 NORTH YUBA RIVER BELOW GOODYEARS BAR, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	186	356	655	887	956	1076	1383	1799	1130	374	187	152
MAX	1407	2380	3830	4526	4367	3074	2822	3894	3627	1384	417	256
(WY)	1963	1951	1965	1997	1986	1995	1982	1952	1983	1983	1983	1983
MIN	71.8	107	97.3	117	138	151	241	335	170	82.7	66.8	71.0
(WY)	1978	1978	1977	1991	1977	1977	1977	1977	1992	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1931 - 1998	
ANNUAL TOTAL	341101		422273			
ANNUAL MEAN	935		1157		761	
HIGHEST ANNUAL MEAN					1566	
LOWEST ANNUAL MEAN					141	
HIGHEST DAILY MEAN	29600	Jan 2	7050	Mar 24	29600	Jan 2 1997
LOWEST DAILY MEAN	143	Oct 1	143	Oct 1	60	Sep 7 1977
ANNUAL SEVEN-DAY MINIMUM	149	Oct 31	149	Oct 31	60	Sep 7 1977
INSTANTANEOUS PEAK FLOW			9140	Mar 24	45500	Jan 2 1997
INSTANTANEOUS PEAK STAGE			12.01	Mar 24	25.65	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	676600		837600		551000	
10 PERCENT EXCEEDS	1690		3020		1880	
50 PERCENT EXCEEDS	362		793		332	
90 PERCENT EXCEEDS	156		168		127	



## 11413250 SLATE CREEK TUNNEL NEAR STRAWBERRY VALLEY, CA

LOCATION.—Lat 39°36'57", long 121°03'03", in SE 1/4 SW 1/4 sec.2, T.20 N., R.8 E., Plumas County, Hydrologic Unit 18020125, Plumas National Forest, on right bank 30 ft upstream from diversion dam on Slate Creek, 0.3 mi upstream from Feney Ravine, and 4.5 mi northeast of town of Strawberry Valley.

PERIOD OF RECORD.—February 1962 to current year. Monthly discharge only published as adjustment to Slate Creek below diversion dam near Strawberry Valley (station 11413300) February 1962 to September 1966; records of daily discharge are in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is sea level.

REMARKS.—Tunnel diverts water from Slate Creek to Sly Creek Reservoir (station 11395400) for power development. See schematic diagrams of South Fork Feather River and Yuba River Basins.

COOPERATION.—Records provided by Oroville-Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 863 ft<sup>3</sup>/s, Apr. 6, 1963; no flow for many days in each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	58	42	.00	138	.00	.00	522	250	29	.00
2	.00	.00	47	108	.00	147	.00	.00	523	231	26	.00
3	.00	.00	40	366	.00	220	.00	.00	522	217	24	.00
4	.00	.00	35	302	.00	205	.00	.00	520	207	22	.00
5	.00	.00	36	181	295	186	.00	363	520	193	20	.00
6	.00	.00	82	134	765	168	.00	589	520	187	19	.00
7	.00	.00	512	119	808	147	.00	590	520	181	17	.00
8	.00	.00	330	109	702	138	.00	549	519	166	16	.00
9	51	.00	171	111	491	130	.00	525	520	149	15	.00
10	7.0	.00	120	285	405	132	.00	522	522	137	14	.00
11	11	.00	95	720	157	144	.00	520	522	120	13	.00
12	3.5	.00	79	512	.00	172	.00	518	522	104	13	.00
13	.00	3.8	69	573	.00	200	137	508	522	96	12	.00
14	.00	18	68	714	.00	239	212	486	522	89	12	.00
15	.00	13	64	703	.00	299	192	459	521	80	11	.00
16	.00	24	59	715	.00	546	185	473	521	73	10	.00
17	.00	54	113	727	.00	625	193	450	519	70	9.6	.00
18	.00	30	130	710	.00	519	219	424	519	64	9.3	.00
19	.00	159	99	815	.00	478	271	439	518	58	9.2	.00
20	.00	78	85	764	.00	229	359	473	514	53	8.9	.00
21	.00	38	75	549	.00	.00	484	474	501	48	8.5	.00
22	.00	26	62	424	.00	.00	604	435	472	44	8.0	.00
23	.00	247	59	247	.00	.00	257	464	416	40	7.6	.00
24	.00	157	53	.00	.00	.00	.00	468	385	37	2.7	.00
25	.00	202	46	.00	.00	.00	.00	525	389	34	.00	.00
26	.00	545	44	.00	.00	.00	.00	523	350	30	.00	.00
27	.00	245	41	.00	89	.00	.00	521	305	27	.00	.00
28	.00	126	40	.00	132	.00	.00	523	306	24	.00	.00
29	.00	84	40	.00	---	.00	.00	524	301	25	.00	.00
30	.00	73	40	.00	---	.00	.00	523	279	30	.00	.00
31	.00	---	41	.00	---	.00	---	522	---	30	.00	---
TOTAL	72.50	2122.80	2833	9930.00	3844.00	5062.00	3113.00	13390.00	14112	3094	336.80	0.00
MEAN	2.34	70.8	91.4	320	137	163	104	432	470	99.8	10.9	.000
MAX	51	545	512	815	808	625	604	590	523	250	29	.00
MIN	.00	.00	35	.00	.00	.00	.00	.00	279	24	.00	.00
AC-FT	144	4210	5620	19700	7620	10040	6170	26560	27990	6140	668	.00

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	MEAN	8.56	63.7	90.6	124	144	211	224	205	113	24.2	3.30	1.57
MAX	43.5	321	302	408	595	588	690	638	470	144	24.2	21.1	
(WY)	1983	1984	1967	1995	1996	1993	1993	1973	1998	1983	1983	1986	
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.028	.000	.000	.000	
(WY)	1963	1963	1974	1965	1965	1969	1969	1977	1977	1966	1963	1963	

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1963 - 1998

ANNUAL TOTAL	26740.10	57910.10	
ANNUAL MEAN	73.3	159	101
HIGHEST ANNUAL MEAN			209
LOWEST ANNUAL MEAN			.002
HIGHEST DAILY MEAN	545	Nov 26	863
LOWEST DAILY MEAN	.00	Jan 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00
ANNUAL RUNOFF (AC-FT)	53040	114900	73010
10 PERCENT EXCEEDS	216	521	331
50 PERCENT EXCEEDS	32	40	16
90 PERCENT EXCEEDS	.00	.00	.00

## 11413300 SLATE CREEK BELOW DIVERSION DAM, NEAR STRAWBERRY VALLEY, CA

LOCATION.—Lat 39°36'52", long 121°03'04", in SE 1/4 SW 1/4 sec.2, T.20 N., R.8 E., Plumas County, Hydrologic Unit 18020125, Plumas National Forest, on right bank 300 ft downstream from diversion dam, 0.2 mi upstream from Feney Ravine, and 4.5 mi northeast of town of Strawberry Valley.

DRAINAGE AREA.—49.4 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1960 to current year.

GAGE.—Water-stage recorder and 130° V-notch weir since October 1982. Elevation of gage is 3,570 ft above sea level, from topographic map.

REMARKS.—Slate Creek Tunnel (station 11413250) diverts up to 900 ft<sup>3</sup>/s from Slate Creek Reservoir, capacity, 223 acre-ft, at diversion dam 300 ft upstream, to Sly Creek Reservoir (station 11395400). Diversion began in February 1962. See schematic diagrams of South Fork Feather River and Yuba River Basins.

COOPERATION.—Records provided by Oroville–Wyandotte Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Creek only: Maximum discharge, 17,300 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 17.20 ft, from rating curve extended above 5,500 ft<sup>3</sup>/s on basis of computed flow over dam at gage heights 12.75, 15.90, 16.89 and 17.20 ft; minimum, 0.3 ft<sup>3</sup>/s, Mar. 4, 5, 1962.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	10	13	12	458	23	384	1000	271	22	11	16
2	12	9.8	13	12	790	23	355	1220	308	22	11	16
3	11	9.7	13	13	2010	23	346	1090	247	22	11	15
4	9.1	9.6	13	13	1150	23	317	956	166	22	11	15
5	8.8	9.5	13	12	522	23	301	525	154	22	11	17
6	8.9	9.8	13	12	100	23	287	398	168	22	11	17
7	9.7	12	72	12	49	23	270	323	156	22	11	18
8	11	11	13	12	13	23	256	333	162	22	11	16
9	18	10	12	12	11	23	261	461	199	22	11	17
10	16	10	12	13	11	23	311	260	264	22	11	16
11	16	13	12	283	200	23	304	139	293	22	11	16
12	16	14	12	1380	338	23	278	77	303	22	11	15
13	15	13	12	649	386	23	138	26	293	22	11	15
14	14	13	12	39	474	23	23	23	251	22	11	15
15	13	13	12	1010	410	23	23	23	215	22	11	14
16	12	13	12	962	344	24	23	23	186	22	11	14
17	12	13	12	1850	299	24	23	23	117	22	11	14
18	11	12	12	954	259	24	23	23	102	22	11	14
19	11	12	12	345	258	24	23	23	93	22	11	14
20	11	12	12	36	231	327	23	23	58	22	11	14
21	10	12	12	13	228	637	29	23	33	22	11	14
22	10	12	12	13	220	1410	86	23	25	22	11	14
23	10	12	12	117	213	1600	591	23	22	22	11	14
24	10	12	12	333	200	2440	933	23	22	22	16	14
25	9.9	12	12	291	181	1440	843	493	22	22	19	16
26	9.8	18	12	419	170	1080	737	311	22	22	18	53
27	9.9	12	12	454	77	924	760	170	22	22	18	37
28	10	12	12	438	23	768	839	336	22	22	18	25
29	10	13	12	601	---	611	917	373	22	19	17	19
30	10	13	12	554	---	501	976	282	22	13	17	17
31	10	---	12	458	---	449	---	239	---	11	17	---
TOTAL	353.4	357.4	439	11322	9625	12628	10680	9265	4240	659	393	531
MEAN	11.4	11.9	14.2	365	344	407	356	299	141	21.3	12.7	17.7
MAX	18	18	72	1850	2010	2440	976	1220	308	22	19	53
MIN	8.3	9.5	12	12	11	23	23	23	22	11	11	14
AC-FT	701	709	871	22460	19090	25050	21180	18380	8410	1310	780	1050

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	MEAN	25.2	55.1	155	260	202	222	189	200	50.7	12.1	11.1	10.4
MAX	437	545	1303	1334	1415	901	753	795	481	21.3	19.3	17.7	
(WY)	1963	1974	1965	1970	1986	1983	1982	1983	1983	1998	1965	1998	
MIN	5.85	7.51	5.80	9.04	8.49	6.61	6.12	6.15	6.95	5.17	3.82	6.13	
(WY)	1971	1977	1977	1975	1973	1968	1968	1968	1973	1977	1977	1987	

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1963 - 1998

ANNUAL TOTAL	40396.5	60492.8	
ANNUAL MEAN	111	166	116
HIGHEST ANNUAL MEAN			352
LOWEST ANNUAL MEAN			10.4
HIGHEST DAILY MEAN	12100	Jan 1	2440 Mar 24
LOWEST DAILY MEAN	8.2	Sep 29	8.3 Oct 1
ANNUAL SEVEN-DAY MINIMUM	8.4	Sep 25	9.7 Oct 1
INSTANTANEOUS PEAK FLOW			3410 Mar 24
INSTANTANEOUS PEAK STAGE			10.70 Mar 24
ANNUAL RUNOFF (AC-FT)	80130	120000	83870
10 PERCENT EXCEEDS	26	482	327
50 PERCENT EXCEEDS	12	22	11
90 PERCENT EXCEEDS	9.6	11	8.2

## 11413320 DEADWOOD CREEK NEAR STRAWBERRY VALLEY, CA

LOCATION.—Lat 39°33'00", long 121°05'36", in SW 1/4 SW 1/4 sec.33, T.20 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Plumas National Forest, on right bank 250 ft upstream of confluence with Owl Gulch, and 1.3 mi southeast of Strawberry Valley.

DRAINAGE AREA.—3.16 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1994 to current year.

GAGE.—Water-stage recorder and 120° V-notch weir. Elevation of gage is 3,275 ft above sea level, from topographic map.

REMARKS.—Water from creek is diverted at gage to Deadwood Creek Powerplant (station 11413326). See schematic diagram of Yuba River Basin.

COOPERATION.—Records provided by Yuba County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 400 ft<sup>3</sup>/s, Jan. 1, 1997; minimum daily, 1.7 ft<sup>3</sup>/s, several days in February and March 1997.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	3.5	2.6	2.6	20	6.4	3.9	3.2	3.2	3.1	2.9	2.8
2	3.6	3.4	2.6	2.7	41	5.9	3.6	3.3	3.2	3.1	2.9	2.8
3	3.4	3.4	2.6	3.0	23	6.0	3.3	3.3	3.1	3.1	2.9	2.7
4	3.4	3.4	5.0	2.8	26	4.8	3.6	3.1	3.1	3.1	2.9	2.7
5	3.3	3.4	2.6	2.7	33	4.3	3.4	3.1	3.1	3.1	2.9	2.7
6	3.4	3.4	2.6	2.6	48	3.5	3.2	3.2	3.2	3.0	2.9	2.7
7	3.5	3.6	4.0	2.6	30	3.2	3.3	3.1	3.1	3.0	2.9	2.7
8	3.0	3.5	2.8	3.5	22	3.2	3.6	3.1	3.1	3.0	2.9	2.7
9	2.0	3.4	2.7	2.6	22	3.1	3.8	5.0	3.1	3.0	2.9	2.7
10	2.8	3.5	2.7	2.6	18	3.1	3.8	20	3.1	3.0	3.0	4.7
11	3.5	2.6	2.7	19	19	3.0	3.8	4.3	3.2	3.0	3.0	3.1
12	4.0	3.8	2.7	37	18	3.1	3.9	3.0	3.1	3.0	3.0	3.6
13	3.9	3.6	2.7	12	28	3.2	3.8	3.0	3.1	3.0	3.0	2.9
14	3.8	2.7	2.7	4.4	21	3.2	3.6	3.0	3.0	3.0	3.0	2.9
15	3.7	4.7	2.6	24	18	3.2	3.6	3.0	3.0	3.0	3.0	3.0
16	3.6	5.9	2.6	16	16	3.4	3.6	3.1	3.0	3.0	3.0	2.9
17	3.6	6.4	2.6	22	16	3.3	3.5	3.2	3.0	3.0	2.8	3.1
18	3.6	2.6	2.6	16	12	3.2	3.5	3.1	3.0	3.0	2.8	2.9
19	3.6	2.7	2.6	16	10	3.2	3.5	3.0	3.0	3.0	2.8	3.0
20	3.6	2.6	2.6	7.2	13	3.2	3.4	3.0	3.0	3.0	2.8	5.4
21	3.5	2.6	2.6	3.0	11	3.2	3.4	3.0	3.0	3.0	2.8	3.2
22	3.5	4.7	2.6	2.9	22	5.9	3.2	3.0	3.0	3.0	2.8	2.9
23	3.5	6.5	2.6	2.9	22	12	3.6	3.0	3.1	3.0	2.8	2.9
24	3.5	2.6	2.6	2.8	16	16	3.6	3.0	3.1	2.9	2.8	2.8
25	3.4	2.7	2.6	2.8	14	10	3.3	5.0	3.0	2.9	2.8	2.8
26	3.4	3.0	2.6	2.9	11	5.9	3.2	3.2	3.0	2.9	2.8	2.9
27	3.4	2.8	2.6	2.8	9.6	8.1	3.2	3.2	3.0	2.9	2.8	2.8
28	3.4	2.7	2.6	2.8	7.6	5.9	3.2	4.8	3.0	2.9	2.8	2.8
29	3.4	2.7	2.6	9.0	---	4.9	3.2	3.7	3.0	2.9	2.8	2.8
30	3.4	2.7	2.6	3.1	---	4.7	3.2	3.6	3.1	2.9	2.8	2.8
31	3.5	---	2.6	2.9	---	4.1	---	3.2	---	2.9	2.8	---
TOTAL	106.4	105.1	85.2	239.2	567.2	156.2	104.8	120.8	92.0	92.7	89.1	90.7
MEAN	3.43	3.50	2.75	7.72	20.3	5.04	3.49	3.90	3.07	2.99	2.87	3.02
MAX	4.0	6.5	5.0	37	48	16	3.9	20	3.2	3.1	3.0	5.4
MIN	2.0	2.6	2.6	2.6	7.6	3.0	3.2	3.0	3.0	2.9	2.8	2.7
AC-FT	211	208	169	474	1130	310	208	240	182	184	177	180
a	3.8	268	401	1930	2160	2310	2160	1860	1550	822	391	81

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998
MEAN	3.67	3.81	7.22	18.6
MAX	4.73	4.73	17.7	42.4
(WY)	1997	1997	1997	1998
MIN	2.04	3.09	2.75	4.32
(WY)	1995	1995	1998	1996

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1995 - 1998

ANNUAL TOTAL	2464.0	1849.4		
ANNUAL MEAN	6.75	5.07		
HIGHEST ANNUAL MEAN			6.39	
LOWEST ANNUAL MEAN			8.23	1997
HIGHEST DAILY MEAN	400	Jan 1	4.63	1996
LOWEST DAILY MEAN	1.7	Feb 24	1.7	Feb 24 1997
ANNUAL SEVEN-DAY MINIMUM	1.7	Feb 23	1.7	Feb 23 1997
ANNUAL RUNOFF (AC-FT)	4890		4630	
TOTAL DIVERSION (AC-FT) a	8170		11610	
10 PERCENT EXCEEDS	5.4		11	
50 PERCENT EXCEEDS	2.9		3.0	
90 PERCENT EXCEEDS	2.6		2.7	

a Diversion, in acre-feet, to Deadwood Creek Powerplant, provided by Yuba County Water Agency.

## 11413323 OWL GULCH NEAR STRAWBERRY VALLEY, CA

LOCATION.—Lat 39°32'44", long 121°05'39", in SW 1/4 SW 1/4 sec.33, T.20 N., R.8 E., Yuba County, Hydrologic Unit 18020125, Plumas National Forest, on left bank 250 ft upstream from Deadwood Creek and 1.3 mi southeast of Strawberry Valley.

DRAINAGE AREA.—2.07 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1994 to current year.

GAGE.—Water-stage recorder and 120° V-notch weir. Elevation of gage is 3,050 ft above sea level, from topographic map.

REMARKS.—Water from creek is diverted at gage to Deadwood Creek Powerplant (station 11413326). See schematic diagram of Yuba River Basin.

COOPERATION.—Records provided by Yuba County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 346 ft<sup>3</sup>/s, Jan. 1, 1997; minimum daily, 0.58 ft<sup>3</sup>/s, Sept. 17–22, 1997.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.4	1.8	1.5	9.5	15	4.3	2.8	3.2	2.0	2.0	1.8
2	1.7	1.4	1.7	1.6	14	15	3.7	3.0	3.2	2.0	1.9	1.8
3	1.7	1.4	1.7	1.9	36	14	6.0	2.9	3.2	2.0	1.9	1.8
4	1.7	1.4	2.6	2.0	33	13	6.2	2.8	3.2	2.0	1.9	2.5
5	1.6	1.4	2.6	1.7	38	12	6.9	3.0	3.1	2.0	1.9	2.3
6	1.6	1.3	2.6	1.7	38	10	7.4	3.1	3.0	2.0	1.9	2.4
7	1.6	1.4	2.6	1.7	38	7.5	7.6	3.0	3.0	2.0	1.9	2.4
8	2.1	1.4	1.7	5.3	38	6.3	6.9	2.9	3.0	2.0	1.9	2.3
9	2.0	1.4	1.7	1.6	38	3.2	7.0	3.0	2.9	2.0	1.9	2.3
10	1.8	1.4	1.6	1.8	26	3.1	6.6	10	2.9	2.0	1.9	2.2
11	2.0	1.7	1.6	12	20	2.9	6.5	10	2.9	2.0	1.9	1.8
12	1.7	1.7	1.6	30	16	2.7	5.8	3.0	2.9	2.0	1.9	1.9
13	1.6	1.8	1.6	12	15	2.6	5.8	3.0	2.8	2.0	1.9	1.8
14	1.5	1.8	1.6	9.3	35	2.6	4.8	3.0	2.8	2.0	1.9	1.9
15	1.5	2.0	1.7	18	25	2.5	4.1	2.9	2.7	2.0	1.9	2.0
16	1.5	2.6	1.6	12	17	2.5	3.5	2.9	2.6	2.0	1.9	2.0
17	1.4	3.4	1.6	18	16	2.3	3.4	3.0	2.6	2.0	1.9	1.8
18	1.4	1.8	1.6	13	16	2.3	3.4	2.9	2.5	2.0	1.9	1.9
19	1.4	1.9	1.5	17	17	2.3	3.4	2.8	2.4	2.0	1.9	1.9
20	1.4	1.8	1.5	16	16	2.3	3.3	2.7	2.4	2.0	1.9	1.9
21	1.4	1.8	1.5	10	17	2.2	3.3	2.6	2.3	2.0	1.9	2.0
22	1.4	2.1	1.5	6.8	27	2.3	3.2	2.6	2.3	2.0	1.9	2.1
23	1.4	3.5	1.5	3.9	27	3.6	3.3	2.5	1.7	2.0	1.9	2.2
24	1.3	1.8	1.5	3.2	22	4.3	3.3	2.5	1.8	2.0	1.9	2.1
25	1.4	1.8	1.5	2.6	19	4.3	3.2	2.9	3.7	2.0	1.9	2.1
26	1.4	2.1	1.6	3.2	18	4.3	3.0	3.0	3.7	2.0	1.9	2.2
27	1.4	1.9	1.6	2.7	17	6.9	3.0	3.1	3.7	2.0	1.9	2.3
28	1.4	1.8	1.6	2.4	16	6.2	3.0	3.2	3.7	2.0	1.9	2.6
29	1.4	1.8	1.5	11	---	4.3	2.9	6.6	3.7	2.0	1.9	2.3
30	1.4	1.8	1.6	6.7	---	3.9	2.8	4.1	2.2	2.0	1.9	2.2
31	1.4	---	1.5	3.4	---	4.9	---	4.0	---	2.0	1.9	---
TOTAL	48.2	54.8	53.4	234.0	664.5	171.3	137.6	109.8	86.1	62.0	59.0	62.8
MEAN	1.55	1.83	1.72	7.55	23.7	5.53	4.59	3.54	2.87	2.00	1.90	2.09
MAX	2.1	3.5	2.6	30	38	15	7.6	10	3.7	2.0	2.0	2.6
MIN	1.3	1.3	1.5	1.5	9.5	2.2	2.8	2.5	1.7	2.0	1.9	1.8
AC-FT	96	109	106	464	1320	340	273	218	171	123	117	125

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998	1995	1996	1997	1998	1995	1996	1997	1998
MEAN	1.54	1.78	5.04	16.2	11.6	7.53	4.50	4.77	2.25	1.94	1.56	1.60
MAX	1.88	2.09	14.2	35.3	23.7	16.3	8.74	10.6	2.87	2.06	1.90	2.09
(WY)	1997	1997	1997	1997	1998	1995	1995	1995	1998	1997	1998	1998
MIN	.99	1.56	1.72	4.09	3.97	2.46	2.13	2.02	1.79	1.74	.77	.79
(WY)	1995	1995	1998	1996	1995	1997	1997	1997	1996	1996	1997	1997

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1995 - 1998

ANNUAL TOTAL	1791.76	1743.5	5.00
ANNUAL MEAN	4.91	4.78	6.02
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1996
HIGHEST DAILY MEAN	346 Jan 1	38 Feb 5	346 Jan 1 1997
LOWEST DAILY MEAN	.58 Sep 17	1.3 Oct 24	.58 Sep 17 1997
ANNUAL SEVEN-DAY MINIMUM	.58 Sep 16	1.4 Oct 18	.58 Sep 16 1997
ANNUAL RUNOFF (AC-FT)	3550	3460	3620
10 PERCENT EXCEEDS	6.2	13	11
50 PERCENT EXCEEDS	2.0	2.3	2.0
90 PERCENT EXCEEDS	.73	1.5	1.5

## 11413510 NEW COLGATE POWERPLANT NEAR FRENCH CORRAL, CA

LOCATION.—Lat 39°19'51", long 121°11'23", in NE 1/4 SE 1/4 sec.16, T.17 N., R.7 E., Yuba County, Hydrologic Unit 18020125, at powerplant on right bank of Yuba River, 0.3 mi upstream from Dobbins Creek, and 2.3 mi northwest of French Corral.

PERIOD OF RECORD.—October 1966 to current year. Prior to October 1969, published as "Colgate Powerplant."

GAGE.—Recorded output from powerplant turbines.

REMARKS.—Water is diverted from North Yuba River at New Bullards Bar Reservoir (station 11413515). Colgate Powerplant was rebuilt during the 1970 water year with an increased capacity. Prior to Oct. 31, 1973, Browns Valley Ditch diverted up to 10 ft<sup>3</sup>/s at times from the head of the penstock for use in irrigation. See schematic diagram of Yuba River Basin.

COOPERATION.—Records provided by Yuba County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	492	1460	1280	3520	3530	3550	3570	3370	3300	2230	3350
2	912	.00	1200	756	3520	3530	3550	3490	3370	3580	2890	3330
3	1400	.00	1190	866	3530	3530	3550	3340	3460	3510	3310	2850
4	1190	.00	1010	345	3530	3530	3560	3450	3310	3140	3270	3130
5	860	.00	1110	677	3380	3530	3410	3580	3400	3310	3250	3150
6	2150	.00	1200	139	3530	3530	3560	3580	3340	3350	3480	3440
7	1060	.00	796	.00	3530	3530	3560	3580	3270	3510	3360	3440
8	1120	.00	618	1060	3530	3530	3560	3500	3530	2860	2400	2770
9	1120	.00	708	1390	3530	3530	2770	3580	3260	2710	2110	2390
10	1320	.00	438	116	3530	3520	3540	3580	3440	2550	2670	2170
11	619	.00	641	276	3530	3530	3000	3590	3430	2270	2770	2260
12	1150	483	1030	240	3530	3530	3560	3590	3440	1820	3130	1160
13	975	823	585	1640	3500	3520	3560	3590	3440	2410	3170	822
14	1420	1510	382	3490	3530	2590	3560	3590	3420	2610	3120	1100
15	847	1520	1090	3490	3540	2370	3560	3590	3470	2710	2690	1240
16	1270	1380	1410	3430	3540	2730	3560	3520	3260	2440	1530	1320
17	1250	1630	1410	1390	3530	2600	3560	3530	3500	2340	2520	432
18	271	1670	1130	2450	3540	2620	3560	3510	3510	2430	2980	1570
19	1060	1640	1650	2860	3530	2990	3560	3440	3520	669	2940	963
20	1120	1510	1010	3490	3530	3520	3530	3500	3450	1150	3020	.00
21	998	691	1200	3470	3540	3500	3560	3420	3500	1360	3010	.00
22	2230	1.0	1230	3520	3540	3490	3540	3480	3510	2340	2310	473
23	1940	6.1	1340	3520	3540	2450	3560	3420	3460	2390	2490	458
24	1840	1450	903	3520	3530	3530	3480	3430	3540	2720	2980	687
25	423	1560	1580	3520	3530	3550	3550	3480	3470	2320	3080	817
26	326	777	813	3520	3530	3560	3560	3500	3480	1040	2690	716
27	981	454	1860	3520	3530	3560	3560	3520	3450	2160	3060	990
28	771	150	453	3520	3530	3550	2760	3550	3370	2170	2760	1250
29	907	740	1430	3520	---	3550	3560	3430	3410	2190	3160	1250
30	1060	1190	1350	3520	---	3550	3570	3490	3530	2260	2950	1070
31	1280	---	943	3520	---	3550	---	3490	---	2680	3130	---
TOTAL	35020	19677.10	33170	68055.00	98700	103130	104320	108910	102910	76299	88460	48598.00
MEAN	1130	656	1070	2195	3525	3327	3477	3513	3430	2461	2854	1620
MAX	2230	1670	1860	3520	3540	3560	3570	3590	3540	3580	3480	3440
MIN	271	.00	382	.00	3380	2370	2760	3340	3260	669	1530	.00
AC-FT	69460	39030	65790	135000	195800	204600	206900	216000	204100	151300	175500	96390

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1998, BY WATER YEAR (WY)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	1215	1132	1391	1551	1687	1660	1690	1527	1674	1758	1927	1393																
MAX	2497	2433	3262	3496	3525	3519	3508	3565	3629	3057	3130	2995																
(WY)	1976	1976	1975	1984	1998	1980	1993	1982	1983	1983	1984	1980																
MIN	.000	302	96.6	152	54.6	39.3	103	206	404	386	319	.000																
(WY)	1975	1978	1978	1977	1977	1977	1979	1977	1977	1977	1977	1974																

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1971 - 1998			
ANNUAL TOTAL	553641.10				887249.10							
ANNUAL MEAN	1517				2431				1550			
HIGHEST ANNUAL MEAN									2686			
LOWEST ANNUAL MEAN									316			
HIGHEST DAILY MEAN	3530				3590				4200			
LOWEST DAILY MEAN	.00				.00				.00			
ANNUAL SEVEN-DAY MINIMUM	.00				.00				.00			
ANNUAL RUNOFF (AC-FT)	1098000				1760000				1123000			
10 PERCENT EXCEEDS	3480				3550				3410			
50 PERCENT EXCEEDS	1220				3000				1270			
90 PERCENT EXCEEDS	257				632				152			

## 11413515 NEW BULLARDS BAR RESERVOIR NEAR NORTH SAN JUAN, CA

LOCATION.—Lat 39°23'34", long 121°08'25", in SE 1/4 NW 1/4 sec.25, T.18 N., R.7 E., Yuba County, Hydrologic Unit 18020125, Plumas National Forest, in center of dam on North Yuba River, 2.2 mi upstream from Middle Yuba River, and 2.4 mi northwest of North San Juan.

DRAINAGE AREA.—489 mi<sup>2</sup>.

PERIOD OF RECORD.—January 1969 to current year.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Yuba County Water Agency).

REMARKS.—Reservoir is formed by concrete-arch dam with a concrete-sidehill spillway. Spill controlled by three 30-ft by 53-ft radial gates. Storage began in January 1969. Usable capacity, 727,380 acre-ft between elevations 1,732.0 ft, minimum power pool, and 1,955.0 ft, normal gross pool. Dead storage, 233,920 acre-ft. Total capacity at normal gross pool, 961,300 acre-ft, elevation, 1,955.0 ft. Water is released to New Colgate Powerplant (station 11413510) through a tunnel at the dam. Water is diverted into the reservoir from Middle Yuba River via Lohman Ridge Tunnel to Oregon Creek then via Camptonville Tunnel (stations 11408870 and 11409350). Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Yuba River Basin.

COOPERATION.—Records provided by Yuba County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 972,224 acre-ft, June 27, 1995, elevation, 1,957.27 ft; minimum since reservoir first filled, 178,230 acre-ft, Dec. 29, 1980, elevation, 1,700.00 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 961,446 acre-ft, June 28, 29, elevation, 1,955.03 ft; minimum, 545,714 acre-ft, Jan. 1, elevation, 1,851.80 ft.

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

(Based on survey by Yuba County Water Agency in 1969)

1,600	64,900	1,750	270,110
1,630	90,570	1,800	389,977
1,660	122,993	1,850	539,748
1,690	162,983	1,900	721,130
1,720	211,768	1,960	985,471

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	610667	562093	561518	545714	695609	753256	790622	848569	950559	960822	912015	772415
2	609562	562534	560131	546446	700698	751708	791758	858121	952796	959721	907907	766833
3	607283	562975	558780	549780	720654	750812	793359	866448	953606	958572	902987	762222
4	605437	563382	557768	554873	730884	749470	794667	873255	953463	957999	897948	757056
5	604196	563789	556635	556666	737462	748130	795933	878653	953463	956852	893020	751912
6	600376	564366	555848	558847	743430	746345	797287	884255	954130	955514	887654	746345
7	598647	564774	561484	561078	748008	744077	798175	888789	955180	953892	882400	740724
8	597521	565216	564706	561180	749552	741773	798513	894569	955324	953129	878879	736215
9	597204	565658	565624	560638	748008	739112	800251	900877	956469	952224	875907	732605
10	595833	566100	566576	564740	747764	736375	800505	905100	957616	951415	871909	729286
11	595376	566781	566815	577845	750731	733727	801905	907769	959147	950796	867699	725698
12	593868	566474	566270	601398	753664	731404	802033	909567	959721	950559	862746	724147
13	592536	565624	566372	614169	756810	729086	802415	910860	960295	949323	857810	723352
14	590438	563755	567053	617433	761236	728926	801863	911645	960439	947424	852894	722002
15	589286	561755	566508	631433	760702	729565	800759	911922	960008	945242	848745	720337
16	587404	560063	565080	643341	759062	731124	799827	912846	958955	943301	846632	718516
17	585561	558240	563993	667502	758160	733486	799149	913495	958620	941457	842854	718318
18	585387	555983	563620	682553	757710	735492	798513	913818	958859	939333	838082	719026
19	583930	555041	561992	692205	759718	736375	798175	914327	959338	940417	833415	714803
20	582162	553597	561416	696152	760825	736978	798260	914976	959578	940748	828591	715316
21	580709	553094	560334	697782	762386	738911	799445	915903	959290	940087	823786	715237
22	576881	554033	559083	698054	759964	747602	802118	916088	958620	937729	820249	714961
23	573651	556185	557633	697472	757219	762797	807435	916505	958381	935140	816420	714764
24	570568	555680	556911	696812	756319	787848	813075	916830	958955	931758	811577	714173
25	570090	555277	554941	695493	756442	795849	817580	923154	960200	929321	806583	713345
26	570021	559894	554336	694796	756605	794836	820851	927823	960918	928993	802330	712951
27	568485	562263	551720	693867	756074	792685	824391	930712	961254	926561	797371	712401
28	567496	563891	551687	692630	754766	789024	830327	934999	961446	923994	793022	710985
29	566202	564027	549847	694447	---	786045	835636	940181	961446	921337	787890	709453
30	564638	563144	548112	695377	---	786715	841714	945100	961062	918501	783114	708238
31	562737	---	547311	695261	---	789234	---	947186	---	914929	777981	---
MAX	610667	566781	567053	698054	762386	795849	841714	947186	961446	960822	912015	772415
MIN	562737	553094	547311	545714	695609	728926	790622	848569	950559	914929	777981	708238
a	1856.87	1856.99	1852.28	1893.40	1908.36	1916.68	1928.91	1952.04	1954.95	1945.16	1913.99	1896.73
b	-49894	+407	-15833	+147950	+59505	+34468	+52480	+105472	+13876	-46133	-136948	-69743

CAL YR 1997 b -291514

WTR YR 1998 b +95607

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11413520 NORTH YUBA RIVER BELOW NEW BULLARDS BAR DAM, NEAR NORTH SAN JUAN, CA

LOCATION.—Lat 39°23'26", long 121°08'36", in SE 1/4 NW 1/4 sec.25, T.18 N., R.7 E., Yuba County, Hydrologic Unit 18020125, Plumas National Forest, on right bank at old Colgate Dam, 0.2 mi downstream from New Bullards Bar Dam, and 2.5 mi northwest of North San Juan.

DRAINAGE AREA.—490 mi<sup>2</sup>.

PERIOD OF RECORD.—August 1966 to current year.

GAGE.—Water-stage recorder, and sharp-crested low-water control since Oct. 1, 1986. Elevation of gage is 1,350 ft above sea level, from topographic map. Auxiliary water-stage recorder for high flow 0.9 mi downstream at different datum.

REMARKS.—Records good except for estimated daily discharges, which are fair. Flow regulated by New Bullards Bar Reservoir (station 11413515) since 1969. Prior to 1969, flow regulated by Bullards Bar Reservoir (usable capacity, 31,500 acre-ft). New Colgate Powerplant (station 11413510) diverts at New Bullards Bar Dam 0.2 mi upstream. Water is diverted to Feather River Basin through Slate Creek Tunnel (station 11413250). Camptonville Tunnel (station 11409350) diverts water from Middle Yuba River to New Bullards Bar Reservoir. Records include flow over New Bullards Bar Reservoir spillway. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 56,200 ft<sup>3</sup>/s, Jan. 22, 1970, gage height, 35.29 ft, at auxiliary gage, from rating curve extended above 40,000 ft<sup>3</sup>/s on basis of computation of flow over old Colgate Dam; minimum daily, 0.42 ft<sup>3</sup>/s, Nov. 5, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of Dec. 22, 1964, reached a stage of 49.8 ft, from floodmarks, discharge, 91,600 ft<sup>3</sup>/s, at auxiliary gage, from computation of flow over old Colgate Dam.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	6.4	6.2	6.2	6.6	6.4	7.0	7.1	8.6	16	7.8	6.4
2	6.7	6.4	6.2	6.9	7.3	6.4	7.0	7.2	e1530	8.5	7.8	6.1
3	6.6	6.3	6.2	7.0	9.0	6.4	7.7	7.2	e2560	8.4	7.8	6.2
4	6.6	6.9	6.2	7.9	6.5	6.4	7.5	7.3	e2480	8.4	7.7	6.2
5	6.6	6.2	6.2	6.6	281	6.7	7.4	7.6	e2500	8.4	7.6	6.2
6	6.6	6.3	6.4	6.4	1100	7.5	7.3	7.8	e2500	8.4	7.4	6.2
7	6.5	6.2	7.8	6.4	2180	6.2	7.3	7.8	e2470	8.3	7.4	6.2
8	6.9	6.2	6.1	6.4	2840	6.2	7.1	7.8	e2470	8.2	7.4	6.2
9	7.5	6.2	6.2	6.6	2770	6.2	7.0	7.9	e2470	8.2	7.4	6.2
10	6.8	6.3	6.2	7.5	1470	6.2	7.0	7.8	e2470	8.2	7.5	6.2
11	7.3	6.9	6.2	10	6.8	6.3	7.0	8.0	e2480	8.2	7.4	6.2
12	7.2	6.7	6.2	11	6.8	6.4	7.0	8.0	e2140	8.2	7.4	6.2
13	6.7	6.3	6.2	7.2	6.8	6.4	8.0	8.2	e1810	8.2	7.4	6.2
14	6.2	6.6	6.4	7.0	1180	6.4	6.9	8.0	e2040	8.2	7.4	6.1
15	6.2	6.5	6.2	8.6	2820	6.4	6.8	8.0	e2210	8.2	7.4	6.0
16	6.2	6.4	6.2	7.0	2340	6.4	7.0	8.3	e1950	8.2	7.4	6.2
17	6.2	6.6	6.2	7.0	1460	6.4	7.0	8.1	e1350	8.2	7.3	7.0
18	6.2	6.4	6.2	7.1	542	6.4	7.0	7.9	e1010	8.2	7.2	6.8
19	6.2	6.5	6.2	6.6	6.8	6.4	7.0	7.8	e1010	7.9	7.2	6.8
20	6.2	6.3	6.2	6.2	6.6	6.4	6.9	7.8	e1010	7.6	7.2	6.8
21	6.2	6.2	6.3	6.4	1080	6.4	6.7	7.8	e1010	8.1	7.2	6.8
22	6.2	6.2	6.6	6.4	3140	6.5	6.7	7.8	e1010	8.4	7.2	6.8
23	e6.2	6.9	6.2	6.4	3030	7.4	6.9	7.8	e447	7.7	7.2	6.8
24	e6.2	6.4	6.2	6.2	1770	7.8	6.8	7.8	8.6	7.6	7.2	6.8
25	e6.2	6.4	6.2	6.2	448	2510	6.8	8.5	8.6	7.6	7.1	6.8
26	e6.2	7.5	6.2	6.5	6.5	4570	6.8	8.3	8.4	7.6	6.7	6.8
27	e6.2	6.6	6.2	6.4	6.4	4510	6.8	8.4	8.2	7.6	6.6	6.9
28	6.2	6.4	6.2	6.3	6.3	4410	6.8	9.0	8.3	7.6	6.4	6.8
29	6.2	6.3	6.2	7.3	---	3290	6.8	9.0	8.3	7.7	6.4	6.8
30	6.2	6.4	6.2	6.8	---	949	6.9	8.7	8.2	7.8	6.4	6.8
31	6.2	---	6.2	6.5	---	7.0	---	8.6	---	7.8	6.4	---
TOTAL	200.6	193.9	194.6	217.0	28533.4	20402.6	210.9	247.3	40994.2	257.6	223.9	194.5
MEAN	6.47	6.46	6.28	7.00	1019	658	7.03	7.98	1366	8.31	7.22	6.48
MAX	7.5	7.5	7.8	11	3140	4570	8.0	9.0	2560	16	7.8	7.0
MIN	6.2	6.2	6.1	6.2	6.3	6.2	6.7	7.1	8.2	7.6	6.4	6.0
AC-FT	398	385	386	430	56600	40470	418	491	81310	511	444	386

e Estimated.

## 11413520 NORTH YUBA RIVER BELOW NEW BULLARDS BAR DAM, NEAR NORTH SAN JUAN, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	18.8	37.3	300	849	928	692	406	534	276	38.6	7.61	8.11
MAX	381	404	3570	8990	7457	4648	4144	4289	3759	759	25.4	45.9
(WY)	1975	1967	1984	1970	1986	1995	1982	1967	1967	1967	1967	1969
MIN	2.60	3.41	4.97	4.65	2.10	5.32	3.09	4.12	1.92	3.48	3.21	2.89
(WY)	1971	1971	1978	1981	1971	1976	1970	1970	1970	1977	1977	1966

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR					FOR 1998 WATER YEAR					WATER YEARS 1966 - 1998	
ANNUAL TOTAL	276457.6					91870.5						
ANNUAL MEAN	757					252					339	
HIGHEST ANNUAL MEAN											1560	
LOWEST ANNUAL MEAN											4.62	
HIGHEST DAILY MEAN	45800					4570					48200	
LOWEST DAILY MEAN	6.0					6.0					.42	
ANNUAL SEVEN-DAY MINIMUM	6.2					6.2					.68	
INSTANTANEOUS PEAK FLOW						4780					56200	
INSTANTANEOUS PEAK STAGE						13.20					35.29	
ANNUAL RUNOFF (AC-FT)	548400					182200					245400	
10 PERCENT EXCEEDS	11					1010					80	
50 PERCENT EXCEEDS	6.5					6.9					6.7	
90 PERCENT EXCEEDS	6.2					6.2					4.8	



## 11413940 KIDD LAKE NEAR SODA SPRINGS, CA

LOCATION.—Lat 39°18'41", long 120°25'54", in SW 1/4 NW 1/4 sec.29, T.17 N., R.14 E., Placer County, Hydrologic Unit 18020125, on outlet structure on Kidd Lake Dam and 3.0 mi west of Soda Springs.

DRAINAGE AREA.—1.00 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1991 to current year. Unpublished records for water years 1966–91 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 6,600.3 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to July 1991, nonrecording gage at same site and datum.

REMARKS.—Reservoir is formed on natural lake by rock-fill dam completed in 1855. Usable capacity, 1,505 acre-ft between gage heights 0.0 ft, invert of outlet, and 27.3 ft, crest of spillway. Water is used for power development downstream. Records, including extremes, represent usable contents at 2400 hours.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents observed, 1,559 acre-ft, June 6, 22, 1995, May 22, 1996, gage height, 27.9 ft; minimum recorded, no storage Dec. 1, 1994.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 1,549 acre-ft, June 11, 14, gage height, 27.79 ft; minimum, 20 acre-ft, Oct. 17, 18, gage height, 0.74 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co., dated April 1965)

0	0	16	654
4	117	20	918
8	259	28	1568

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e131	27	81	137	388	557	855	1115	1535	1523	1449	1368
2	e123	28	82	143	404	560	862	1154	1538	1516	1447	1363
3	e115	28	83	146	415	562	868	1178	1543	1518	1447	1364
4	e107	29	86	155	422	564	875	1200	1537	1524	1447	1359
5	e99	29	89	158	432	568	880	1220	1544	1514	1447	1361
6	e92	30	92	160	444	571	887	1234	1536	1518	1442	1361
7	e84	31	101	164	457	572	891	1252	1545	1517	1435	1360
8	e76	32	106	165	466	573	891	1265	1544	1505	1430	1360
9	e69	32	108	168	471	576	896	1287	1537	1509	1428	1359
10	e61	33	109	177	479	578	901	1300	1539	1493	1425	1359
11	e53	34	111	187	484	579	903	1313	1549	1507	1422	1359
12	e46	34	112	201	489	583	907	1316	1543	1489	1419	1358
13	e39	36	113	208	492	592	919	1325	1539	1495	1416	1357
14	e31	37	115	218	505	593	923	1335	1549	1500	1416	1354
15	e24	39	117	239	507	595	923	1339	1539	1484	1412	1351
16	21	39	119	265	512	598	929	1347	1544	1485	1408	1348
17	20	40	121	284	514	602	926	1351	1536	1490	1407	1346
18	20	42	123	306	516	606	931	1356	1540	1482	1406	1342
19	21	46	123	320	523	609	936	1368	1540	1484	1402	1341
20	22	47	124	327	525	617	944	1380	1544	1479	1397	1341
21	22	48	124	332	538	627	952	1386	1543	1477	1395	1340
22	23	50	125	336	541	648	962	1389	1545	1475	1393	1339
23	23	53	128	341	549	684	984	1407	1532	1476	1387	1338
24	24	55	129	345	550	747	1001	1412	1538	1464	1386	1337
25	24	61	130	349	551	775	1011	1446	1541	1471	1383	1336
26	24	71	131	353	553	791	1024	1460	1547	1466	1379	1336
27	24	73	133	358	555	810	1033	1473	1532	1460	1380	1335
28	25	75	135	361	555	823	1049	1485	1537	1455	1376	1334
29	26	77	136	372	---	834	1072	1495	1526	1453	1377	1333
30	26	78	138	376	---	839	1094	1500	1527	1446	1369	1311
31	27	---	136	379	---	852	---	1509	---	1454	1369	---
MAX	131	78	138	379	555	852	1094	1509	1549	1524	1449	1368
MIN	20	27	81	137	388	557	855	1115	1526	1446	1369	1311
a	0.99	2.74	4.58	10.92	14.34	19.06	22.36	27.34	27.55	26.72	25.73	25.03
b		+51	+58	+243	+176	+297	+242	+415	+18	-73	-85	-58

WTR YR 1998 MAX 1549 MIN 20

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

LOCATION.—Lat 39°18'12", long 120°26'19", in SE 1/4 SE 1/4 sec.30, T.17 N., R.14 E., Placer County, Hydrologic Unit 18020125, Tahoe National Forest, on outlet structure on Lower Cascade Lake Dam and 3.6 mi southwest of Soda Springs.

GAGE.—Water-stage recorder. Datum of gage is 6,560.4 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to July 1991, nonrecording gage at same site and datum.

REMARKS.—Except for instantaneous observations, there were no usable data for the entire year due to equipment malfunction. Reservoir is formed on natural lake by rock-fill dam completed in 1860. Usable capacity, 484 acre-ft between gage heights 0.0 ft, invert of outlet, and 21.5 ft, crest of spillway. Water is used for power development downstream. Records, including extremes, represent usable contents at 2400 hours.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

**EXTREMES FOR PERIOD OF RECORD.**—Maximum contents, 617 acre-ft, Apr. 29, 1995, gage height, 25.89 ft; no storage on some days in most years.

EXTREMES FOR CURRENT YEAR.—Maximum contents observed, 487 acre-ft, July 2, gage height, 21.6 ft; minimum contents observed, 0 acre-ft, Nov. 1, 12, gage height, 0.0 ft.

0	0	16	318
4	62	20	435
8	133	22	500
12	218	23	530

### DAILY INSTANTANEOUS VALUES

[illegible]

## 11414090 FORDYCE LAKE NEAR CISCO, CA

LOCATION.—Lat 39°22'44", long 120°29'40", in NE 1/4 SE 1/4 sec.34, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, near left abutment of Fordyce Dam on Fordyce Creek and 5.3 mi northeast of Cisco.

DRAINAGE AREA.—31.7 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1977 to current year. Periodic gage heights only for October 1965 to September 1976 and daily contents for water year 1977 are in the files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 6,290.5 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to Nov. 29, 1976, nonrecording gage on upstream side of dam at same datum.

REMARKS.—Lake is formed by a rockfill dam; storage began in 1926. In 1980 the capacity of Fordyce Lake was increased by the addition of 3 ft of flashboards. Capacity, 49,903 acre-ft between gage heights 0.85 ft, bottom of outlet valve, and 114.6 ft, top of flashboards in spillway. Released water flows down Fordyce Creek (station 11414100) to Lake Spaulding (station 11414140) for use in a power and irrigation system. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 49,903 acre-ft, June 27, July 4, 6, 1982, June 9, 15–17, 1984, several days in June 1989, and several days in July 1998, gage height, 114.60 ft; minimum, 250 acre-ft, Oct. 31 to Nov. 7, 1979.

EXTREMES FOR CURRENT YEAR.—Maximum contents, about 49,900 acre-ft, July 15–19, gage height, about 114.60 ft; minimum, 7,060 acre-ft, Dec. 5, gage height, 36.43 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on table provided by Pacific Gas & Electric Co., dated May 1981)

4	219	20	2,608	40	8,183	80	26,770
5	278	25	3,827	50	11,797	90	32,820
10	774	30	5,170	60	16,174	100	39,342
15	1,570	35	6,628	70	21,196	114.6	49,903

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17692	12144	7152	e13455	9939	e11337	e12022	18763	31174	45720	46147	e32732
2	17554	11946	7124	e13649	9983	e11369	e12083	20085	32282	45999	45398	e32663
3	17388	11730	7100	e13727	10030	11380	e12140	21037	33090	46272	44654	e32613
4	17222	11498	7072	e13723	10045	11392	e12201	21675	e33671	46457	43897	e32557
5	17057	11263	7060	e13710	10063	11326	e12262	22143	e34358	46925	43147	e32550
6	16892	11031	7066	e13928	10082	11167	e12323	22544	e35045	47366	42341	e32507
7	16718	10798	7133	e14520	10108	11008	e12384	22998	e35738	47794	41584	e32457
8	16560	10557	7152	e14466	10159	10851	e12446	23732	e36436	48253	41048	e32375
9	16479	10311	e7340	e12128	10229	e10684	e12507	24533	e37147	48716	40703	e32326
10	16350	10078	e7561	e10527	10381	e10741	e12569	24968	e37857	49142	40010	e32132
11	16193	9838	e7798	e9597	10486	e10798	e12631	25201	e38573	49195	39098	e31878
12	16018	9600	e8035	e9007	10549	e10855	e12693	25350	e39301	49272	38331	e31648
13	15853	9368	e8260	e8649	10609	e10912	e12751	25458	e40030	49585	37777	e31352
14	15685	9146	e8543	e8556	10662	e10970	e12813	25498	e40765	49885	37219	e31044
15	15517	8921	e8789	e8563	10722	e11027	e12876	25516	e41507	49900	36646	e30384
16	15345	8699	e9056	e8689	10885	e11081	e12851	25613	e41570	49900	36096	e30068
17	15179	8486	e9354	e9014	10954	e11139	12742	25619	41159	49900	35530	e29348
18	15000	8256	e9629	e9326	e11027	e11198	12680	25659	41201	49900	34974	e28397
19	14823	8100	e9924	e9435	e11054	e11256	12701	25906	41291	49900	34422	e28130
20	14642	7893	e10207	e9516	e11081	e11314	12846	26281	41242	49846	33868	e27620
21	14453	7684	e10482	9607	e11112	e11373	13228	26589	41361	49762	33317	e27027
22	14261	7483	e10771	9685	e11139	e11431	13797	26787	41270	49654	32770	26357
23	14065	7309	e11047	9760	e11167	e11490	14435	27120	41110	49494	32220	26229
24	13840	7167	e11221	9809	e11194	e11549	14746	27591	41034	49325	31983	26102
25	13649	7115	e11404	9852	e11225	e11604	14936	28695	41549	49119	31933	25963
26	13442	7219	e11722	9895	e11252	e11663	15151	29132	42814	48891	e32020	25860
27	13173	7216	e12055	9928	e11279	e11722	15545	29324	43682	48678	e32188	25762
28	12965	7204	e12511	9953	e11310	e11781	16141	29451	44307	48389	e32369	25630
29	12755	7186	e12825	10023	---	e11841	16892	29572	44960	48087	e32544	25493
30	12557	7170	e12910	10052	---	e11901	17805	29687	45456	47606	e32726	25361
31	12352	---	e13100	10074	---	e11962	---	30165	---	46888	e32807	---
MAX	17692	12144	13100	14520	11310	11962	17805	30165	45456	49900	46147	32732
MIN	12352	7115	7060	8556	9939	10684	12022	18763	31174	45720	31933	25361
a	51.37	36.79		45.49			63.37	85.70	108.68	110.62		77.56
b	-5512	-5182	+5930	-3026	+1236	+652	+5843	+12360	+15291	+1432	-14081	-7446

CAL YR 1997 MIN 7060 b -11095  
WTR YR 1998 MAX 49900 MIN 7060 b +7497

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## 11414100 FORDYCE CREEK BELOW FORDYCE DAM, NEAR CISCO, CA

LOCATION.—Lat 39°22'48", long 120°29'54", in NW 1/4 SE 1/4 sec.34, T.18 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 850 ft downstream from Fordyce Dam, and 5.3 mi northeast of Cisco.

DRAINAGE AREA.—31.7 mi<sup>2</sup>.

PERIOD OF RECORD.—June 1966 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 6,250 ft above sea level, from topographic map.

REMARKS.—Flow regulated by Fordyce Lake (station 11414090). See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 4,660 ft<sup>3</sup>/s, July 9, 1974, gage height, 7.90 ft in gage well, 6.82 ft from high-water marks, from rating curve extended above 1,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 3.5 ft<sup>3</sup>/s, Jan. 2–9, 1979.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	149	134	24	22	26	27	109	120	143	563	409	136
2	149	133	24	22	26	28	109	123	144	557	407	136
3	149	133	24	22	28	28	109	123	145	519	406	136
4	149	132	24	22	27	27	109	124	148	491	404	135
5	149	131	24	22	27	67	109	125	149	491	401	136
6	148	131	25	22	27	104	109	126	153	477	402	135
7	147	130	25	22	27	104	108	127	155	462	402	135
8	146	129	24	22	27	103	108	128	157	415	286	135
9	146	129	24	22	27	102	108	129	219	378	190	136
10	146	128	24	22	27	102	108	130	450	380	363	136
11	146	127	23	22	27	101	108	130	615	436	463	135
12	146	126	23	23	27	101	108	130	782	346	398	135
13	146	126	23	22	27	100	107	130	879	256	303	136
14	145	125	23	22	27	100	107	130	971	211	302	136
15	144	125	23	29	27	101	106	131	1010	202	299	135
16	144	124	23	29	27	101	106	130	1130	366	298	136
17	144	123	23	29	27	100	106	130	1020	336	298	135
18	144	122	23	26	27	100	107	131	929	307	296	136
19	144	121	23	26	27	100	107	132	965	299	295	135
20	142	121	23	26	27	101	108	132	964	274	293	136
21	141	121	23	26	27	101	109	132	976	240	290	136
22	140	120	23	26	27	105	110	133	995	238	286	135
23	139	119	23	26	27	106	111	133	922	241	283	134
24	138	118	23	26	27	112	111	135	841	232	123	134
25	138	118	23	26	27	108	111	139	662	228	27	133
26	137	117	23	26	27	108	112	137	191	227	27	133
27	137	117	23	26	27	109	114	137	298	226	27	133
28	136	50	23	26	27	108	115	138	482	226	27	133
29	135	25	22	26	---	108	116	138	486	225	27	133
30	135	24	22	26	---	109	118	139	518	302	27	132
31	135	---	22	26	---	109	---	141	---	411	74	---
TOTAL	4434	3479	722	760	755	2880	3283	4063	17499	10562	8133	4047
MEAN	143	116	23.3	24.5	27.0	92.9	109	131	583	341	262	135
MAX	149	134	25	29	28	112	118	141	1130	563	463	136
MIN	135	24	22	22	26	27	106	120	143	202	27	132
AC-FT	8790	6900	1430	1510	1500	5710	6510	8060	34710	20950	16130	8030

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	MEAN	82.3	40.6	26.0	36.7	57.4	74.2	70.1	189	367	291	214	142
MAX	428	236	173	278	328	353	315	727	957	542	403	497	
(WY)	1976	1977	1982	1997	1984	1984	1986	1996	1995	1995	1983	1980	
MIN	4.35	3.90	3.75	4.76	4.78	5.07	9.21	17.0	36.4	21.7	11.4	4.84	
(WY)	1978	1979	1979	1981	1977	1977	1977	1977	1976	1981	1987	1977	

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1966 - 1998

ANNUAL TOTAL	69199	60617	
ANNUAL MEAN	190	166	133
HIGHEST ANNUAL MEAN			288
LOWEST ANNUAL MEAN			49.3
HIGHEST DAILY MEAN	1700	1130	3750
LOWEST DAILY MEAN	22	22	3.5
ANNUAL SEVEN-DAY MINIMUM	23	22	3.5
INSTANTANEOUS PEAK FLOW		1260	4660
INSTANTANEOUS PEAK STAGE		4.88	7.90
ANNUAL RUNOFF (AC-FT)	137300	120200	96460
10 PERCENT EXCEEDS	336	401	409
50 PERCENT EXCEEDS	146	126	32
90 PERCENT EXCEEDS	25	24	6.7

## 11414140 LAKE SPAULDING NEAR EMIGRANT GAP, CA

LOCATION.—Lat 39°19'35", long 120°38'32", in SE 1/4 NE 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, near center of Spaulding Dam on South Yuba River and 2.5 mi northeast of Emigrant Gap.

DRAINAGE AREA.—118 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1964 to current year.

GAGE.—Water-stage recorder. Datum of gage is 4,809.6 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to July 1968, nonrecording gage at same site and datum.

REMARKS.—Lake is formed by three concrete-arch dams with spillway on the middle arch. Storage began in 1913. Capacity, 74,773 acre-ft between gage heights 0.6 ft, bottom of outlet, and 205.0 ft, top of radial gates. Released water flows through Spaulding Powerplants Nos. 1 and 2 (stations 11414154 and 11414155). Flow through Powerplant No. 1 is transported out of Yuba River basin by Drum Canal to Bear River basin. See schematic diagrams of Yuba and Bear River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 75,100 acre-ft, July 13, 1967, gage height, 205.5 ft; minimum, 914 acre-ft, Feb. 28, 1976, gage height, 25.5 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 74,787 acre-ft, July 8, gage height, 205.02 ft; minimum, 18,143 acre-ft, Oct. 1, gage height, 96.14 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co., dated Apr. 23, 1965)

20	566	70	9,632
25	874	100	19,541
30	1,352	150	41,545
40	2,742	200	71,329
50	4,578	206	75,473

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18143	34942	37759	19340	32429	28426	40865	54330	67375	74161	69974	51703
2	18573	35512	36859	19299	33196	27706	40424	58491	67665	74251	69900	50788
3	18978	36081	36289	19237	e35272	27134	40006	61204	67336	74279	69719	50079
4	19498	36600	e35435	19186	e36095	26430	39494	62874	67500	74293	69378	49352
5	20034	37172	34619	19051	e36541	25771	38990	64199	67526	74383	68897	48614
6	20584	37759	34122	18865	37217	25149	38569	65508	67955	74585	68558	47903
7	20915	38355	34118	18735	37404	24510	38066	66015	68359	74655	68359	47169
8	21141	38970	33742	18583	37423	23919	37680	66165	68054	74787	67882	e46103
9	21452	39550	33140	18436	37266	23343	37330	66262	67988	74682	67185	45388
10	21951	40118	32447	18565	37035	e22772	37045	65722	68253	74689	66765	e44609
11	22632	40675	31743	19160	36844	e22234	36795	65437	68445	74689	66569	e43825
12	23268	41251	30952	e21426	36585	21718	36444	65359	68645	74724	66275	e43122
13	24043	41809	30154	21764	36507	21327	36139	65184	69111	74641	65729	e43608
14	24691	42351	29356	22169	36537	20986	35786	65022	69405	74404	e65029	e44272
15	25316	42917	28461	e25878	36396	20952	e35358	64913	68971	74009	64449	e45103
16	25907	43433	27625	e29932	36114	21441	34761	65081	68658	73891	63899	e45946
17	26496	43990	27049	34510	35613	21688	34245	64861	68160	73773	63363	e46769
18	27083	44475	26534	36454	34933	21886	34151	64880	68346	73483	62772	e47527
19	e27693	44807	25857	37256	34363	22181	34387	65404	68472	73172	62203	e48263
20	28228	44368	25088	37537	33784	22729	35071	65852	68299	72945	61523	e49016
21	28794	43656	24242	37418	33289	23359	36751	65995	68266	72855	e60942	e49768
22	29321	42870	23587	37006	e32798	26151	38990	65729	68133	72670	60444	50555
23	29853	42221	23115	36561	32264	e31277	41405	65891	68585	72457	59905	51302
24	30407	41602	22593	36066	e31616	38136	42393	66249	70283	72196	59190	51835
25	30961	41117	22065	35531	30993	40639	42854	67783	73062	71875	e58235	52135
26	31512	e41514	21536	35009	30420	41685	43386	66863	73573	71506	57173	52054
27	32085	40983	21001	34496	29945	42210	44641	66217	73794	71194	56211	51485
28	32655	40235	20480	34042	29233	42335	46610	66021	73607	70842	55263	50840
29	33229	39494	20108	33765	---	42153	48999	65748	73586	70492	54318	50266
30	33803	38639	19685	33340	---	41576	51703	65566	74050	70122	53370	49661
31	34368	---	19516	32825	---	41271	---	66138	---	70055	52435	---
MAX	34368	44807	37759	37537	37423	42335	51703	67783	74050	74787	69974	52135
MIN	18143	34942	19516	18436	29233	20952	34151	54330	67336	70055	52435	43122
a	135.51	144.29	99.93	132.21	124.22	149.47	168.61	192.19	203.96	198.11	169.88	165.02
b	+16566	+4271	-19123	+13309	-3592	+12038	+10432	+14435	+7912	-3995	-17620	-2774
c	0	12300	29670	25410	47180	23670	30460	42930	41500	42710	105300	21560
d	3840	5120	6470	4050	5440	7440	4350	10890	10540	8480	4190	3780
CAL YR 1997	MAX 74822	MIN 13609	b -48333	c 231000	d 76300							
WTR YR 1998	MAX 74787	MIN 18143	b +31859	c 422700	d 74610							

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

c Diversion, in acre-feet, to Spaulding No. 1 Powerplant, provided by Pacific Gas & Electric Co.

d Diversion, in acre-feet, to Spaulding No. 2 Powerplant, provided by Pacific Gas & Electric Co.

## 11414170 DRUM CANAL AT TUNNEL OUTLET, NEAR EMIGRANT GAP, CA

LOCATION.—Lat 39°19'03", long 120°39'08", in SE 1/4 SW 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, 100 ft downstream from tunnel outlet, 1.0 mi downstream from Spaulding No. 1 Powerplant, and 1.7 mi northeast of Emigrant Gap.

PERIOD OF RECORD.—October 1964 to current year. Prior to October 1972, published as "Drum Canal at intake."

GAGE.—Water-stage recorder. Elevation of gage is 4,880 ft above sea level, from topographic map. Prior to Oct. 1, 1968, in powerplant 0.7 mi upstream at different datum.

REMARKS.—Canal diverts from Spaulding No. 1 Powerplant (station 11414154) at Lake Spaulding Dam. Most of the water from Drum Canal enters the Bear River via Drum No. 1 and 2 Powerplants (station 11414196) at Drum Afterbay. Some of the water is diverted out of Drum Forebay to Alta Powerplant (station 11421725). See schematic diagrams of Yuba and Bear River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 864 ft<sup>3</sup>/s, May 1, 1998; no flow for several days in most years.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	1.6	584	397	559	759	833	864	860	856	739	808
2	4.5	1.6	603	396	303	757	835	861	858	855	738	806
3	4.5	1.6	576	397	497	758	837	853	854	857	791	811
4	4.5	1.6	560	396	497	757	832	855	852	858	851	816
5	4.5	1.6	560	397	414	753	829	852	843	859	845	821
6	4.5	1.6	566	396	368	743	825	850	859	860	807	821
7	4.5	1.8	531	398	482	735	823	853	861	860	787	822
8	2.8	1.9	531	396	449	734	829	858	862	860	838	819
9	1.1	1.9	565	395	485	726	829	862	861	854	828	818
10	1.1	1.9	560	397	521	733	825	862	861	850	825	817
11	1.1	1.9	570	391	502	768	834	859	862	854	836	835
12	1.1	1.9	607	366	500	776	835	858	859	858	841	794
13	1.1	1.9	607	406	500	759	833	858	859	857	841	75
14	1.1	1.9	602	456	490	770	829	857	860	855	842	.00
15	1.1	1.9	610	447	487	769	835	860	857	853	841	.00
16	1.1	1.9	609	475	491	662	834	859	855	854	839	.00
17	1.1	2.1	620	468	537	814	831	859	853	855	844	.00
18	1.1	14	570	487	591	803	837	858	852	852	847	.00
19	1.1	245	589	494	587	808	839	859	859	850	844	.00
20	1.1	521	601	506	582	820	845	862	857	774	837	.00
21	1.1	533	624	548	578	824	848	853	858	729	827	.00
22	1.2	573	580	603	573	816	845	854	859	743	798	.00
23	1.3	602	530	600	569	750	846	860	859	742	806	.00
24	1.5	594	526	596	565	518	842	862	863	741	815	1.5
25	1.6	548	532	593	561	609	837	861	857	740	813	180
26	1.6	529	531	589	556	676	839	855	854	739	818	483
27	1.6	551	526	599	552	736	843	854	852	736	823	782
28	1.6	554	526	601	666	785	847	773	852	735	822	767
29	1.6	556	525	599	---	836	860	863	852	738	818	726
30	1.6	566	510	591	---	836	863	861	852	741	817	730
31	1.6	---	398	601	---	836	---	861	---	736	813	---
TOTAL	63.7	6416.6	17429	14981	14462	23426	25119	26516	25432	25151	25431	13532.50
MEAN	2.05	214	562	483	517	756	837	855	848	811	820	451
MAX	4.5	602	624	603	666	836	863	864	863	860	851	835
MIN	1.1	1.6	398	366	303	518	823	773	582	729	738	.00
AC-FT	126	12730	34570	29710	28690	46470	49820	52590	50440	49890	50440	26840
a	0	11980	31830	29670	28310	32250	31340	32470	39890	42690	45160	24770
b	1140	799	551	945	1240	1590	1150	878	190	1100	1430	1070

a Discharge, in acre-feet, to Drum No. 1 and 2 Powerplants, provided by Pacific Gas & Electric Co.

b Discharge, in acre-feet, to Alta Powerplant, provided by Pacific Gas & Electric Co.

## 11414170 DRUM CANAL AT TUNNEL OUTLET, NEAR EMIGRANT GAP, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

MEAN	401	422	461	448	470	515	604	643	632	613	577	369
MAX	817	824	835	837	833	838	839	855	848	820	820	661
(WY)	1983	1984	1984	1984	1984	1984	1996	1998	1998	1983	1998	1986
MIN	.000	29.5	31.1	30.2	.000	22.6	22.9	5.77	166	178	.000	.000
(WY)	1966	1987	1977	1997	1991	1988	1988	1976	1977	1977	1965	1965

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1965 - 1998	
ANNUAL TOTAL	142000.8		217959.80			
ANNUAL MEAN	389		597		513	
HIGHEST ANNUAL MEAN					796	
LOWEST ANNUAL MEAN					101	
HIGHEST DAILY MEAN	845 May 31		864 May 1		864 May 1 1998	
LOWEST DAILY MEAN	1.1 Oct 9		.00 Sep 14		.00 Jul 31 1965	
ANNUAL SEVEN-DAY MINIMUM	1.1 Oct 9		.00 Sep 14		.00 Jul 31 1965	
ANNUAL RUNOFF (AC-FT)	281700		432300		371800	
ANNUAL DISCHARGE (AC-FT) a	206300		350400			
ANNUAL DISCHARGE (AC-FT) b	13850		12080			
10 PERCENT EXCEEDS	830		858		826	
50 PERCENT EXCEEDS	533		738		570	
90 PERCENT EXCEEDS	1.9		1.6		25	

a Discharge, in acre-feet, to Drum No. 1 and 2 Powerplants, provided by Pacific Gas & Electric Co.

b Discharge, in acre-feet, to Alta Powerplant, provided by Pacific Gas & Electric Co.

## 11414200 SOUTH YUBA CANAL NEAR EMIGRANT GAP, CA

LOCATION.—Lat 39°18'49", long 120°39'43", in SE 1/4 NE 1/4 sec.30, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on left bank of concrete flume 400 ft downstream from Bowman Lake Road and 2.5 mi northeast of Emigrant Gap.

PERIOD OF RECORD.—October 1964 to current year.

GAGE.—Water-stage recorder and concrete control. Elevation of gage is 4,590 ft above sea level, from topographic map.

REMARKS.—Canal diverts from Spaulding No. 2 Powerplant (station 11414155) at Lake Spaulding Dam. Downstream from the gage, some flow is diverted to Bear River. The remainder of the water enters Deer Creek at Deer Creek Powerplant (station 11414205). See schematic diagrams of Yuba and Bear River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 165 ft<sup>3</sup>/s, Aug. 3, 1965; no flow at times in some years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	63	136	41	145	137	138	137	137	139	63	63
2	66	61	136	42	87	136	138	140	137	139	63	63
3	70	60	135	41	42	136	137	136	137	140	63	63
4	74	53	134	40	41	135	138	134	138	139	103	63
5	74	49	133	41	43	134	140	135	137	139	128	62
6	71	51	133	41	45	133	68	136	137	138	102	63
7	71	46	125	42	52	132	35	136	138	138	64	63
8	73	45	126	41	52	132	35	136	138	138	63	63
9	68	44	130	41	51	132	35	136	138	139	63	63
10	70	45	133	41	50	132	35	136	137	139	63	63
11	72	45	135	38	50	131	35	136	137	139	63	63
12	41	49	136	31	58	129	35	136	137	139	63	63
13	23	62	137	31	52	129	35	136	137	138	63	64
14	58	71	137	35	51	128	35	135	137	136	63	64
15	76	71	135	28	49	128	35	134	138	136	63	63
16	77	71	136	28	91	130	65	135	138	135	62	60
17	72	71	135	25	145	128	103	135	138	135	62	59
18	72	69	134	31	145	128	38	135	138	133	62	59
19	72	59	131	31	145	129	35	135	138	134	62	59
20	72	65	132	31	144	131	13	135	138	94	63	59
21	72	110	133	84	143	133	3.5	135	138	61	63	59
22	71	143	81	143	143	132	53	135	137	61	63	58
23	70	143	39	144	142	134	59	136	137	62	64	64
24	68	142	41	142	142	128	139	137	138	62	65	64
25	66	141	43	143	141	133	136	139	139	62	64	58
26	67	141	43	143	140	137	136	138	139	63	64	57
27	61	139	41	143	140	140	136	137	139	62	63	57
28	54	139	42	144	139	139	138	137	138	63	63	56
29	56	138	43	146	---	139	139	138	139	63	63	57
30	56	137	42	146	---	138	138	137	139	63	63	57
31	62	---	41	145	---	138	---	136	---	63	63	---
TOTAL	2043	2523	3258	2243	2668	4121	2405.5	4219	4133	3392	2099	1829
MEAN	65.9	84.1	105	72.4	95.3	133	80.2	136	138	109	67.7	61.0
MAX	77	143	137	146	145	140	140	140	139	140	128	64
MIN	23	44	39	25	41	128	3.5	134	137	61	62	56
AC-FT	4050	5000	6460	4450	5290	8170	4770	8370	8200	6730	4160	3630
a	3280	2400	2240	2500	2460	3740	1790	2920	3370	3460	3330	3310

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

	MEAN	79.2	68.4	72.3	75.0	78.8	82.0	74.9	109	111	97.3	92.5	89.0
MAX	158	157	157	155	151	147	146	156	163	160	155	152	152
(WY)	1966	1966	1966	1984	1984	1980	1967	1980	1965	1965	1965	1965	1965
MIN	35.9	14.7	33.4	18.2	11.4	15.6	11.3	27.2	46.9	46.1	41.7	38.0	38.0
(WY)	1978	1995	1978	1997	1997	1997	1979	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1965 - 1998

ANNUAL TOTAL	32342.0	34933.5	
ANNUAL MEAN	88.6	95.7	85.8
HIGHEST ANNUAL MEAN			124
LOWEST ANNUAL MEAN			47.2
HIGHEST DAILY MEAN	156	Apr 25	146
LOWEST DAILY MEAN	2.0	Mar 21	3.5
ANNUAL SEVEN-DAY MINIMUM	2.0	Mar 21	30
ANNUAL RUNOFF (AC-FT)	64150	69290	62130
ANNUAL DISCHARGE (AC-FT) a	33710	34790	
10 PERCENT EXCEEDS	139	139	142
50 PERCENT EXCEEDS	103	91	79
90 PERCENT EXCEEDS	9.7	41	39

a Discharge, in acre-feet, to Deer Creek Powerplant, provided by Pacific Gas & Electric Co.



## 11414210 SOUTH YUBA RIVER BELOW SPAULDING NO. 2 POWERPLANT, NEAR EMIGRANT GAP, CA

LOCATION.—Lat 39°19'28", long 120°38'42", in NE 1/4 SE 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on left bank 200 ft downstream from Spaulding No. 2 Powerplant, 0.2 mi downstream from Spaulding Dam, and 2.3 mi northeast of Emigrant Gap.

DRAINAGE AREA.—118 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to current year. Unpublished records for water years 1965–85 in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and V-notch sharp-crested weir and steel-lipped rectangular weir. Elevation of gage is 4,670 ft above sea level, from topographic map. Prior to June 1988, at same site and different datum.

REMARKS.—Flow regulated by Lake Spaulding (station 11414140) 0.2 mi upstream. Water is released at the intake to South Yuba Canal (station 11414200) 100 ft upstream. See schematic diagrams of Yuba and Bear River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 194 ft<sup>3</sup>/s, Apr. 14, June 8, 1986, gage height, 3.37 ft, from rating curve extended above 45 ft<sup>3</sup>/s, on basis of weir formula; minimum daily, 0.09 ft<sup>3</sup>/s, Nov. 5–7, 1985.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	6.3	4.3	2.8	2.1	5.6	15	36	42	44	2.9	6.2
2	6.1	6.2	4.3	3.8	4.5	5.7	15	37	43	44	2.9	6.2
3	5.9	6.2	4.0	3.4	3.8	6.5	15	40	43	44	2.9	6.2
4	7.1	6.2	3.8	3.0	1.4	5.9	15	42	43	44	3.3	6.2
5	7.9	6.0	3.8	2.9	1.7	5.4	15	42	42	44	3.5	6.2
6	7.9	6.2	4.2	2.9	2.2	5.1	9.0	43	42	44	3.3	6.2
7	7.9	6.2	7.0	3.0	1.5	4.6	6.3	43	42	44	3.0	6.2
8	8.5	6.2	4.9	3.0	1.3	4.3	6.3	43	42	44	3.0	6.2
9	8.9	6.2	4.3	3.3	1.2	3.9	6.3	43	43	44	3.0	6.2
10	8.6	6.2	3.9	4.8	1.2	3.0	6.5	43	43	44	3.0	6.2
11	8.2	6.2	3.7	6.3	1.2	2.2	6.5	42	43	44	3.0	6.2
12	8.4	6.2	3.6	7.1	1.3	2.0	6.5	43	43	44	3.0	6.2
13	8.0	6.2	3.6	3.2	1.8	2.3	6.3	43	43	44	3.0	5.9
14	5.6	6.2	3.6	4.2	1.8	2.3	6.2	43	43	46	3.0	5.9
15	5.6	6.2	3.7	6.8	2.0	2.6	6.2	42	43	46	3.0	5.9
16	5.6	6.2	4.0	5.4	2.1	2.8	14	42	43	46	3.0	5.9
17	5.6	6.5	4.8	4.7	3.5	2.2	28	42	43	46	3.0	5.9
18	5.6	5.0	2.9	3.6	6.2	2.1	4.1	42	43	46	3.0	5.9
19	5.6	5.6	1.7	3.2	6.0	2.2	2.6	42	43	46	3.5	5.9
20	6.0	3.6	1.6	2.9	5.9	2.4	42	42	43	21	4.5	5.9
21	6.5	4.7	1.5	2.5	5.9	2.3	24	43	43	4.0	4.5	5.9
22	6.5	4.6	1.0	2.0	5.9	3.7	12	42	43	3.0	4.5	5.9
23	6.5	5.0	1.1	2.0	5.9	4.2	10	42	43	3.0	4.5	5.9
24	6.5	4.9	1.8	1.9	5.9	4.1	31	42	43	3.0	5.1	5.8
25	6.5	5.1	1.7	1.7	5.9	2.2	32	43	44	3.0	5.9	5.6
26	6.5	7.8	1.7	1.6	5.9	8.4	32	43	44	3.0	6.0	5.6
27	6.5	5.1	4.3	1.7	5.6	15	32	42	44	3.0	6.2	5.8
28	6.5	4.6	5.2	1.6	5.6	15	32	42	44	2.9	6.2	5.9
29	6.5	4.3	2.8	2.0	---	15	32	43	43	2.9	6.1	5.8
30	6.5	4.3	2.8	1.6	---	15	34	42	43	2.9	5.9	5.6
31	6.5	---	2.8	1.7	---	15	---	42	---	2.9	6.1	---
TOTAL	210.7	170.2	104.4	100.6	99.3	173.0	502.8	1301	1289	902.6	123.8	179.4
MEAN	6.80	5.67	3.37	3.25	3.55	5.58	16.8	42.0	43.0	29.1	3.99	5.98
MAX	8.9	7.8	7.0	7.1	6.2	15	42	43	44	46	6.2	6.2
MIN	5.6	3.6	1.0	1.6	1.2	2.0	2.6	36	42	2.9	2.9	5.6
AC-FT	418	338	207	200	197	343	997	2580	2560	1790	246	356

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	4.25	4.07	4.58	4.41	10.8	17.5	25.4	25.6	24.8	7.11	4.54	4.57	
MAX	6.80	6.23	21.2	17.7	61.4	111	118	85.8	111	29.1	8.84	8.22	
(WY)	1998	1995	1997	1995	1986	1986	1986	1986	1986	1998	1997	1997	
MIN	1.50	1.52	1.72	1.70	2.13	1.95	2.05	1.75	1.71	1.71	1.55	1.58	
(WY)	1986	1986	1987	1989	1989	1988	1987	1987	1987	1986	1986	1987	

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1986 - 1998

ANNUAL TOTAL	4989.5	5156.8	
ANNUAL MEAN	13.7	14.1	11.4
HIGHEST ANNUAL MEAN			41.3
LOWEST ANNUAL MEAN			2.05
HIGHEST DAILY MEAN	141	Apr 10	46
LOWEST DAILY MEAN	1.0	Dec 22	1.0
ANNUAL SEVEN-DAY MINIMUM	1.5	Dec 19	1.4
INSTANTANEOUS PEAK FLOW			136
INSTANTANEOUS PEAK STAGE			2.69
ANNUAL RUNOFF (AC-FT)	9900	10230	8280
10 PERCENT EXCEEDS	39	43	33
50 PERCENT EXCEEDS	6.5	5.9	4.5
90 PERCENT EXCEEDS	3.3	2.2	1.7

## 11414250 SOUTH YUBA RIVER AT LANGS CROSSING, NEAR EMIGRANT GAP, CA

LOCATION.—Lat 39°19'07", long 120°39'24", in SW 1/4 SW 1/4 sec.20, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on right bank 50 ft downstream from road bridge, 0.8 mi downstream from Spaulding Nos. 1 and 2 Powerplants, and 1.6 mi northeast of Emigrant Gap.

DRAINAGE AREA.—120 mi<sup>2</sup>.

PERIOD OF RECORD.—December 1965 to current year.

GAGE.—Water-stage recorder. Datum of gage is 4,432.44 ft above sea level (levels by Pacific Gas & Electric Co.).

REMARKS.—Flow regulated by Lake Spaulding (station 11414140) 0.8 mi upstream. Lake Spaulding receives water from Canyon Creek via the Bowman–Spaulding Canal (station 11416100). Most of the water is diverted out of the Yuba River just downstream from Spaulding Dam via Drum Canal (station 11414170) and South Yuba Canal (station 11414200). See schematic diagrams of Yuba and Bear River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, about 34,200 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 23.60 ft, from rating curve extended above 8,800 ft<sup>3</sup>/s on basis of spillway rating at Spaulding Dam; minimum daily, 2.1 ft<sup>3</sup>/s, on several days during July and September 1977.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	6.1	8.7	6.2	16	e14	26	50	637	913	5.4	6.9
2	6.9	6.0	8.0	12	49	17	25	68	1200	868	5.1	6.8
3	5.7	6.0	7.5	15	87	22	26	59	1230	778	5.0	6.8
4	7.2	5.9	7.2	14	34	18	26	58	992	706	5.1	6.8
5	8.7	5.8	7.6	12	27	16	27	57	1200	668	5.4	7.2
6	8.6	6.2	9.1	11	37	15	22	132	1230	540	5.4	7.1
7	8.2	6.4	35	12	28	14	18	430	1650	650	4.7	7.0
8	9.3	6.0	20	12	22	13	17	892	1610	454	4.7	7.0
9	15	6.0	15	14	17	13	18	1150	1450	400	4.8	7.1
10	14	6.2	12	27	16	14	19	781	1620	394	4.6	7.0
11	13	6.5	11	54	15	15	19	314	1710	298	4.6	6.9
12	11	6.3	10	88	15	17	18	155	1900	212	4.7	6.8
13	9.4	6.9	9.8	36	20	19	18	126	2100	60	4.7	6.7
14	6.0	7.6	10	31	22	21	17	97	2390	59	4.7	6.7
15	6.0	8.1	10	75	20	25	16	70	2780	59	4.7	7.3
16	5.9	8.6	11	58	16	30	24	67	2660	58	4.7	7.1
17	5.8	9.7	13	e61	15	26	40	72	2260	58	4.6	6.6
18	5.6	7.9	11	e29	15	23	19	57	2100	58	4.6	6.6
19	5.6	19	9.1	e42	15	23	19	59	2340	57	4.7	6.7
20	5.9	12	8.0	e41	16	25	61	204	2320	30	5.7	6.9
21	6.5	9.4	7.0	e17	15	25	44	332	2190	7.8	5.6	6.8
22	6.4	7.9	5.8	e17	e15	46	32	266	2170	6.8	5.5	6.8
23	6.5	9.9	4.9	e13	e14	51	32	294	1500	6.6	5.5	6.9
24	6.3	9.7	5.8	e13	e14	91	50	289	689	6.4	5.9	6.7
25	6.3	12	5.1	e12	e14	42	49	966	243	6.3	7.0	6.2
26	6.3	46	4.9	e12	e13	32	45	1080	724	6.1	7.1	6.5
27	6.2	19	6.8	e12	e13	36	43	578	707	6.0	7.1	7.8
28	6.0	13	9.2	11	e13	32	43	361	1270	5.9	7.1	7.0
29	6.1	11	6.5	15	---	29	45	300	1100	5.9	7.1	6.8
30	6.0	9.6	6.5	14	---	27	49	214	831	5.9	6.9	6.7
31	6.1	---	6.4	13	---	27	---	245	---	5.7	6.9	---
TOTAL	233.5	300.7	301.9	799.2	613	818	907	9823	46803	7389.4	169.6	206.2
MEAN	7.53	10.0	9.74	25.8	21.9	26.4	30.2	317	1560	238	5.47	6.87
MAX	15	46	35	88	87	91	61	1150	2780	913	7.1	7.8
MIN	5.6	5.8	4.9	6.2	13	13	16	50	243	5.7	4.6	6.2
AC-FT	463	596	599	1590	1220	1620	1800	19480	92830	14660	336	409

e Estimated.

## 11414250 SOUTH YUBA RIVER AT LANGS CROSSING, NEAR EMIGRANT GAP, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

MEAN	7.14	43.3	50.8	126	97.4	93.1	89.4	331	443	73.2	6.12	6.39
MAX	18.8	683	685	2465	1626	1304	620	1734	2613	822	9.44	10.3
(WY)	1972	1984	1982	1997	1986	1986	1982	1996	1983	1983	1971	1986
MIN	2.68	4.51	5.44	4.51	5.58	5.10	3.41	5.29	3.05	2.34	2.43	2.73
(WY)	1978	1978	1977	1976	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1966 - 1998	
ANNUAL TOTAL	156916.3		68364.5			
ANNUAL MEAN	430		187		117	
HIGHEST ANNUAL MEAN					448	
LOWEST ANNUAL MEAN					4.35	
HIGHEST DAILY MEAN	25400	Jan 1	2780	Jun 15	25400	Jan 1 1997
LOWEST DAILY MEAN	4.6	Jun 19	4.6	Aug 10	2.1	Jul 15 1997
ANNUAL SEVEN-DAY MINIMUM	4.7	Jun 19	4.7	Aug 10	2.1	Sep 22 1997
INSTANTANEOUS PEAK FLOW			3450	Jun 15	34200	Jan 1 1997
INSTANTANEOUS PEAK STAGE			9.88	Jun 15	23.60	Jan 1 1997
ANNUAL RUNOFF (AC-FT)	311200		135600		84660	
10 PERCENT EXCEEDS	880		696		97	
50 PERCENT EXCEEDS	12		14		7.6	
90 PERCENT EXCEEDS	6.0		5.9		5.3	

## 11414360 LAKE CREEK BELOW CARR LAKE, NEAR GRANITEVILLE, CA

**LOCATION.**—Lat 39°23'57", long 120°38'31", in SE 1/4 NE 1/4 sec.29, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 65 ft downstream from Carr Lake, 2.0 mi upstream from Fall Creek, and 5.8 mi southeast of Graniteville.

DRAINAGE AREA.—0.48 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1995 to current year. Unpublished records for water years 1965–95 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and compound rectangular weir. Elevation of gage is 6,650 ft above sea level (levels by Pacific Gas & Electric Co). August 1965 to November 1975, nonrecording gage at site 65 ft upstream at different datum. November 1975 to July 1984, nonrecording gage at same site but different datum. July 1984 to September 1995, nonrecording gage at same site and datum.

REMARKS.—Records not computed for winter months. Flow regulated by Carr Lake. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

### DAILY MEAN VALUES

[illegible]

## 11414400 FRENCH LAKE NEAR CISCO, CA

LOCATION.—Lat 39°25'16", long 120°32'28", in SE 1/4 SW 1/4 sec.17, T.18 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank near French Lake Dam on Canyon Creek, 0.5 mi upstream from Weil Lake, and 8.2 mi north of Cisco.

DRAINAGE AREA.—4.60 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1986 to current year. Unpublished records for water years 1966–86 available in the files of the U.S. Geological Survey.

GAGE.—Water-stage recorder installed May 19, 1998. Records prior to May 19 are instantaneous values.

REMARKS.—Reservoir is formed on natural lake by rock-filled dam completed in 1859. Usable capacity, 13,940 acre-ft between elevations 6,594.90 ft, invert of outlet gate, and 6,660.28 ft, crest of spillway. Figures given represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Nevada Irrigation District in 1964)

6,610	1,805	6,640	8,006
6,620	3,636	6,650	10,701
6,630	5,677	6,662	14,542

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	14200	14200	13600	7990
2	---	---	---	---	---	---	---	---	14200	14200	13500	7790
3	---	---	---	---	---	---	---	---	14100	14200	13400	7570
4	---	---	---	---	---	---	---	---	14200	14200	13200	7370
5	---	---	---	---	---	---	---	---	14200	14200	13100	7180
6	---	---	---	---	---	---	---	---	14200	14200	13000	6970
7	---	---	---	---	---	---	---	---	14200	14200	12800	6770
8	---	---	---	---	---	---	---	---	14200	14200	12700	6660
9	---	---	---	---	---	---	---	---	14200	14200	12500	6640
10	---	---	---	---	---	---	---	---	14200	14200	12400	6630
11	---	---	---	---	---	---	---	---	14200	14200	12200	6620
12	---	---	---	---	---	---	---	---	14200	14100	12100	6610
13	---	---	---	---	---	---	---	---	14200	14100	12000	6600
14	---	---	---	---	---	---	---	---	14200	14100	11800	6590
15	---	---	---	---	---	---	---	---	14200	14100	11700	6590
16	6950	---	---	---	---	---	---	---	14200	14100	11600	6570
17	---	---	---	---	---	---	---	---	14200	14100	11400	6560
18	---	---	---	---	---	---	---	---	14300	14100	11300	6550
19	---	---	---	---	---	---	---	13000	14300	14100	11100	6540
20	---	---	---	---	---	---	---	13100	14300	14100	10800	6530
21	---	---	---	---	---	---	---	13200	14300	14100	10600	6520
22	6330	---	---	---	---	---	---	13200	14200	14000	10300	6510
23	---	---	---	---	---	---	---	13300	14200	14000	10100	6500
24	---	---	---	---	---	---	---	13400	14200	14000	9850	6500
25	---	---	---	---	---	---	---	13800	14300	14000	9600	6490
26	---	---	---	---	---	---	---	13900	14300	14000	9350	6490
27	---	---	---	---	---	---	---	13900	14200	14000	9120	6490
28	---	---	---	---	---	---	---	14000	14300	14000	8890	6490
29	---	---	---	---	---	---	10600	14000	14300	14000	8670	6470
30	5520	---	---	---	---	---	---	14000	14300	13900	8440	6460
31	---	---	---	---	---	---	---	14100	---	13800	8220	---
MAX	---	---	---	---	---	---	---	---	14300	14200	13600	7990
MIN	---	---	---	---	---	---	---	---	14100	13800	8220	6460
a								6760.75	6761.22	6759.83	6740.81	6733.49
b								+200	-500	-5580	-1760	

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

**LOCATION.**—Lat 39°25'16", long 120°32'30", in SE 1/4 SW 1/4 sec.17, T.18 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 10 ft downstream from outlet at French Lake Dam on Canyon Creek, 0.5 mi upstream from Weil Lake, and 8.2 mi north of Cisco.

PERIOD OF RECORD.—January 1989 to current year (low flow records only). Unpublished records for water years 1967–88 available in files of the U.S. Geological Survey.

REMARKS.—No records computed above 3.2 ft<sup>3</sup>/s. Flow regulated by French Lake (station 11414400). Flow over the spillway bypasses this station. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

[illegible]

LOCATION.—Lat 39°25'45", long 120°34'04", in SE 1/4 NE 1/4 sec.13, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, near right bank end of Faucherie Dam on Canyon Creek, 8.5 mi north of Cisco.

PERIOD OF RECORD.—October 1986 to current year. Unpublished records for water years 1965–86 available in files of the U.S. Geological Survey.

REMARKS.—Reservoir is formed on natural lake by earth-filled dam initially constructed prior to 1880 and enlarged in 1964. Usable capacity, 3,740 acre-ft between elevations 6,090.00 ft, invert of outlet gate, and 6,123.00 ft, crest of spillway. Dead storage, below elevation 6,090 ft, 240 acre-ft. Figures given represent total contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

6,090	240	6,110	2,216
6,095	628	6,115	2,854
6,100	1,095	6,120	3,540
6,105	1,629	6,125	4,280

[illegible]

LOCATION.—Lat 39°25'46", long 120°34'06", in SE 1/4 NE 1/4 sec.13, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 80 ft downstream from Faucherie Dam on Canyon Creek, 8.5 mi north of Cisco.

PERIOD OF RECORD.—January 1989 to current year (low flow records only). Unpublished records for water years 1965–88 available in files of the U.S. Geological Survey.

REMARKS.—No records computed above 3.2 ft<sup>3</sup>/s. Flow regulated by Faucherie Lake (station 11414440). Flow over the spillway bypasses this station. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

[illegible]



**LOCATION.**—Lat 39°26'44", long 120°36'02", in NW 1/4 NW 1/4 sec.11, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, near right bank end of Sawmill Lake Dam on Canyon Creek, 0.8 mi upstream from Bowman Lake, and 7.2 mi east of Graniteville.

PERIOD OF RECORD.—October 1986 to current year. Unpublished records for water years 1966–86 available in files of the U.S. Geological Survey.

REMARKS.—Reservoir is formed by a rock-filled dam initially constructed prior to 1880 and enlarged in 1941. Usable capacity, 3,030 acre-ft between elevations 5,805 ft, base of dam, and 5,860 ft, crest of spillway. Figures given represent usable contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Yuba River Basin.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Nevada Irrigation District in 1964)

5,805	0	5,850	2,000
5,820	110	5,860	3,030
5,830	430	5,863	3,375
5,840	1,130		

[illegible]

## 11414470 CANYON CREEK BELOW SAWMILL LAKE, NEAR GRANITEVILLE, CA

LOCATION.—Lat 39°26'44", long 120°36'05", in NW 1/4 NW 1/4 sec.11, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 130 ft downstream from outlet at Sawmill Lake Dam on Canyon Creek, 0.8 mi upstream from Bowman Lake, and 7.2 mi east of Graniteville.

DRAINAGE AREA.—16.4 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1989 to current year. Unpublished records for water years 1965–89 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and V-notch sharp-crested weir in concrete control. Elevation of gage is 5,790 ft above sea level, from topographic map. September 1964 to July 6, 1988, nonrecording gage at two sites 470 ft downstream at different datum. July 7, 1988, to January 1989, nonrecording gage at same site and datum.

REMARKS.—Flow completely regulated by Sawmill Lake (station 11414465). Flow over the spillway bypasses this station. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 128 ft<sup>3</sup>/s, Mar. 8–11, 1993, gage height, 2.02 ft; minimum daily, 2.5 ft<sup>3</sup>/s, Oct. 7, 1989, May 12, 1997.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	3.3	4.1	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.1	4.1
2	3.0	3.4	4.1	4.2	4.3	4.2	4.2	4.2	4.5	4.2	4.1	4.1
3	3.0	3.4	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	4.1
4	3.0	3.4	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	4.1
5	3.0	3.6	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	4.1
6	3.0	4.0	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	4.1
7	2.9	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	4.1
8	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	4.1
9	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	31
10	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	78
11	2.9	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	3.9	72
12	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	3.5	71
13	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	3.6	70
14	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	3.7	69
15	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	3.7	68
16	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	3.9	66
17	3.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	56
18	3.1	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	40
19	3.1	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.1	4.0	22
20	2.9	4.0	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.1	4.0	25
21	2.9	4.0	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.1	4.0	40
22	3.0	4.0	4.2	4.2	4.2	4.3	4.2	4.2	4.5	4.1	4.0	39
23	3.1	4.0	4.2	4.2	4.2	4.2	4.2	4.2	4.4	4.1	4.1	25
24	3.1	4.0	4.2	4.2	4.2	4.3	4.2	4.2	4.2	4.1	4.1	11
25	3.1	4.1	4.2	4.2	4.1	4.2	4.2	4.3	4.2	4.1	4.1	9.5
26	3.2	4.1	4.2	4.2	4.1	4.2	4.2	4.2	4.2	4.1	4.1	9.5
27	3.3	4.1	4.2	4.2	4.2	4.2	4.2	4.3	4.2	4.1	4.1	9.5
28	3.3	4.1	4.2	4.2	4.2	4.2	4.2	4.5	4.2	4.0	4.0	9.5
29	3.3	4.1	4.2	4.2	---	4.2	4.2	4.5	4.2	4.1	4.0	9.5
30	3.3	4.1	4.2	4.2	---	4.2	4.2	4.5	4.2	4.1	4.1	9.4
31	3.3	---	4.2	4.2	---	4.2	---	4.5	---	4.1	4.1	---
TOTAL	94.8	119.0	130.0	130.2	117.5	130.4	126.0	131.6	132.8	128.8	123.2	872.7
MEAN	3.06	3.97	4.19	4.20	4.20	4.21	4.20	4.25	4.43	4.15	3.97	29.1
MAX	3.3	4.1	4.2	4.2	4.3	4.3	4.2	4.5	4.5	4.2	4.1	78
MIN	2.9	3.3	4.1	4.2	4.1	4.2	4.2	4.2	4.2	4.0	3.5	4.1
AC-FT	188	236	258	258	233	259	250	261	263	255	244	1730

## 11414470 CANYON CREEK BELOW SAWMILL LAKE, NEAR GRANITEVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1998, BY WATER YEAR (WY)

MEAN	8.23	11.4	13.8	11.3	7.03	14.9	14.7	13.0	4.93	4.41	11.3	16.6
MAX	33.6	37.1	61.4	56.7	17.6	95.1	96.0	88.6	7.62	6.50	45.3	51.2
(WY)	1992	1991	1990	1990	1990	1993	1993	1993	1993	1993	1996	1992
MIN	3.06	3.14	3.13	3.00	3.00	3.00	3.01	2.68	3.17	3.10	3.26	3.34
(WY)	1998	1993	1997	1997	1997	1997	1997	1989	1996	1990	1997	1997

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1989 - 1998	
ANNUAL TOTAL	1297.9		2237.0			
ANNUAL MEAN	3.56		6.13		11.1	
HIGHEST ANNUAL MEAN					28.8	
LOWEST ANNUAL MEAN					3.45	
HIGHEST DAILY MEAN	7.7	May 15	78	Sep 10	128	Mar 8 1993
LOWEST DAILY MEAN	2.5	May 12	2.9	Oct 7	2.5	Oct 7 1989
ANNUAL SEVEN-DAY MINIMUM	2.7	May 6	3.0	Oct 5	2.6	Apr 23 1989
INSTANTANEOUS PEAK FLOW			81	Sep 9	128	Mar 8 1993
INSTANTANEOUS PEAK STAGE			1.80	Sep 9	2.02	Mar 8 1993
ANNUAL RUNOFF (AC-FT)	2570		4440		8030	
10 PERCENT EXCEEDS	4.6		4.5		28	
50 PERCENT EXCEEDS	3.1		4.2		4.3	
90 PERCENT EXCEEDS	3.0		3.6		3.1	

LOCATION.—Lat 39°27'52", long 120°33'44", in SW 1/4 SW 1/4 sec.31, T.19 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on outlet structure on Jackson Lake Dam on Jackson Creek, 3.0 mi upstream from Bowman Lake, and 8.0 mi southeast of Sierra City.

REMARKS.—Reservoir is formed on natural lake by earth-filled dam completed in 1859. Usable capacity, 974 acre-ft between gage height 0.0 ft, invert of outlet, and 22.67 ft, crest of spillway. Dead storage below gage height 0.0 ft, 360 acre-ft. Figures given represent total contents. Released water is used for hydroelectric power and irrigation downstream. See schematic diagram of Yuba River Basin.

0	360	15	958
5	545	20	1,185
10	730	24	1,407

[illegible]

**LOCATION.**—Lat 39°27'53", long 120°33'46", in SW 1/4 SW 1/4 sec.31, T.19 N., R.13 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on left bank 75 ft downstream from Jackson Lake Dam on Jackson Creek, 3.0 mi upstream from Bowman Lake, and 8.0 mi southeast of Sierra City.

PERIOD OF RECORD.—January 1989 to September 1992, April 1993 to current year (low-flow records only). Unpublished records for water years 1965–88 available in files of the U.S. Geological Survey.

**GAGE.**—Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,570 ft above sea level, from topographic map. October 1964 to October 1986, nonrecording gage at site 25 ft downstream at different datum. October 1986 to January 1989, nonrecording gage at same site and datum.

REMARKS.—No records computed above 2.9 ft<sup>3</sup>/s. Except for instantaneous observations, there were no usable data for the entire year due to equipment malfunction. Flow regulated by Jackson Lake (station 11414690). Flow over the spillway bypasses this station. See schematic diagram of Yuba River Basin.

### DAILY INSTANTANEOUS VALUES

[illegible]

## 11415500 BOWMAN LAKE NEAR GRANITEVILLE, CA

LOCATION.—Lat 39°27'01", long 120°39'09", in SE 1/4 SW 1/4 sec.5, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on right bank near rockfill portion of Bowman Dam on Canyon Creek, 4.6 mi east of Graniteville, and 8 mi south of Sierra City.

DRAINAGE AREA.—27.1 mi<sup>2</sup>.

PERIOD OF RECORD.—December 1926 to current year.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Nevada Irrigation District). Prior to Oct. 8, 1964, nonrecording gage at same site and datum.

REMARKS.—Lake is formed by one rockfill and one concrete-arch dam; storage began in November 1926. Total capacity, 68,700 acre-ft between elevations 5,400 ft, bottom of outlet tunnel, and 5,563.6 ft, top of radial spillway gates and crest of concrete-arch dam. Flashboards are occasionally added, increasing elevation to 5,565.8 ft and capacity to 70,400 acre-ft, all of which is available for release. Lake receives water from Middle Yuba River via Milton-Bowman Tunnel (station 11408000), and releases it through Bowman-Spaulding Canal (station 11416000) which conveys it to reservoirs of Pacific Gas & Electric Co. Water is eventually used for irrigation by Nevada Irrigation District. Records, including extremes, represent total contents. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 71,000 acre-ft, May 30, 1965, elevation, 5,566.5 ft; lake completely drained for inspection and repair Nov. 25 to Dec. 9, 1949, Oct. 1–20, 1966, Oct. 4–29, 1972, and Sept. 21–30, 1981.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 69,300 acre-ft, June 14, elevation, 5564.50 ft; minimum, 27,600 acre-ft, Mar. 14, elevation, 5506.34 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table dated Nov. 24, 1926)

5,419.6	0	5,470	10,200
5,430	900	5,480	14,200
5,440	2,100	5,510	30,000
5,450	4,100	5,540	49,800
5,460	6,900	5,570	73,800

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43000	46600	43600	33100	34700	30500	35900	40500	56600	e68600	59900	52600
2	43300	46600	43200	32800	34800	30000	35900	42000	57600	e68400	59700	52500
3	43400	46700	42800	32500	35600	29500	35900	43200	58500	e68200	59500	52500
4	43500	46700	42500	32300	35800	29100	35900	44100	59200	e68000	59400	52500
5	43500	46700	42100	31900	35900	29000	35900	44800	60100	e67700	59200	52500
6	43500	46800	41900	31500	36000	28800	35800	45600	61300	e67600	59000	52400
7	43800	46800	41900	31200	36100	28600	35700	46300	62500	e67500	58800	52400
8	44300	46800	41700	30800	36100	28400	35600	47300	63900	67400	58600	52400
9	45000	46800	41400	30400	36000	28200	35500	48400	66200	67300	58400	52200
10	45300	46900	41200	30100	35900	28000	35500	49000	66400	67100	58100	e52100
11	45300	46900	40800	30000	35800	27800	35400	49300	67800	66900	57700	e52000
12	45400	46900	40500	30300	35700	27700	35300	49700	69000	66500	57300	e51800
13	45400	46700	40100	30400	35500	27700	35400	50000	69200	66200	56900	e51700
14	45500	46500	39800	30400	35500	27600	35300	50200	69300	65800	56500	e51600
15	45500	46300	39400	31900	35300	27600	35000	50500	69300	65400	56100	e51500
16	45500	46100	39100	33300	35200	27700	34500	50800	69200	e65200	55700	e51400
17	45600	45900	38800	35400	34900	27800	34100	51100	69200	e64700	55200	e51300
18	45600	45700	38400	36300	34700	27900	33700	51300	69200	e64200	54800	51100
19	45700	45500	38100	36600	34500	28000	33300	51600	e69200	e63800	54400	50900
20	45700	45300	37800	36600	34300	28100	33100	51900	e69100	e63400	54300	50700
21	45700	45000	37400	36600	34100	28400	33100	52100	e69100	e63100	54000	50500
22	45700	44700	37000	36500	34000	29600	33500	52300	e69000	e62900	53700	50400
23	45700	44600	36600	36300	33600	31200	34600	52500	e69000	62600	53400	50300
24	45700	44500	36200	36200	33100	34000	35200	52700	e69000	62300	53100	50100
25	45800	44500	35800	36000	32600	34900	35600	54100	e68900	62000	52900	49900
26	45800	44700	35400	35800	32100	35300	36000	54600	e68900	61600	52800	49700
27	46000	44600	35000	35600	31500	35600	36600	54900	e68800	61200	52700	49600
28	46200	44400	34600	35400	31000	35800	37400	55100	e68800	60900	52700	49400
29	46400	44100	34200	35300	---	35900	38400	55300	e68700	60500	52600	49200
30	46500	43900	33900	35100	---	35900	39400	55400	e68700	60200	52600	49000
31	46600	---	33400	34900	---	35900	---	55800	---	60000	52600	---
MAX	46600	46900	43600	36600	36100	35900	39400	55800	69300	68600	59900	52600
MIN	43000	43900	33400	30000	31000	27600	33100	40500	56600	60000	52600	49000
a	5535.31	5531.54	5515.81	5518.12	5512.05	5519.75	5524.94	5547.76		5553.14	5543.47	5538.68
b	+3900	-2700	-10500	+1500	-3900	+4900	+3500	+16400	+12900	-8700	-7400	-3600

CAL YR 1997 MAX 69000 MIN 33400 b -28900

WTR YR 1998 MAX 69300 MIN 27600 b +6300

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11416100 BOWMAN-SPAULDING CANAL AT JORDAN CREEK SIPHON VENTURI, NEAR EMIGRANT GAP, CA

LOCATION.—Lat 39°20'32", long 120°38'26", in SW 1/4 NW 1/4 sec.16, T.17 N., R.12 E., Nevada County, Hydrologic Unit 18020125, at outlet of Jordan Creek Siphon, 0.6 mi downstream from Fuller Lake, and 3.5 mi northeast of Emigrant Gap.

PERIOD OF RECORD.—October 1964 to current year.

GAGE.—Water-stage recorder and Venturi section. Elevation of gage is 5,340 ft above sea level, from topographic map.

REMARKS.—Records show water diverted from Bowman Lake (station 11415500) plus numerous small tributaries before it enters Lake Spaulding (station 11414140). Most of the water at this gage flows downstream through Spaulding No. 3 Powerplant (station 11416200). See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 335 ft<sup>3</sup>/s, Dec. 25, 1983; no flow at times in most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	219	183	236	238	293	299	315	310	289	307	298
2	112	219	197	239	250	295	297	320	290	297	306	300
3	127	217	218	242	304	299	297	309	306	308	303	301
4	187	200	221	240	260	300	294	302	299	304	303	302
5	201	228	230	238	235	299	291	277	300	299	303	304
6	200	221	235	238	235	300	290	303	289	289	306	306
7	109	219	244	239	237	297	287	302	301	287	305	305
8	26	223	239	236	215	294	288	306	294	286	304	304
9	1.7	219	234	237	198	294	289	310	298	286	303	305
10	134	218	216	243	204	300	300	293	299	287	301	305
11	253	220	229	255	225	304	306	267	296	291	300	304
12	241	220	232	279	224	308	308	262	293	291	300	296
13	235	218	232	277	230	311	310	268	291	290	300	291
14	244	217	231	254	237	308	310	289	294	296	298	289
15	237	217	231	294	230	310	303	294	293	304	297	290
16	229	216	230	217	219	310	299	299	293	313	292	289
17	227	217	238	299	221	306	298	297	288	315	289	289
18	225	190	237	193	228	279	300	290	300	312	281	293
19	224	201	234	260	233	298	293	296	308	309	287	297
20	212	190	233	251	236	310	294	304	309	308	231	303
21	212	179	231	231	236	301	305	304	304	308	269	306
22	202	179	229	224	216	278	309	297	296	309	293	308
23	209	183	230	231	231	218	315	305	299	309	298	307
24	202	187	230	228	240	318	288	312	302	309	298	297
25	186	190	229	223	217	292	284	317	305	309	297	294
26	188	244	229	220	239	277	260	287	307	307	295	297
27	204	217	227	229	275	270	267	288	302	306	300	303
28	220	190	228	236	289	279	303	288	294	306	302	302
29	220	189	235	246	---	269	312	274	289	309	304	299
30	220	185	236	243	---	260	315	277	286	309	303	298
31	220	---	236	237	---	292	---	292	---	307	299	---
TOTAL	5798.7	6232	7084	7515	6602	9069	8911	9144	8935	9349	9174	8982
MEAN	187	208	229	242	236	293	297	295	298	302	296	299
MAX	253	244	244	299	304	318	315	320	310	315	307	308
MIN	1.7	179	183	193	198	218	260	262	286	286	231	289
AC-FT	11500	12360	14050	14910	13100	17990	17670	18140	17720	18540	18200	17820
a	11950	12960	14780	15850	13760	18260	18150	18630	18010	12920	18600	18080

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

	191	199	202	197	187	211	221	233	234	212	251	259
MEAN	191	199	202	197	187	211	221	233	234	212	251	259
MAX	306	308	312	313	311	311	311	319	315	305	316	311
(WY)	1983	1984	1984	1984	1995	1983	1980	1983	1983	1983	1993	1983
MIN	29.5	.000	41.9	37.8	21.4	26.3	19.3	33.9	.000	45.6	40.2	143
(WY)	1973	1965	1978	1977	1991	1977	1977	1965	1965	1991	1988	1977

## SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1965 - 1998

ANNUAL TOTAL	90207.70	96795.7	
ANNUAL MEAN	247	265	217
HIGHEST ANNUAL MEAN			304
LOWEST ANNUAL MEAN			77.9
HIGHEST DAILY MEAN	323	320	335
LOWEST DAILY MEAN	.00	1.7	.00
ANNUAL SEVEN-DAY MINIMUM	.00	122	.00
ANNUAL RUNOFF (AC-FT)	178900	192000	156900
ANNUAL DISCHARGE (AC-FT) a	182500	191900	
10 PERCENT EXCEEDS	307	308	306
50 PERCENT EXCEEDS	282	289	253
90 PERCENT EXCEEDS	131	216	64

a Discharge, in acre-feet, through Spaulding No. 3 Powerplant, provided by Pacific Gas & Electric Co.

## 11416500 CANYON CREEK BELOW BOWMAN LAKE, CA

LOCATION.—Lat 39°26'23", long 120°39'37", in NE 1/4 SE 1/4 sec.7, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, on left bank 1 mi downstream from Bowman Dam, 3.5 mi upstream from Texas Creek, and 8.8 mi south of Sierra City.

DRAINAGE AREA.—28.3 mi<sup>2</sup>.

PERIOD OF RECORD.—January 1927 to current year.

REVISED RECORDS.—WSP 1315-A: 1930(M). WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Elevation of gage is 5,300 ft above sea level, from topographic map.

REMARKS.—Flow regulated by Bowman Lake (station 11415500), several smaller reservoirs, and diversion into Bowman–Spaulding Canal (station 11416000). See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, about 5,500 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 13.01 ft, from floodmarks (backwater from debris), from rating curve extended above 1,500 ft<sup>3</sup>/s, on basis of computation of flow over Bowman Dam; no flow at times in some years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	6.3	6.6	6.7	7.1	33	65	215	184	166	5.0	4.9
2	8.4	6.3	6.4	7.3	11	32	65	272	212	139	5.0	4.9
3	7.8	6.0	6.3	7.8	17	33	66	305	227	138	5.0	4.9
4	5.8	5.8	6.3	7.5	8.3	31	65	298	217	138	5.0	4.9
5	6.0	5.7	6.5	7.0	7.6	30	66	263	216	139	5.1	5.0
6	6.0	5.8	7.2	6.9	8.6	30	65	232	207	99	5.1	5.0
7	5.8	5.8	10	7.0	8.1	30	61	233	231	70	5.1	5.0
8	6.1	5.7	11	7.1	7.5	29	57	235	231	69	5.1	5.0
9	7.5	5.7	7.3	7.1	6.9	24	53	237	229	70	5.1	5.1
10	7.3	5.8	6.9	7.1	7.0	21	42	235	226	73	5.1	5.0
11	6.5	5.9	6.8	7.1	7.0	21	42	208	225	72	5.1	4.9
12	6.3	5.8	6.7	8.7	6.9	21	41	171	336	71	5.1	4.9
13	6.2	6.0	6.6	10	7.8	26	41	142	1060	60	5.1	4.9
14	6.1	6.1	6.6	12	7.5	30	41	127	1160	53	5.1	4.7
15	5.9	6.1	6.6	29	7.0	31	41	128	1160	47	5.1	4.7
16	5.8	6.3	6.7	21	6.8	32	41	129	1140	45	5.1	4.8
17	5.8	6.8	8.0	62	6.7	41	41	130	958	46	5.2	4.8
18	5.8	6.4	7.5	40	6.7	48	47	129	707	45	5.9	4.8
19	5.8	11	6.9	9.4	6.8	49	63	130	777	45	5.2	4.7
20	5.9	7.2	6.7	7.4	6.7	63	64	140	750	24	7.8	4.7
21	5.8	6.3	6.6	7.0	6.8	80	81	149	684	6.8	5.2	4.7
22	5.8	6.1	6.5	7.1	6.7	95	103	133	661	6.7	5.2	4.7
23	5.9	7.3	6.4	7.0	86	192	141	126	554	6.7	5.2	4.8
24	6.1	6.8	6.4	6.9	100	367	147	127	473	6.7	5.1	5.1
25	6.2	7.5	6.3	6.9	127	257	143	138	469	6.7	5.1	5.0
26	6.2	15	6.3	6.8	41	178	153	176	514	6.6	5.1	5.0
27	6.2	8.2	6.3	7.2	35	144	135	194	424	5.8	4.9	5.3
28	6.2	7.3	6.5	7.3	34	119	144	200	378	5.2	4.9	5.0
29	6.3	6.8	6.7	7.8	---	119	170	208	395	5.2	4.9	4.9
30	6.3	6.7	6.7	7.3	---	91	199	176	347	5.0	4.9	4.9
31	6.3	---	6.7	7.1	---	65	---	176	---	5.0	4.9	---
TOTAL	196.9	204.5	215.0	356.5	595.5	2362	2483	5762	15352	1675.4	160.7	147.0
MEAN	6.35	6.82	6.94	11.5	21.3	76.2	82.8	186	512	54.0	5.18	4.90
MAX	8.8	15	11	62	127	367	199	305	1160	166	7.8	5.3
MIN	5.8	5.7	6.3	6.7	6.7	21	41	126	184	5.0	4.9	4.7
AC-FT	391	406	426	707	1180	4690	4930	11430	30450	3320	319	292
a	10860	11540	13170	11110	9980	13360	13180	9440	9610	16800	18090	17320

a Diversion, in acre-feet, to Bowman–Spaulding Canal, provided by Nevada Irrigation District.



## 11416500 CANYON CREEK BELOW BOWMAN LAKE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1998, BY WATER YEAR (WY)

MEAN	3.02	6.25	17.5	23.5	18.2	27.8	43.1	126	147	14.2	2.63	2.50
MAX	24.1	195	360	453	198	629	325	773	542	314	37.3	17.0
(WY)	1973	1984	1965	1997	1965	1986	1940	1963	1952	1952	1952	1952
MIN	.13	.19	.20	.20	.50	.58	.46	.43	.30	.029	.000	.000
(WY)	1935	1940	1937	1937	1933	1935	1934	1947	1977	1935	1934	1963

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1927 - 1998	
ANNUAL TOTAL	24154.5		29510.5			
ANNUAL MEAN	66.2		80.9		35.6	
HIGHEST ANNUAL MEAN					165	1965
LOWEST ANNUAL MEAN					.81	1931
HIGHEST DAILY MEAN	5520	Jan 2	1160	Jun 14	5520	Jan 2 1997
LOWEST DAILY MEAN	3.0	Mar 22	4.7	Sep 14	.00	Apr 16 1934
ANNUAL SEVEN-DAY MINIMUM	3.3	Jul 24	4.7	Sep 14	.00	Apr 16 1934
INSTANTANEOUS PEAK FLOW			1280	Jun 15	5500	Jan 2 1997
INSTANTANEOUS PEAK STAGE			6.95	Jun 15	13.01	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	47910		58530		25790	
ANNUAL DIVERSION (AC-FT) a	167600		154400			
10 PERCENT EXCEEDS	121		220		65	
50 PERCENT EXCEEDS	7.0		7.3		3.1	
90 PERCENT EXCEEDS	4.4		5.0		.30	

a Diversion, in acre-feet, to Bowman-Spaulding Canal, provided by Nevada Irrigation District.

LOCATION.—Lat 39°25'42", long 120°37'19", in SW 1/4 NW 1/4 sec.15, T.18 N., R.12 E., Nevada County, Hydrologic Unit 18020125, Tahoe National Forest, on right bank 200 ft downstream from outlet structure on Lower Rock Lake Dam, and 6.4 mi east of Graniteville.

PERIOD OF RECORD.—October 1995 to current year (low-flow records only). Unpublished records for water years 1974 and 1979–95 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and Parshall flume. Elevation of gage is 6,615 ft above sea level, from topographic map. August 1965 to August 1995, nonrecording gage at same site and datum.

REMARKS.—Records not computed for winter months or above 1.2 ft<sup>3</sup>/s. Flow regulated by Lower Rock Lake. See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

[illegible]

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

[illegible]



## 11417500 SOUTH YUBA RIVER AT JONES BAR, NEAR GRASS VALLEY, CA

LOCATION.—Lat 39°17'32", long 121°06'13", in NW 1/4 SE 1/4 sec.32, T.17 N., R.8 E., Nevada County, Hydrologic Unit 18020125, on left bank at Jones Bar, 100 ft upstream from Rush Creek, 0.9 mi downstream from bridge on State Highway 49, and 5 mi northwest of Grass Valley.

DRAINAGE AREA.—308 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1940 to September 1948, April 1959 to current year. Published as South Fork Yuba River at Jones Bar 1940–48, and as South Yuba River at Jones Bar 1959–63. Yearly discharge for the 1947 water year published in WSP 1315-A.

SEDIMENT DATA: Water years 1966–74.

WATER TEMPERATURE: Water years 1965–79 (daily records).

REVISED RECORDS.—WSP 1315-A: 1942–43(M), drainage area at former site. WSP 1931: Drainage area.

GAGE.—Water-stage recorder and crest-stage gage. Elevation of gage is 1,060 ft above sea level, from river-profile map. Oct. 1, 1940, to Sept. 30, 1948, at site 150 ft upstream at datum 2.00 ft higher.

REMARKS.—Records good. Flow regulated by Lake Spaulding, Fordyce Lake, and Bowman Lake (stations 11414140, 11414090, and 11415500) and many smaller reservoirs. Diversions into and out of basin for several powerplants and for irrigation. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 53,600 ft<sup>3</sup>/s, Dec. 22, 1964, gage height, 25.0 ft, from floodmarks, from rating curve extended above 23,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 1.0 ft<sup>3</sup>/s, Sept. 10–13, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of Dec. 23, 1955, reached a stage of 30.7 ft, from floodmarks, present datum, at site 100 ft upstream.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	43	77	68	499	614	694	958	1330	1190	92	65
2	45	43	70	97	1680	588	638	1400	2030	1260	90	65
3	48	42	66	343	5640	615	834	1390	2050	1260	87	64
4	41	42	63	778	2150	587	808	1190	1780	1080	85	64
5	40	42	63	307	1420	553	802	1220	1900	1100	83	65
6	40	42	80	196	2360	562	834	1230	1900	1060	82	72
7	42	45	803	190	2880	501	764	1380	2220	812	81	73
8	43	46	509	206	2440	481	697	1830	2330	871	79	70
9	86	44	229	182	1420	454	640	2120	2160	661	78	73
10	84	44	152	293	1090	425	626	1840	2280	640	78	72
11	71	48	121	1370	1130	416	638	1290	2410	588	78	69
12	59	50	105	3100	1000	440	650	913	2570	500	76	68
13	50	49	96	1480	1040	449	788	941	3320	330	76	67
14	48	57	100	734	2130	468	719	863	3850	267	75	66
15	46	60	121	2820	1570	484	658	768	4170	255	73	64
16	44	70	99	1970	1100	546	625	749	4160	237	72	64
17	43	78	98	2790	954	580	633	792	3630	232	72	65
18	43	73	115	1990	794	595	630	719	3120	226	72	63
19	42	119	101	1590	929	534	637	692	3360	220	74	63
20	43	160	89	943	924	551	653	768	3380	215	73	63
21	42	80	85	689	1500	594	755	945	3160	151	84	64
22	42	63	78	551	1510	1010	792	900	3110	114	73	63
23	42	69	74	477	1360	1300	926	859	2580	113	71	65
24	42	86	71	420	1360	3030	1040	860	1790	108	70	66
25	41	82	69	371	1060	1800	947	1770	1110	106	69	70
26	42	655	67	334	868	1270	846	2130	1390	103	69	70
27	68	327	66	324	714	1090	827	1550	1620	99	69	87
28	43	149	65	313	650	1010	836	1470	1790	97	69	87
29	42	104	67	596	---	879	883	1520	1750	95	68	74
30	42	89	68	526	---	782	920	1130	1610	94	68	71
31	43	---	68	418	---	739	---	1020	---	93	66	---
TOTAL	1494	2901	3935	26466	42172	23947	22740	37207	73860	14177	2352	2052
MEAN	48.2	96.7	127	854	1506	772	758	1200	2462	457	75.9	68.4
MAX	86	655	803	3100	5640	3030	1040	2130	4170	1260	92	87
MIN	40	42	63	68	499	416	625	692	1110	93	66	63
AC-FT	2960	5750	7810	52500	83650	47500	45100	73800	146500	28120	4670	4070

## 11417500 SOUTH YUBA RIVER AT JONES BAR, NEAR GRASS VALLEY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	81.2	203	489	797	789	774	699	906	691	127	39.1	39.1
MAX	1197	1350	3756	4865	4078	3029	2804	3323	3618	996	84.9	132
(WY)	1963	1984	1965	1997	1986	1986	1982	1963	1967	1983	1983	1965
MIN	11.7	24.2	37.4	45.0	64.0	67.2	51.1	68.3	31.8	11.6	3.05	1.42
(WY)	1945	1960	1960	1991	1977	1977	1977	1992	1977	1947	1947	1947

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR			FOR 1998 WATER YEAR			WATER YEARS 1941 - 1998		
ANNUAL TOTAL	280795			253303					
ANNUAL MEAN	769			694			474		
HIGHEST ANNUAL MEAN							1135		
LOWEST ANNUAL MEAN							42.6		
HIGHEST DAILY MEAN	30300			5640			30300		
LOWEST DAILY MEAN	38			40			1.0		
ANNUAL SEVEN-DAY MINIMUM	39			42			1.0		
INSTANTANEOUS PEAK FLOW				8740			53600		
INSTANTANEOUS PEAK STAGE				12.93			25.00		
ANNUAL RUNOFF (AC-FT)	557000			502400			343600		
10 PERCENT EXCEEDS	1470			1830			1170		
50 PERCENT EXCEEDS	96			416			124		
90 PERCENT EXCEEDS	40			49			28		

## 11418000 YUBA RIVER BELOW ENGLEBRIGHT DAM, NEAR SMARTVILLE, CA

LOCATION.—Lat 39°14'07", long 121°16'23", in NW 1/4 NW 1/4 sec.23, T.16 N., R.6 E., Yuba County, Hydrologic Unit 18020125, on right bank 2,000 ft downstream from Englebright Dam, 0.5 mi upstream from Deer Creek, and 2.3 mi northeast of Smartville.

DRAINAGE AREA.—1,108 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1941 to current year. Prior to October 1953, published as "at Narrows Dam." October 1953 to Sept. 30, 1969, published as "at Englebright Dam." If records for Deer Creek near Smartville (station 11418500) since 1941 are added to records at this station, records equivalent to those published from 1903 to 1941 as Yuba River at Smartville (station 11419000) can be obtained.

WATER TEMPERATURE: Water years 1973–78.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder and acoustic velocity meters. Datum of gage is 278.68 ft above sea level (levels by International Engineering Co.). Prior to Sept. 19, 1958, at site 2,000 ft upstream at datum 248.31 ft higher, and Sept. 19, 1958, to Sept. 30, 1969, at datum 278.68 ft lower. Supplementary gage 2,000 ft upstream since Oct. 1, 1969, at Englebright Dam at datum 248.31 ft higher.

REMARKS.—Diversions up to 1,800 ft<sup>3</sup>/s (see stations 11413250, 11414190, and 11414200) out of basin for power and irrigation upstream from station. Flow regulation by Lake Spaulding (station 11414140), Jackson Meadows and New Bullards Bar Reservoirs (stations 11407800 and 11413515), Englebright Reservoir beginning in 1941, capacity, 70,000 acre-ft, Bowman and Fordyce Lakes (stations 11415500 and 11414090), and many smaller reservoirs. Flow is determined by adding the discharges provided by Narrows Powerplant No. 1 (11417970), Narrows Powerplant No. 2 (11417980), and spill over Englebright Dam (11417950). See schematic diagram of Yuba River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 171,000 ft<sup>3</sup>/s, Dec. 22, 1964, gage height, 546.14 ft, site and datum then in use, from rating curve extended above 25,000 ft<sup>3</sup>/s on basis of computation of peak flow over spillway of dam at gage heights 544.72 and 546.14 ft; no flow at times in 1942, 1949, 1956, 1958–61, 1968–69.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1220	1020	1310	1300	4050	4460	4580	4820	5050	4450	2620	3130
2	1300	1010	1320	1300	5510	4350	4500	5350	6870	4680	2990	3120
3	1290	1000	1320	1300	14800	4300	4880	5340	7870	4650	3260	3270
4	1290	989	1320	1310	8500	4290	4920	5160	7370	4220	3270	3100
5	1290	988	1310	1320	5970	4220	4750	5180	7340	4270	3270	3080
6	1290	978	1310	1320	8070	4300	4890	5310	7170	4300	3270	3090
7	1300	992	1240	1360	11200	4200	4820	5230	7600	4230	2660	3090
8	1300	996	1310	1460	11000	4140	4670	5520	7870	4080	2810	3190
9	1300	995	1310	1470	8940	4120	e4000	5940	7690	3690	2610	2580
10	1290	991	1300	1480	7240	4120	4390	5750	7930	3150	2600	3450
11	1300	991	1290	1460	5340	4120	4140	5140	8240	3200	2610	3050
12	1290	987	1390	2880	5030	4110	4500	4740	8420	3250	3000	2860
13	1290	1190	1280	4660	5200	4110	4980	4800	9420	3230	3190	1850
14	1280	1310	1300	5200	7870	4040	e4870	4710	10100	3040	3080	740
15	1230	1330	1280	10300	9490	3990	4790	4600	10600	2810	2560	634
16	996	1330	1280	8570	7880	3950	4640	4520	10500	2290	2160	642
17	1000	1340	1290	8020	6620	3920	4580	4690	9330	2080	2460	624
18	1000	1340	1290	7170	5440	3880	4530	4550	8010	2100	2630	646
19	1000	1350	1300	6910	4910	3900	4520	4360	8140	2100	2640	651
20	1000	1320	1300	5510	5090	3870	4510	4420	8120	2070	2650	664
21	1000	1300	1290	4780	6520	3880	4590	4520	7890	2060	2660	653
22	999	1300	1300	4520	9530	3900	4740	4590	7800	2060	2660	657
23	985	1320	1300	4250	8770	3960	4810	4440	7010	2070	2670	651
24	1030	1310	1310	4150	7990	7290	4930	4470	5620	2090	3030	651
25	1030	1320	1290	4130	5900	9330	4850	5220	4580	2090	3170	655
26	1020	1320	1300	4130	4880	10600	4660	5920	4570	2280	3160	656
27	1010	1340	1300	4110	4650	10100	4590	5360	4910	2190	3160	656
28	1010	1340	1310	4120	4530	9890	4230	5390	4840	2120	3170	895
29	1010	1310	1300	4280	---	8590	4390	5860	4960	2460	3150	1210
30	1010	1310	1300	4440	---	6190	4710	5090	4990	2630	3130	1210
31	1010	---	1300	4180	---	4610	---	4810	---	2630	3100	---
TOTAL	35370	35617	40350	121390	200920	160730	138960	155800	220810	92570	89400	51355
MEAN	1141	1187	1302	3916	7176	5185	4632	5026	7360	2986	2884	1712
MAX	1300	1350	1390	10300	14800	10600	4980	5940	10600	4680	3270	3450
MIN	985	978	1240	1300	4050	3870	4000	4360	4570	2060	2160	624
AC-FT	70160	70650	80030	240800	398500	318800	275600	309000	438000	183600	177300	101900
a	26770	19290	11440	6530	2560	509	584	28870	30760	53060	48520	16950

e Estimated.

a Combined flow, in acre-feet, from Browns Valley Irrigation Ditch (11420750), Brophy South Canal (11420760) and Hallwood–Cordua Irrigation District Canal (11420770).

## 11418000 YUBA RIVER BELOW ENGLEBRIGHT DAM, NEAR SMARTVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	960	1227	2708	3616	3949	3594	3769	4046	2717	1357	1265	1003
MAX	5206	8964	18100	22350	17330	13060	11950	13330	9017	4034	3140	3144
(WY)	1963	1951	1965	1997	1986	1995	1982	1952	1983	1983	1980	1980
MIN	207	41.3	175	283	211	199	437	367	501	430	326	202
(WY)	1960	1942	1960	1977	1977	1977	1976	1977	1977	1977	1944	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1942 - 1998	
ANNUAL TOTAL	1347938		1343272			
ANNUAL MEAN	3693		3680		2510	
HIGHEST ANNUAL MEAN					5251	
LOWEST ANNUAL MEAN					414	
HIGHEST DAILY MEAN	134000	Jan 2	14800	Feb 3	134000	Jan 2 1997
LOWEST DAILY MEAN	609	Sep 30	624	Sep 17	.00	Nov 8 1941
ANNUAL SEVEN-DAY MINIMUM	659	Sep 24	645	Sep 15	.00	Nov 8 1941
INSTANTANEOUS PEAK FLOW			19600	Feb 3	171000	Dec 22 1964
INSTANTANEOUS PEAK STAGE			18.96	Feb 3	546.14	Dec 22 1964
ANNUAL RUNOFF (AC-FT)	2674000		2664000		1819000	
ANNUAL DISCHARGE (AC-FT) a	288910		245800			
10 PERCENT EXCEEDS	5170		7640		5310	
50 PERCENT EXCEEDS	1340		3270		1290	
90 PERCENT EXCEEDS	996		1010		440	

a Combined flow, in acre-feet, from Browns Valley Irrigation Ditch (11420750), Brophy South Canal (11420760) and Hallwood-Cordua Irrigation District Canal (11420770).



## 11418500 DEER CREEK NEAR SMARTVILLE, CA

LOCATION.—Lat 39°13'28", long 121°16'03", in SW 1/4 SE 1/4 sec.23, T.16 N., R.6 E., Nevada County, Hydrologic Unit 18020125, on left bank 400 ft upstream from county road bridge, 0.9 mi upstream from mouth, and 2 mi northeast of Smartville.

DRAINAGE AREA.—84.6 mi<sup>2</sup>.

PERIOD OF RECORD.—June 1935 to current year.

WATER TEMPERATURE: Water years 1974–79.

SEDIMENT DATA: Water years 1974–79.

REVISED RECORDS.—WSP 1395: Drainage area.

GAGE.—Water-stage recorder. Elevation of gage is 630 ft above sea level, from river-profile map. June 21, 1935, to Nov. 30, 1938, nonrecording gage at same site and datum.

REMARKS.—Records good. Natural flow of stream is affected by Scotts Flat Reservoir beginning in 1949, usable capacity, 26,300 acre-ft, increased to 49,000 acre-ft in July 1964; Deer Creek Reservoir, capacity, 1,400 acre-ft beginning 1949; Lake Wildwood, capacity, 3,840 acre-ft beginning in 1970, power developments, and diversion for irrigation. At times water from South Yuba River is diverted to Deer Creek and water from Deer Creek is diverted to Bear River. See schematic diagram of Yuba River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 12,100 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 14.05 ft, from rating curve extended above 5,200 ft<sup>3</sup>/s; minimum daily, 0.06 ft<sup>3</sup>/s, Aug. 5, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of March 1928 reached a stage of 14.5 ft from floodmarks, discharge, 14,000 ft<sup>3</sup>/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	7.3	14	22	337	384	390	195	232	68	13	8.6
2	16	6.0	11	71	1390	358	333	307	206	49	13	8.3
3	11	5.3	9.4	471	3340	343	713	295	192	37	11	9.3
4	8.2	5.2	8.6	1070	758	327	596	263	183	35	11	10
5	7.3	4.8	8.9	208	772	334	472	299	175	32	11	12
6	6.5	4.6	14	98	1680	417	439	434	169	28	8.7	18
7	8.4	7.2	882	93	2050	350	423	283	161	24	8.7	16
8	11	7.8	297	82	1470	321	348	242	159	20	8.6	12
9	84	7.3	92	66	891	293	319	227	155	17	9.3	14
10	28	8.0	56	346	723	273	292	213	147	17	8.0	13
11	19	9.8	45	1440	817	258	290	205	175	17	8.7	12
12	13	10	38	2340	782	205	297	236	164	15	8.8	11
13	111	11	36	539	781	280	686	320	149	14	9.5	13
14	264	20	71	376	1890	264	488	254	143	13	9.2	9.9
15	242	13	100	1740	1040	254	370	220	135	12	9.9	9.9
16	224	13	51	628	726	253	274	222	128	11	9.1	9.5
17	215	13	43	590	657	249	301	275	107	12	7.0	8.2
18	123	9.5	39	854	554	246	269	211	101	13	7.7	7.6
19	40	15	32	723	842	241	253	193	98	11	8.6	8.2
20	22	13	30	368	730	242	240	178	94	9.1	8.6	8.7
21	14	8.3	31	289	1460	246	172	167	91	8.4	10	7.5
22	11	6.7	29	253	1100	290	216	166	88	8.3	11	8.5
23	9.1	9.6	25	227	927	395	246	160	87	10	10	9.5
24	7.7	11	28	216	911	906	279	156	87	11	8.2	9.8
25	8.5	8.5	24	198	621	716	262	232	85	13	8.4	12
26	7.2	270	24	192	528	497	248	210	78	12	8.7	12
27	6.3	76	24	198	467	441	228	236	76	11	9.4	24
28	6.0	22	24	178	419	460	213	637	74	10	10	21
29	5.9	14	23	603	---	406	201	596	72	10	11	14
30	6.4	19	23	306	---	345	190	337	69	11	11	14
31	7.2	---	21	237	---	401	---	262	---	12	7.9	---
TOTAL	1553.7	635.9	2153.9	15022	28663	10995	10048	8231	3880	570.8	295.0	351.5
MEAN	50.1	21.2	69.5	485	1024	355	335	266	129	18.4	9.52	11.7
MAX	264	270	882	2340	3340	906	713	637	232	68	13	24
MIN	5.9	4.6	8.6	22	337	205	172	156	69	8.3	7.0	7.5
AC-FT	3080	1260	4270	29800	56850	21810	19930	16330	7700	1130	585	697

## 11418500 DEER CREEK NEAR SMARTVILLE, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	27.2	62.2	169	309	371	327	187	73.0	21.3	6.63	5.00	5.95
MAX	373	388	960	1418	1399	1162	888	301	129	23.2	14.2	19.1
(WY)	1963	1951	1956	1997	1986	1938	1982	1995	1998	1974	1969	1980
MIN	1.07	2.25	2.89	5.25	14.5	10.5	3.91	3.58	.48	.36	.33	.27
(WY)	1989	1940	1977	1991	1991	1977	1977	1981	1977	1940	1940	1937

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1936 - 1998

ANNUAL TOTAL	59350.1		82399.8									
ANNUAL MEAN	163		226							129		
HIGHEST ANNUAL MEAN										327		1983
LOWEST ANNUAL MEAN										5.48		1977
HIGHEST DAILY MEAN	7650	Jan 2				3340	Feb 3			10200	Feb 17	1986
LOWEST DAILY MEAN	2.4	Sep 3				4.6	Nov 6			.06	Aug 5	1977
ANNUAL SEVEN-DAY MINIMUM	3.6	Jul 6				5.8	Oct 31			.16	Aug 3	1940
INSTANTANEOUS PEAK FLOW						5700	Feb 3			12100	Feb 17	1986
INSTANTANEOUS PEAK STAGE						10.31	Feb 3			14.05	Feb 17	1986
ANNUAL RUNOFF (AC-FT)	117700					163400				93590		
10 PERCENT EXCEEDS	251					610				318		
50 PERCENT EXCEEDS	14					85				18		
90 PERCENT EXCEEDS	4.9					8.5				2.7		

## 11421000 YUBA RIVER NEAR MARYSVILLE, CA

LOCATION.—Lat 39°10'33", long 121°31'26", in New Helvetia Grant, Yuba County, Hydrologic Unit 18020107, on left bank 4.2 mi northeast of Marysville and 5 mi downstream from Dry Creek.

DRAINAGE AREA.—1,339 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—October 1940 to current year (prior to October 1943, low-water periods only). Published as "at Marysville" October 1940 to September 1957. Separate records published for two sites August 1954 to September 1955. Yearly discharge for the 1945 water year published in WSP 1315-A.

REVISED RECORDS.—WSP 1715: 1956(M). WSP 1931: Drainage area.

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 2.95 ft below sea level. Prior to August 1954 and Oct. 1, 1956, to Sept. 30, 1957, at Simpson Lane Bridge in Marysville 4.2 mi downstream at same datum. Sept. 3, 1963, to Sept. 23, 1968, auxiliary water-stage recorder at Simpson Lane Bridge at same datum.

REMARKS.—Records good. Flow regulated by New Bullards Bar Reservoir since January 1969, and several other reservoirs. Many diversions upstream from station for power and for irrigation. See schematic diagrams of Yuba and lower Sacramento River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge (water years 1944, 1947–98), 180,000 ft<sup>3</sup>/s, Dec. 22, 1964, gage height, 90.15 ft, from floodmarks, from rating curve extended above 91,000 ft<sup>3</sup>/s on basis of U.S. Army Corps of Engineers flood-routing study, maximum gage height 91.64 ft, from floodmarks, Jan. 2, 1997; minimum recorded, 10 ft<sup>3</sup>/s, July 2, 1959.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	656	652	1220	1150	5720	5840	5850	5370	5340	4070	1850	2730
2	875	651	1190	1250	8070	5800	5560	5950	6970	4130	2040	2750
3	874	637	1190	1610	21400	5670	6470	6190	8330	4150	2420	2770
4	881	626	1210	2990	12800	5630	6830	5890	7920	3770	2450	2750
5	879	632	1210	1680	9040	5560	6390	5780	7750	3690	2480	2730
6	892	644	1230	1430	11100	5860	6280	6110	7700	3670	2490	2760
7	899	658	2550	1370	16900	5600	6210	5760	7700	3640	2400	2780
8	902	673	1990	1460	15600	5420	5740	5780	8080	3450	2000	2790
9	1040	683	1440	1450	11900	5290	4910	6240	7860	3180	1930	2670
10	964	699	1350	1670	9960	5170	4960	6180	8010	2570	1910	2820
11	910	739	1320	3460	7840	5100	4770	5430	8480	2480	1910	2840
12	900	753	1290	7110	7240	5030	5010	4970	8580	2580	2120	2060
13	928	826	1270	6300	7680	5130	6050	5030	9430	2530	2410	911
14	1110	985	1340	6490	10600	5030	5970	5050	10200	2400	2430	619
15	1060	1010	1420	14600	12300	5000	5710	4810	10700	2060	2010	571
16	864	1050	1310	12400	9750	5000	5430	4630	10700	1660	1550	550
17	848	1080	1280	10800	8500	4960	5210	4900	9300	1330	1660	512
18	810	1110	1260	10100	7180	4920	5140	4650	7820	1310	1950	495
19	735	1130	1250	10800	7100	4880	5040	4310	7710	1310	1970	494
20	693	1120	1250	7930	7910	4870	5040	4200	7680	1280	1980	501
21	668	1110	1230	6630	9120	4900	5090	4240	7490	1240	2010	517
22	658	1100	1230	5980	13000	4980	5310	4300	7370	1210	2020	531
23	664	1160	1220	5580	11100	5190	5460	4130	6920	1220	2030	527
24	647	1180	1220	5360	11100	9100	5730	4160	5470	1250	2280	520
25	636	1170	1210	5190	8430	11200	5630	4590	4250	1270	2570	510
26	627	1600	1210	5250	7030	12300	5330	5890	4040	1340	2590	528
27	621	1440	1190	5420	6520	11000	5140	5570	4540	1490	2590	582
28	640	1250	1190	5250	6100	10700	4860	5900	4310	1350	2600	635
29	638	1200	1170	6340	---	9850	4780	8000	4650	1620	2630	1060
30	640	1260	1160	6510	---	7570	5250	6270	4640	1820	2660	1080
31	645	---	1160	5730	---	5780	---	5520	---	1840	2680	---
TOTAL	24804	28828	40760	169290	280990	198330	165150	165800	219940	70810	68620	43593
MEAN	800	961	1315	5461	10040	6398	5505	5348	7331	2284	2214	1453
MAX	1110	1600	2550	14600	21400	12300	6830	8000	10700	4150	2680	2840
MIN	621	626	1160	1150	5720	4870	4770	4130	4040	1210	1550	494
AC-FT	49200	57180	80850	335800	557300	393400	327600	328900	436300	140500	136100	86470

## 11421000 YUBA RIVER NEAR MARYSVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1968, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	507	846	3323	3574	4555	3928	4965	5064	2610	514	218	240
MAX	6222	8586	18650	13160	12470	7321	10400	13750	8712	2669	551	458
(WY)	1963	1951	1965	1956	1958	1958	1952	1952	1952	1952	1967	1952
MIN	50.5	116	157	573	965	1360	2139	1264	265	30.5	35.3	47.9
(WY)	1962	1960	1960	1960	1948	1964	1961	1947	1959	1959	1959	1961

## SUMMARY STATISTICS

## WATER YEARS 1944 - 1968

ANNUAL MEAN	2518
HIGHEST ANNUAL MEAN	5393
LOWEST ANNUAL MEAN	882
HIGHEST DAILY MEAN	136000
LOWEST DAILY MEAN	15
ANNUAL SEVEN-DAY MINIMUM	15
INSTANTANEOUS PEAK FLOW	180000
INSTANTANEOUS PEAK STAGE	90.15
ANNUAL RUNOFF (AC-FT)	1824000
10 PERCENT EXCEEDS	6450
50 PERCENT EXCEEDS	822
90 PERCENT EXCEEDS	108

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1146	1449	2525	4525	4549	4477	2969	2373	2008	1275	1454	1354
MAX	2731	4475	11430	26180	20970	15100	14280	9721	8633	3735	2829	2900
(WY)	1976	1984	1984	1997	1986	1983	1982	1995	1983	1983	1984	1980
MIN	132	183	371	230	211	188	173	166	155	88.4	71.7	85.8
(WY)	1970	1970	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1970 - 1998

ANNUAL TOTAL	1386258	1476915	
ANNUAL MEAN	3798	4046	2499
HIGHEST ANNUAL MEAN			5818
LOWEST ANNUAL MEAN			229
HIGHEST DAILY MEAN	140000	Jan 2	140000
LOWEST DAILY MEAN	284	Jul 2	62
ANNUAL SEVEN-DAY MINIMUM	292	Jun 30	65
INSTANTANEOUS PEAK FLOW			28900
INSTANTANEOUS PEAK STAGE			72.73
ANNUAL RUNOFF (AC-FT)	2750000	2929000	1811000
10 PERCENT EXCEEDS	5940	8180	5230
50 PERCENT EXCEEDS	1230	2820	1320
90 PERCENT EXCEEDS	406	689	312

## 11421000 YUBA RIVER NEAR MARYSVILLE, CA—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1951–52, 1973–80, 1990 to current year. Published as Yuba River at Marysville (station 11421500) during water years 1966, 1973–76.

CHEMICAL DATA: Water years 1951–52, 1973–80, 1996. Published as Yuba River at Marysville (station 11421500) water years 1966, 1973–76

WATER TEMPERATURE: Water years 1973–78, 1990 to current year.

SEDIMENT DATA: Water year 1996.

## PERIOD OF DAILY RECORD.—

WATER TEMPERATURE: November 1972 to September 1978, October 1989 to current year.

INSTRUMENTATION.—Temperature recorder November 1972 to September 1978, October 1989 to current year.

REMARKS.—Water temperatures can be affected by releases from Englebright Reservoir located approximately 13 mi upstream from station.

Interruption in record was due to malfunction of the recording instrument.

## EXTREMES FOR PERIOD OF DAILY RECORD.—

WATER TEMPERATURE: Maximum recorded, 28.5°C, July 16, 30, 1977, Aug. 11, 1992; minimum recorded, 4.5°C, Dec. 22, 23, 29–31, 1990.

## EXTREMES FOR CURRENT YEAR.—

WATER TEMPERATURE: Maximum recorded, 20.0°C, Sept. 14–16; minimum recorded, 7.5°C, several days in December, January, and March.

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	18.0	15.0	15.5	12.5	12.0	10.0	9.5	8.0	9.0	8.5	10.0	8.5
2	18.0	14.5	15.0	12.0	12.0	10.5	10.0	9.0	9.5	8.5	10.5	8.5
3	18.0	14.0	15.0	12.5	11.5	10.0	10.0	9.0	9.5	8.5	10.5	8.0
4	18.0	14.0	15.0	12.5	11.5	10.5	9.0	8.5	9.0	8.5	10.0	8.0
5	17.0	13.5	15.0	12.0	11.0	10.5	9.5	8.0	9.0	9.0	9.0	8.0
6	15.5	13.0	14.0	12.5	11.5	11.0	8.5	7.5	9.0	9.0	10.0	8.0
7	16.5	13.0	15.0	13.0	11.5	11.0	9.0	8.5	9.0	8.5	9.0	7.5
8	14.5	13.0	14.0	12.0	11.0	10.0	9.0	8.5	9.0	8.5	10.0	8.0
9	16.0	13.5	13.5	11.5	11.0	9.5	9.0	8.5	9.0	8.5	10.0	7.5
10	15.0	13.0	13.0	12.5	11.0	9.0	9.5	9.0	9.0	8.5	10.5	8.0
11	16.0	12.5	13.5	12.5	11.0	9.0	10.0	9.5	9.5	8.5	11.0	8.5
12	15.5	12.0	14.0	12.0	10.0	9.0	10.0	9.0	9.0	8.5	10.0	8.5
13	16.0	12.5	13.0	12.0	10.0	9.0	9.5	9.0	9.5	8.5	10.5	9.0
14	16.5	13.0	13.5	12.0	10.0	9.5	9.5	9.0	9.0	8.5	11.5	8.5
15	16.5	13.0	12.0	11.5	10.0	9.5	9.5	9.5	9.5	8.0	11.0	9.0
16	17.0	13.5	12.5	11.5	11.0	9.5	10.0	9.5	8.5	8.0	12.0	9.5
17	16.5	13.0	13.0	11.5	10.0	9.5	10.5	9.5	9.5	8.0	12.0	9.0
18	16.5	13.0	12.0	11.0	11.0	9.0	9.5	9.5	9.5	8.0	12.0	9.0
19	16.0	13.0	12.5	11.0	10.5	8.0	9.5	9.0	9.5	8.0	12.0	9.5
20	16.0	12.5	12.5	10.5	10.0	8.5	9.5	8.5	9.0	8.0	12.0	9.5
21	16.0	12.5	12.5	11.0	10.0	8.5	9.5	8.0	8.0	8.0	11.0	10.0
22	16.0	13.0	11.5	10.5	9.5	7.5	9.5	8.5	9.0	8.0	10.5	10.0
23	15.5	13.0	13.0	11.5	9.5	8.0	9.0	8.0	8.5	8.0	10.5	10.0
24	14.5	11.5	12.5	11.0	9.5	7.5	10.0	8.5	9.5	8.0	11.5	10.0
25	15.0	11.5	13.0	11.0	9.5	7.5	9.0	8.0	9.0	8.0	11.0	9.5
26	14.5	11.5	12.0	11.5	9.5	7.5	9.0	8.5	9.5	8.0	10.5	9.5
27	15.0	12.0	12.5	11.0	9.5	7.5	10.0	8.5	10.0	8.0	11.0	9.5
28	14.5	11.5	12.5	10.5	9.5	7.5	9.5	8.5	9.5	8.0	11.0	9.5
29	14.5	12.5	12.0	10.5	9.5	7.5	10.0	8.5	---	---	10.5	9.0
30	15.5	12.0	12.5	11.0	9.5	7.5	9.5	8.5	---	---	10.5	9.0
31	15.5	12.5	---	---	9.5	8.0	9.0	8.5	---	---	10.0	9.5
MONTH	18.0	11.5	15.5	10.5	12.0	7.5	10.5	7.5	10.0	8.0	12.0	7.5

## 11421000 YUBA RIVER NEAR MARYSVILLE, CA—Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	10.5	9.5	13.0	12.0	13.5	12.5	---	---	---	---	---	---
2	10.0	9.5	12.5	12.0	13.5	12.5	---	---	---	---	---	---
3	10.0	9.5	12.5	12.0	13.0	12.5	---	---	---	---	---	---
4	10.5	9.5	12.5	12.5	13.0	12.5	---	---	---	---	---	---
5	10.4	9.4	12.5	12.5	13.0	12.5	---	---	---	---	---	---
6	10.5	9.5	12.5	12.0	13.0	12.5	---	---	---	---	---	---
7	10.5	9.5	12.5	12.0	13.0	12.5	---	---	---	---	---	---
8	10.5	9.5	12.5	12.0	13.0	12.5	---	---	---	---	---	---
9	11.0	9.5	12.0	11.5	13.0	12.5	---	---	---	---	---	---
10	10.5	10.0	12.0	11.5	13.0	13.0	---	---	---	---	16.0	12.0
11	10.5	10.0	12.0	11.5	13.0	12.5	---	---	---	---	16.0	12.5
12	11.0	10.0	12.0	11.5	13.0	12.5	---	---	---	---	17.0	12.5
13	10.5	10.0	11.5	11.5	13.0	12.5	---	---	---	---	19.0	14.0
14	10.5	9.5	12.0	11.5	13.5	12.5	---	---	---	---	20.0	15.5
15	11.0	9.5	12.0	11.5	---	---	---	---	---	---	20.0	16.0
16	11.0	9.5	12.0	11.5	---	---	---	---	---	---	20.0	15.5
17	11.5	9.5	12.0	11.5	---	---	---	---	---	---	19.5	15.5
18	11.5	10.0	12.5	11.5	---	---	---	---	---	---	19.5	15.0
19	12.0	10.0	12.5	12.0	---	---	---	---	---	---	19.0	14.5
20	12.0	10.5	12.5	12.0	---	---	---	---	---	---	19.0	14.5
21	12.5	11.0	13.0	12.0	---	---	---	---	---	---	19.0	15.0
22	12.5	11.0	13.0	12.5	---	---	---	---	---	---	19.0	15.0
23	12.0	11.0	13.0	12.5	---	---	---	---	---	---	18.0	15.0
24	12.0	11.0	13.0	12.5	---	---	---	---	---	---	18.5	15.0
25	12.0	11.0	13.0	12.5	---	---	---	---	---	---	17.5	15.0
26	12.5	11.0	13.0	12.0	---	---	---	---	---	---	17.0	15.0
27	12.5	11.5	12.5	12.0	---	---	---	---	---	---	16.0	14.5
28	12.5	11.5	12.5	12.0	---	---	---	---	---	---	18.0	13.5
29	13.0	11.5	12.0	12.0	---	---	---	---	---	---	17.0	13.5
30	13.0	12.0	12.5	11.5	---	---	---	---	---	---	17.0	13.5
31	---	---	13.0	12.0	---	---	---	---	---	---	---	---
MONTH	13.0	9.4	13.0	11.5	---	---	---	---	---	---	---	---

## 11421500 YUBA RIVER AT MARYSVILLE, CA

LOCATION.—Lat 39°08'40", long 121°34'35", in New Helvetia Grant, Yuba County, Hydrologic Unit 18020107, 4.2 miles downstream from Yuba River near Marysville (station 11421000) gaging station, and approximately 2 miles upstream from mouth.

DRAINAGE AREA.—1,340 m<sup>2</sup>, upstream from gaging station.

PERIOD OF RECORD.—Water years 1961–66, 1973–76, October 1995 to current year. Published as Yuba River near Marysville (station 11421000) water year 1996.

CHEMICAL DATA: Water years 1961–66, 1973–76, October 1995 to current year. Published as Yuba River near Marysville (station 11421000) water year 1996.

SEDIMENT DATA: October 1995 to current year. Published as Yuba River near Marysville (station 11421000) water year 1996.

PERIOD OF DAILY RECORD.—

WATER TEMPERATURE: Water years 1963–66, 1973–76.

INSTRUMENTATION.—None.

REMARKS.—Discharge data from station 11421000, Yuba River near Marysville.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
20...	1050	700	92	7.0	12.6	761	10.5	99	9.7	3.5
NOV										
17...	1400	1100	84	7.8	12.0	768	11.4	105	9.5	3.1
DEC										
15...	1140	1420	93	7.8	9.2	768	11.5	99	9.6	3.7
JAN										
22...	1100	6000	65	7.7	8.8	766	11.6	100	7.1	2.8
FEB										
10...	1120	10100	63	7.3	8.8	764	12.1	104	6.6	2.5
MAR										
16...	1200	5010	73	7.7	10.9	760	13.0	118	8.0	3.2
APR										
06...	1100	6320	71	7.6	9.4	759	12.4	109	8.0	3.0

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT										
20...	2.6	12	.6	32	5.9	1.2	<.1	12	57	59
NOV										
17...	2.4	12	.6	30	4.0	1.6	<.1	12	65	57
DEC										
15...	2.9	13	.8	31	5.5	1.6	<.1	13	67	62
JAN										
22...	2.2	14	.5	27	3.3	1	<.1	13	56	48
FEB										
10...	2.1	14	.5	24	3.0	1.8	<.1	13	52	45
MAR										
16...	2.3	13	.5	31	4.1	1	<.1	13	56	53
APR										
06...	2.4	14	.4	30	3.3	1.8	<.1	14	54	53

## 11421500 YUBA RIVER AT MARYSVILLE, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT 20...	.08	<.01	.05	.02	<.2	<.2	<.01	<.01	<.01	8
NOV 17...	.09	.19	.06	<.02	<.1	<.1	<.01	<.01	.01	7
DEC 15...	.09	.04	.13	<.02	<.1	<.1	.03	.02	<.01	8
JAN 22...	.08	<.01	.11	<.02	<.1	<.1	.02	<.01	<.01	9
FEB 10...	.07	<.01	.10	<.02	<.1	<.1	.01	<.01	.02	11
MAR 16...	.08	.02	<.05	<.02	<.1	<.1	<.01	<.01	<.01	10
APR 06...	.07	<.01	.09	.03	<.1	<.1	.03	<.01	<.01	9

DATE	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 20...	<1	<1	16	<1	<1	<1	<1	<1	9	<1
NOV 17...	<1	<1	14	<1	<1	<1	<1	1	13	<1
DEC 15...	<1	<1	17	<1	<1	<1	<1	1	17	<1
JAN 22...	<1	<1	11	<1	<1	<1	<1	1	10	<1
FEB 10...	<1	<1	10	<1	<1	<1	<1	1	24	<1
MAR 16...	<1	<1	11	<1	<1	<1	<1	<1	<10	<1
APR 06...	<1	<1	10	<1	<1	<1	<1	1	<10	<1

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)
OCT 20...	15	<1	<1	<1	<1	<1	<1	.8	.2
NOV 17...	12	<1	<1	<1	<1	<1	<1	.8	.2
DEC 15...	14	<1	1	<1	<1	<1	<1	1.7	.2
JAN 22...	4	<1	<1	<1	<1	<1	<1	1.8	<.2
FEB 10...	7	<1	<1	<1	<1	<1	<1	1.3	.2
MAR 16...	5	<1	<1	<1	<1	2	<1	.8	.2
APR 06...	4	<1	<1	<1	<1	2	<1	1.0	.5



## 11421500 YUBA RIVER AT MARYSVILLE, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
20...N	1050	700	12.6	1	1.9	89
NOV						
17...N	1400	1100	12.0	7	21	81
DEC						
15...N	1140	1420	9.2	12	46	92
JAN						
22...N	1100	6000	8.8	38	616	71
FEB						
10...N	1120	10100	8.8	51	1390	84
MAR						
16...N	1200	5010	10.9	16	216	38
APR						
06...N	1100	6320	9.4	48	819	24

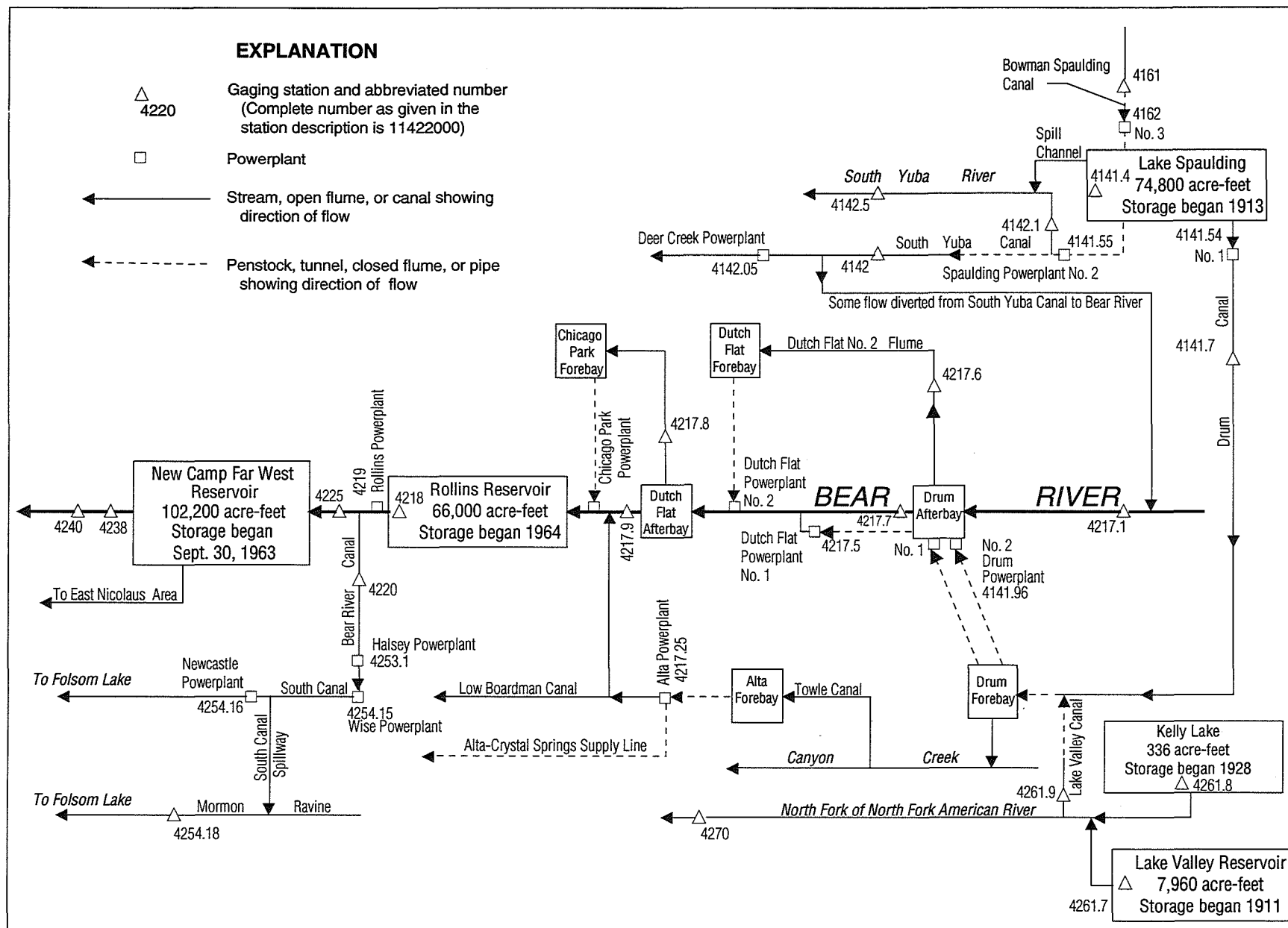


Figure 32. Diversions and storage in Bear River Basin.

LOCATION.—Lat 39°18'23", long 120°40'41", in NW 1/4 SW 1/4 sec.30, T.17 N., R.12 E., Placer County, Hydrologic Unit 18020126, on left bank 20 ft upstream from Highway 20 Bridge and 0.7 mi northwest of Emigrant Gap.

PERIOD OF RECORD.—October 1987 to current year (low-flow records only). Unpublished records for water years 1981–87 available in files of the U.S. Geological Survey.

REMARKS.—No records computed above 160 ft<sup>3</sup>/s. Some water is diverted into stream from South Yuba Canal (station 11414200). See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

### DAILY MEAN VALUES

[illegible]

## 11421770 BEAR RIVER BELOW DRUM AFTERBAY, NEAR BLUE CANYON, CA

LOCATION.—Lat 39°15'16", long 120°46'26", in SW 1/4 NW 1/4 sec.17, T.16 N., R.11 E., Placer County, Hydrologic Unit 18020126, on left bank 60 ft downstream from Drum Afterbay Dam and 3.5 mi west of Blue Canyon.

DRAINAGE AREA.—12.3 mi<sup>2</sup>.

PERIOD OF RECORD.—April 1966 to current year, low flows only April to September 1966.

GAGE.—Water-stage recorder and 4-ft steel Cipolletti weir set in a concrete broad-crested weir. Elevation of gage is 3,300 ft above sea level, from topographic map. April 1966 to May 25, 1967, water-stage recorder at present site at different datum. May 26, 1967, to Feb. 11, 1968, water-stage recorder at site 1,000 ft downstream at different datum.

REMARKS.—Water for Dutch Flat No. 1 Powerplant (station 11421750) and Dutch Flat No. 2 Flume (station 11421760) is diverted from Drum Afterbay just upstream from station. See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 7,530 ft<sup>3</sup>/s, Apr. 11, 1982, gage height, 4.64 ft, from rating curve extended above 1,200 ft<sup>3</sup>/s; minimum daily, 1.0 ft<sup>3</sup>/s, Dec. 9, 1967.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	15	95	5.6	5.9	e5.6	9.9	10	10	11	11	11
2	12	13	379	5.7	5.7	e5.6	9.8	10	10	11	11	11
3	9.8	17	148	5.6	5.7	e6.2	9.9	10	10	11	11	11
4	18	15	116	5.7	5.7	e11	9.8	10	10	11	11	11
5	14	11	100	5.7	e5.7	e11	9.8	10	10	11	11	11
6	20	14	60	5.7	e5.0	11	9.8	10	10	11	11	11
7	10	13	17	5.7	e5.0	11	9.9	10	10	11	11	11
8	10	9.1	138	5.7	e5.2	11	9.9	10	10	11	11	11
9	16	10	123	5.7	e5.0	11	9.7	10	10	11	11	11
10	14	9.0	5.7	5.7	e5.3	11	9.9	10	11	11	11	11
11	14	9.5	5.7	5.7	e5.7	10	9.8	10	11	11	11	11
12	23	7.7	5.8	5.7	e5.6	9.9	9.8	10	11	11	11	11
13	23	5.6	5.7	5.7	e5.4	9.9	9.7	10	11	11	11	11
14	13	5.4	5.7	5.7	e5.6	9.9	9.8	10	11	11	11	11
15	13	5.4	5.7	5.7	e5.7	9.8	9.8	10	11	11	11	11
16	23	5.5	5.7	5.7	e5.6	9.9	9.8	10	11	11	11	11
17	19	5.2	5.7	5.7	e5.4	9.9	9.7	10	11	11	11	11
18	15	51	5.9	5.7	e5.6	9.8	9.8	10	11	11	11	11
19	12	172	5.8	5.7	e5.7	9.9	9.7	10	11	11	11	11
20	16	103	5.7	5.6	e5.4	9.8	9.8	10	11	11	11	11
21	14	40	5.7	5.6	e5.7	9.9	9.8	10	11	11	11	11
22	11	148	5.7	5.7	e5.7	9.8	10	10	11	11	11	11
23	15	61	5.6	5.7	e5.7	9.9	10	10	11	11	11	11
24	12	51	5.7	5.7	e5.6	46	10	10	11	11	11	11
25	8.4	61	5.7	5.7	e5.6	9.8	10	10	11	11	11	11
26	9.3	70	5.7	5.7	e5.4	9.8	10	10	11	11	11	11
27	8.1	73	5.7	5.7	e5.6	9.8	10	10	11	11	11	11
28	9.2	77	5.7	5.7	e5.6	9.9	10	10	11	11	11	11
29	8.5	104	5.7	5.7	---	9.8	10	10	11	11	11	11
30	7.4	76	5.7	5.7	---	9.8	10	10	11	11	11	11
31	10	---	5.7	5.7	---	9.9	---	10	---	11	11	---
TOTAL	418.7	1257.4	1301.7	176.3	154.8	337.6	295.9	310	321	341	341	330
MEAN	13.5	41.9	42.0	5.69	5.53	10.9	9.86	10.0	10.7	11.0	11.0	11.0
MAX	23	172	379	5.7	5.9	46	10	10	11	11	11	11
MIN	7.4	5.2	5.6	5.6	5.0	5.6	9.7	10	10	11	11	11
AC-FT	830	2490	2580	350	307	670	587	615	637	676	676	655
a	213	10990	32660	32940	31680	35800	34430	35140	33920	35090	33620	17350
b	0	0	4510	8930	9080	22510	22300	27400	21710	14250	12370	7400

e Estimated.

a Diversion, in acre-feet, to Dutch Flat No. 2 Flume, provided by Nevada Irrigation District.

b Diversion, in acre-feet, to Dutch Flat No. 1 Powerplant, provided by Pacific Gas & Electric Co.

## 11421770 BEAR RIVER BELOW DRUM AFTERBAY, NEAR BLUE CANYON, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

MEAN	6.24	8.93	16.6	22.9	32.9	37.3	47.3	33.5	15.8	11.9	13.2	11.2
MAX	13.5	41.9	148	240	306	364	411	320	139	66.6	118	53.8
(WY)	1998	1998	1997	1997	1986	1986	1986	1982	1997	1997	1997	1997
MIN	2.68	2.58	2.44	5.13	4.03	2.47	2.49	2.50	2.43	2.56	2.45	2.77
(WY)	1978	1978	1978	1981	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1966 - 1998	
ANNUAL TOTAL	39176.8		5585.4			
ANNUAL MEAN	107		15.3		21.5	
HIGHEST ANNUAL MEAN					122	
LOWEST ANNUAL MEAN					3.54	
HIGHEST DAILY MEAN	2510	Jan 1	379	Dec 2	2510	Jan 1 1997
LOWEST DAILY MEAN	5.2	Nov 17	5.0	Feb 6	1.0	Dec 9 1967
ANNUAL SEVEN-DAY MINIMUM	5.7	Dec 20	5.3	Feb 6	2.3	Aug 25 1977
INSTANTANEOUS PEAK FLOW			1470	Dec 2	7530	Apr 11 1982
INSTANTANEOUS PEAK STAGE			2.85	Dec 2	4.64	Apr 11 1982
ANNUAL RUNOFF (AC-FT)	77710		11080		15580	
ANNUAL DIVERSION (AC-FT) a	221000		333800			
ANNUAL DIVERSION (AC-FT) b	6200		150500			
10 PERCENT EXCEEDS	253		14		12	
50 PERCENT EXCEEDS	70		10		7.6	
90 PERCENT EXCEEDS	9.4		5.7		5.2	

a Diversion, in acre-feet, to Dutch Flat No. 2 Flume, provided by Nevada Irrigation District.

b Diversion, in acre-feet, to Dutch Flat No. 1 Powerplant, provided by Pacific Gas & Electric Co.

## 11421790 BEAR RIVER BELOW DUTCH FLAT AFTERBAY, NEAR DUTCH FLAT, CA

LOCATION.—Lat 39°12'55", long 120°50'23", in NE 1/4 NW 1/4 sec.34, T.16 N., R.10 E., Placer County, Hydrologic Unit 18020126, at left bank downstream end of spillway on Dutch Flat Afterbay Dam, 0.6 mi north of Dutch Flat.

DRAINAGE AREA.—21.5 mi<sup>2</sup>.

PERIOD OF RECORD.—December 1965 to current year.

REVISED RECORDS.—WDR CA-82-4: 1978, 1979(M), 1980.

GAGE.—Water-stage recorder and concrete control. Elevation of gage is 2,600 ft above sea level, from topographic map.

REMARKS.—Water is imported from South Yuba River Basin via Drum Canal above forebay. Chicago Park Flume (station 11421780) diverts upstream from station to Chicago Park Powerplant. Records include spill over Dutch Flat Afterbay Dam. See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 4,240 ft<sup>3</sup>/s, Feb. 17, 1986; minimum daily, 0.08 ft<sup>3</sup>/s, Mar. 8–19, 1968.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	20	7.6	7.8	7.6	8.3	26	159	148	11	11	11
2	12	20	7.6	7.8	7.6	8.3	34	200	130	11	11	11
3	12	20	7.6	7.6	188	8.4	43	199	119	11	11	11
4	12	20	7.6	7.7	14	8.5	44	185	12	11	11	11
5	12	15	7.6	7.6	8.1	8.5	46	173	10	11	11	11
6	12	11	7.6	7.6	8.1	8.5	21	215	10	11	11	11
7	12	11	7.7	7.6	8.2	8.3	7.4	158	85	11	11	11
8	12	11	7.6	7.7	8.1	8.3	7.3	160	116	11	11	11
9	12	11	7.6	7.6	8.1	8.5	7.3	149	128	11	11	11
10	12	9.9	7.6	7.7	8.2	8.5	7.3	116	108	11	11	11
11	12	9.0	7.6	66	8.2	8.5	7.3	117	83	11	11	11
12	12	9.0	7.6	262	8.1	8.7	7.3	126	88	11	11	10
13	13	9.0	7.6	43	8.1	8.7	7.3	120	75	11	11	10
14	12	9.0	7.6	8.0	8.2	8.6	7.3	179	70	11	11	10
15	12	9.0	7.6	33	8.2	8.7	7.3	137	68	11	11	10
16	12	9.0	7.6	30	8.2	8.5	7.3	137	52	11	11	10
17	12	9.1	7.6	78	8.2	8.5	99	137	23	11	11	43
18	12	9.2	7.6	7.9	8.2	126	44	134	13	11	11	76
19	12	16	7.6	7.7	8.2	81	8.7	113	11	11	11	75
20	35	494	7.6	7.8	8.1	62	17	138	11	11	11	37
21	46	331	7.6	7.8	8.2	77	88	104	17	11	11	12
22	46	6.9	7.5	7.7	8.2	182	92	62	441	11	11	23
23	46	6.9	7.4	7.7	8.2	173	199	103	11	11	11	24
24	49	7.6	7.6	7.8	8.0	322	262	126	11	11	11	10
25	52	7.6	7.6	7.8	8.1	138	255	171	11	11	11	11
26	52	7.7	7.7	7.8	8.2	38	177	131	11	11	11	11
27	51	7.6	7.7	7.8	8.4	42	122	127	11	11	11	11
28	31	7.6	7.7	7.7	8.5	7.6	180	115	11	11	11	11
29	20	7.6	7.6	7.7	---	43	141	169	11	11	11	11
30	20	7.6	7.6	7.6	---	47	139	138	11	11	11	11
31	20	---	7.7	7.6	---	66	---	109	---	11	11	---
TOTAL	697	1129.3	235.8	705.1	413.5	1548.9	2110.8	4407	1906	341	341	537
MEAN	22.5	37.6	7.61	22.7	14.8	50.0	70.4	142	63.5	11.0	11.0	17.9
MAX	52	494	7.7	262	188	322	262	215	441	11	11	76
MIN	12	6.9	7.4	7.6	7.6	7.6	7.3	62	10	11	11	10
AC-FT	1380	2240	468	1400	820	3070	4190	8740	3780	676	676	1070
a	0	14330	41480	47550	50150	61010	59770	60800	59760	53770	47550	24800

a Diversion, in acre-feet, to Chicago Park Flume.

## 11421790 BEAR RIVER BELOW DUTCH FLAT AFTERBAY, NEAR DUTCH FLAT, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

MEAN	19.2	12.0	45.0	54.0	57.9	63.6	62.2	25.4	13.0	10.9	10.6	14.2
MAX	266	71.1	350	531	380	395	602	142	63.5	22.0	13.1	21.3
(WY)	1968	1984	1997	1997	1986	1966	1969	1998	1998	1970	1969	1983
MIN	4.81	2.65	2.42	4.94	4.10	4.26	3.94	5.30	5.13	5.00	5.00	5.00
(WY)	1978	1968	1968	1975	1974	1973	1973	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1998 WATER YEAR

## WATER YEARS 1966 - 1998

ANNUAL TOTAL	14372.4		
ANNUAL MEAN	39.4		29.0
HIGHEST ANNUAL MEAN			80.1 1982
LOWEST ANNUAL MEAN			5.53 1977
HIGHEST DAILY MEAN	494	Nov 20	3400 Feb 17 1986
LOWEST DAILY MEAN	6.9	Nov 22	.08 Mar 8 1968
ANNUAL SEVEN-DAY MINIMUM	7.3	Apr 8	.08 Mar 8 1968
INSTANTANEOUS PEAK FLOW	975	Jun 22	4240 Feb 17 1986
ANNUAL RUNOFF (AC-FT)	28510		21020
ANNUAL DIVERSION (AC-FT) a	521000		
10 PERCENT EXCEEDS	130		27
50 PERCENT EXCEEDS	11		9.5
90 PERCENT EXCEEDS	7.6		5.0

a Diversion, in acre-feet, to Chicago Park Flume.

## 11421800 ROLLINS RESERVOIR NEAR COLFAX, CA

LOCATION.—Lat 39°08'08", long 120°56'57", in NE 1/4 SE 1/4 sec.22, T.15 N., R.9 E., Placer County, Hydrologic Unit 18020126, on left bank 300 ft upstream from Rollins Dam on Bear River, 2.3 mi north of Colfax.

DRAINAGE AREA.—104 mi<sup>2</sup>.

PERIOD OF RECORD.—December 1964 to current year.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Nevada Irrigation District).

REMARKS.—Reservoir is formed by an earthfill dam. Storage began Dec. 15, 1964. Usable capacity, 66,000 acre-ft between elevations 1,970.0 ft, invert of outlet tunnel, and 2,171.0 ft, spillway crest. Dead storage, 270 acre-ft. Several diversions into and out of basin upstream for power development and irrigation. Water is normally released through Rollins Powerplant (station 11421900). Part of the water then is diverted to Bear River Canal (station 11422000) for power development. Water is later used for irrigation. See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 71,700 acre-ft, Feb. 17, 1986, elevation, 2,177.7 ft; minimum since reservoir first filled, 4,250 acre-ft, Oct. 10, 1977, elevation, 2,022.5 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 67,800 acre-ft, Feb. 3, elevation, 2,173.15 ft; minimum, 31,900 acre-ft, Nov. 19, elevation, 2,118.24 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Nevada Irrigation District in 1964)

2,020	3,920	2,050	8,940	2,100	23,900	2,160	57,300
2,030	5,320	2,060	11,200	2,120	32,700	2,178	72,000
2,040	6,990	2,080	16,800	2,140	43,800		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52600	33000	38800	45600	66700	66800	66800	66900	66900	66600	65000	65100
2	51600	32900	38800	46000	67400	66800	66900	67000	66800	66600	64800	65100
3	50500	32800	38700	46600	67800	66800	67000	67000	66800	66600	64700	65000
4	49400	32700	38700	47800	67200	66800	67000	67000	66600	66600	64800	65000
5	48400	32700	38700	48600	67000	66800	67000	67000	66700	66600	65000	65000
6	47300	32600	38800	48900	67500	66800	66900	67000	66600	66600	65100	65000
7	46300	32500	40500	49500	67600	66800	66900	66900	66700	66600	64900	65000
8	45400	32500	41500	49900	67300	66700	66800	66900	66800	66600	64900	65100
9	44800	32400	41800	50500	66900	66600	66800	66900	66800	66600	65000	65100
10	44000	32300	42000	51600	66900	66700	66800	66900	66800	66500	65000	65100
11	43200	32200	42100	56000	67000	66700	66800	66900	66800	66600	64900	65200
12	42200	32200	42200	63600	66900	66700	66800	66900	66700	66600	64900	65300
13	41200	32100	42300	66500	66900	66700	66900	67000	66700	66600	65000	64500
14	40200	32100	42500	67000	67500	66700	66900	67000	66700	66500	65100	59900
15	39100	32100	42700	67600	67100	66700	66900	66900	66700	66500	65000	61500
16	38100	32100	43000	67400	66900	66700	66900	67000	66700	66500	64900	59900
17	37000	32000	43000	67200	66900	66800	66900	66900	66700	66500	64900	58300
18	36100	32000	42900	67300	66800	66900	66800	66900	66700	66400	65000	56800
19	35800	31900	43000	67000	67000	66800	66800	66900	66700	66400	65000	55300
20	35500	32500	43100	66700	66900	66800	66800	66900	66600	66300	65100	53700
21	35400	33200	43200	66700	67400	66800	66800	66900	66600	66300	65000	52100
22	35200	33400	43500	66700	67200	67000	66800	66800	66700	66200	65000	50500
23	35000	34000	43800	66700	67200	67100	67000	66800	66600	66000	65000	48900
24	34900	34500	44000	66600	67000	67100	67100	66900	66600	65900	65000	47400
25	34700	35000	44200	66600	66800	66900	67000	67000	66600	65900	65000	45900
26	34400	36700	44500	66600	66800	66800	66900	66900	66600	65700	64900	44500
27	34200	38100	44800	66700	66700	66900	66900	66900	66600	65600	65000	44700
28	34000	38700	45000	66600	66800	66800	66900	67100	66600	65400	65000	44700
29	33700	38800	45300	66900	---	66800	66900	67000	66600	65200	65000	44700
30	33500	38900	45600	66800	---	66800	66900	66900	66600	65100	65000	44700
31	33200	---	45600	66600	---	66900	---	66800	---	65000	65100	---
MAX	52600	38900	45600	67600	67800	67100	67100	67100	66900	66600	65100	65300
MIN	33200	31900	38700	45600	66700	66600	66800	66800	66600	65000	64700	44500
a	2120.94	2131.61	2142.90	2171.73	2171.97	2172.05	2172.02	2172.01	2171.69	2169.77	2169.93	2141.48
b	-20500	+5700	+6700	+21000	+200	+100	0	-100	-200	-1600	+100	-20400
c	21510	10200	41230	46750	52740	55200	54550	57600	55380	57420	56340	51600

CAL YR 1997 MAX 71300 MIN 31900 b -23000 c 459100

WTR YR 1998 MAX 67800 MIN 31900 b -9000 c 560500

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Discharge, in acre-feet, through Rollins Powerplant, provided by Pacific Gas & Electric Co.



## 11422000 BEAR RIVER CANAL INTAKE NEAR COLFAX, CA

LOCATION.—Lat 39°07'58", long 120°57'12", in SW 1/4 SE 1/4 sec.22, T.15 N., R.9 E., Placer County, Hydrologic Unit 18020126, on right bank 400 ft downstream from canal inlet, 0.2 mi downstream from Rollins Dam, and 2.2 mi north of Colfax.

PERIOD OF RECORD.—January 1912 to September 1953, October 1964 to current year. Monthly discharge only for some periods published in WSP 1315-A. Prior to October 1912, published as Pacific Gas & Electric Co.'s Canal near Colfax; October 1912 to September 1953, published as Bear River Canal near Colfax.

GAGE.—Water-stage recorder. Elevation of gage is 1,950 ft above sea level, from topographic map. Prior to Mar. 25, 1946, water-stage recorder at site 1.5 mi downstream at different datum.

REMARKS.—Canal diverts from left bank of Bear River. Water is used to develop power at Halsey and Wise Powerplants (stations 11425310 and 11425415). Part of the water is distributed for irrigation, and the remainder is eventually spilled into North Fork American River. Capacity of canal is believed to have been increased in 1917 and 1931. See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 531 ft<sup>3</sup>/s, Oct. 5, 6, 1980; no flow at times in most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	418	83	392	459	287	396	385	392	413	423	427	436
2	423	57	428	460	215	396	398	391	415	423	428	436
3	423	38	428	420	126	396	399	390	421	423	428	436
4	423	38	428	380	173	395	399	389	420	423	429	436
5	422	37	401	382	253	392	399	389	420	424	429	437
6	421	37	374	382	253	348	399	426	411	424	430	438
7	417	37	304	381	253	353	399	440	409	424	431	377
8	359	37	346	381	253	354	399	439	419	424	431	381
9	325	37	428	382	253	354	398	432	418	425	432	438
10	350	39	428	358	313	368	398	426	418	425	432	438
11	374	37	428	290	353	398	398	425	418	425	433	438
12	374	37	429	256	353	365	398	424	418	425	433	438
13	407	37	429	320	353	383	400	423	418	424	434	438
14	422	36	382	355	353	400	400	422	418	424	434	438
15	417	37	399	286	352	400	399	422	418	424	435	437
16	414	36	432	270	352	400	391	422	418	424	436	437
17	415	36	432	308	352	399	398	421	418	424	436	437
18	399	39	432	287	352	399	399	421	418	424	437	437
19	92	129	432	317	351	398	399	421	419	424	436	437
20	91	216	431	356	351	399	399	421	419	424	436	436
21	68	339	431	353	298	399	398	421	420	423	436	437
22	56	359	429	377	248	399	398	421	420	423	436	436
23	64	359	447	406	286	399	397	421	421	423	436	436
24	74	365	458	406	257	399	396	421	421	424	436	436
25	82	375	457	406	398	366	395	421	421	424	436	436
26	89	344	457	406	397	377	394	420	422	424	436	435
27	89	331	458	406	397	402	393	420	422	425	436	435
28	89	331	459	406	396	401	392	379	422	425	436	435
29	86	331	459	377	---	401	392	390	422	426	436	435
30	86	331	460	387	---	401	393	413	423	426	436	435
31	85	---	460	389	---	366	---	413	---	426	436	---
TOTAL	8254	4545	13158	11349	8578	12003	11902	12876	12560	13149	13443	12982
MEAN	266	152	424	366	306	387	397	415	419	424	434	433
MAX	423	375	460	460	398	402	400	440	423	426	437	438
MIN	56	36	304	256	126	348	385	379	409	423	427	377
AC-FT	16370	9020	26100	22510	17010	23810	23610	25540	24910	26080	26660	25750
a	14020	6210	22120	19980	16600	21970	21250	23340	22330	22630	23840	23080
b	14580	7360	20340	19380	17040	18680	19160	22550	20320	21830	19850	19010

a Discharge, in acre-feet, to Halsey Powerplant, provided by Pacific Gas & Electric Co.

b Discharge, in acre-feet, to Wise Powerplant, provided by Pacific Gas & Electric Co.

## 11422000 BEAR RIVER CANAL INTAKE NEAR COLFAX, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1931, BY WATER YEAR (WY)

MEAN	184	158	156	124	139	154	200	253	253	250	251	235
MAX	300	285	281	257	265	257	286	278	300	317	300	300
(WY)	1929	1929	1925	1925	1925	1922	1925	1925	1927	1931	1926	1927
MIN	.000	.000	.000	.000	.000	.000	53.2	158	190	162	167	93.7
(WY)	1930	1930	1930	1930	1930	1930	1931	1931	1931	1918	1918	1924

## SUMMARY STATISTICS

## WATER YEARS 1918 - 1931

ANNUAL MEAN	197	
HIGHEST ANNUAL MEAN	245	1929
LOWEST ANNUAL MEAN	121	1931
HIGHEST DAILY MEAN	345	Aug 2 1931
LOWEST DAILY MEAN	.00	Nov 12 1917
ANNUAL SEVEN-DAY MINIMUM	.00	Mar 17 1918
ANNUAL RUNOFF (AC-FT)	142400	
10 PERCENT EXCEEDS	300	
50 PERCENT EXCEEDS	232	
90 PERCENT EXCEEDS	.00	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1998, BY WATER YEAR (WY)

MEAN	334	315	372	356	346	320	310	388	401	409	409	395
MAX	492	495	488	479	478	485	490	498	499	493	497	496
(WY)	1968	1968	1976	1979	1980	1980	1978	1978	1978	1967	1967	1967
MIN	69.8	27.9	52.7	8.65	27.8	18.5	18.4	106	139	143	136	114
(WY)	1978	1978	1977	1946	1946	1977	1940	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1932 - 1998

ANNUAL TOTAL	123897.9		134799		
ANNUAL MEAN	339		369		363
HIGHEST ANNUAL MEAN					462
LOWEST ANNUAL MEAN					118
HIGHEST DAILY MEAN	460	Dec 30	460	Dec 30	531
LOWEST DAILY MEAN	4.5	Jan 24	36	Nov 14	.00
ANNUAL SEVEN-DAY MINIMUM	12	Jan 23	37	Nov 11	.00
ANNUAL RUNOFF (AC-FT)	245800		267400		263100
ANNUAL DIVERSION (AC-FT) a	196700		237400		
ANNUAL DIVERSION (AC-FT) b	228400		220100		
10 PERCENT EXCEEDS	449		436		475
50 PERCENT EXCEEDS	423		407		424
90 PERCENT EXCEEDS	86		235		137

a Discharge, in acre-feet, to Halsey Powerplant, provided by Pacific Gas &amp; Electric Co.

b Discharge, in acre-feet, to Wise Powerplant, provided by Pacific Gas &amp; Electric Co.

## 11422500 BEAR RIVER BELOW ROLLINS DAM, NEAR COLFAX, CA

LOCATION.—Lat 39°07'53", long 120°57'29", in SE 1/4 SW 1/4 sec.22, T.15 N., R.9 E., Nevada County, Hydrologic Unit 18020126, on right bank 20 ft upstream from new highway bridge, 0.5 mi downstream from Rollins Dam, and 2.2 mi north of Colfax.

DRAINAGE AREA.—105 mi<sup>2</sup>.

PERIOD OF RECORD.—January 1912 to September 1913, October 1913 to July 1915 (gage heights and discharge measurements only), August 1915 to June 1917, November 1949 to September 1953, August 1964 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Prior to August 1964, published as Bear River near Colfax. Records for November and December 1911 include diversion to Bear River Canal and are not equivalent.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 1,927.41 ft above sea level. Prior to Aug. 8, 1915, nonrecording gages at several sites above diversion dam 0.3 mi upstream at different datums. Aug. 8, 1915, to June 30, 1917, nonrecording gage 0.7 mi downstream at different datum. Nov. 1, 1949, to Sept. 30, 1953, at site 0.2 mi downstream at different datum. Aug. 17, 1964, to Feb. 4, 1986, at present site and datum. Feb. 5, 1986, to Mar. 19, 1987, at site 160 ft downstream at datum 8.00 ft lower.

REMARKS.—Flow regulated by Rollins Reservoir (station 11421800) beginning Dec. 15, 1964. Bear River Canal (station 11422000) diverts upstream from station. See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Nevada Irrigation District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge (prior to construction of Rollins Dam in 1964), 9,620 ft<sup>3</sup>/s, Nov. 20, 1950, gage height, 21.40 ft, site and datum then in use, from rating curve extended above 3,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1912, 1952. Maximum discharge since construction of Rollins Dam, 34,300 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 18.01 ft, maximum gage height, 20.62 ft, Feb. 17, 1986, site and datum then in use, from rating curve extended above 11,600 ft<sup>3</sup>/s; minimum daily, 0.5 ft<sup>3</sup>/s, Nov. 17, 1964.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	45	341	22	884	1080	1110	1040	954	633	359	352
2	81	22	321	22	1570	1050	1050	1190	938	630	358	352
3	81	22	319	23	3990	1050	1200	1240	923	628	357	350
4	80	22	321	31	2510	1010	1310	1190	839	636	357	349
5	79	22	342	22	1870	995	1270	1170	745	619	356	350
6	78	22	367	22	1900	1060	1270	1250	753	624	355	350
7	78	22	451	24	2620	1010	1190	1140	772	610	354	404
8	78	22	406	23	2630	957	1120	1090	814	601	355	408
9	80	22	334	23	1870	811	1080	1070	868	607	354	355
10	80	22	334	26	1400	828	1040	1020	838	561	353	356
11	80	22	335	42	1600	854	1030	986	836	577	352	356
12	80	22	335	214	1500	891	1030	1030	825	591	352	360
13	80	22	335	527	1460	875	1120	1070	797	592	352	364
14	80	22	378	944	1990	851	1160	1110	781	590	352	361
15	80	22	364	3040	2170	844	1110	1040	768	572	353	357
16	79	22	337	2470	1550	835	1060	1020	752	516	354	353
17	79	22	337	2470	1390	823	1080	1060	729	507	355	349
18	79	44	336	2010	1330	806	1100	996	708	477	355	345
19	76	42	338	2040	1390	925	1020	938	695	456	354	340
20	77	23	338	1200	1480	933	982	913	688	439	355	335
21	79	123	338	1030	1680	952	1010	903	688	410	355	330
22	80	233	214	1090	2160	1030	1040	871	628	381	353	324
23	81	233	27	861	1830	1150	1130	866	714	361	353	319
24	82	234	22	791	1790	1780	1320	833	695	358	354	306
25	83	237	22	722	1310	1520	1290	983	696	357	354	303
26	80	111	22	694	1150	1220	1180	991	689	356	354	304
27	78	42	22	690	911	1160	1090	949	663	355	352	303
28	78	218	22	723	1000	1140	1080	1040	647	354	353	302
29	77	380	22	981	---	1080	1050	1290	643	354	352	302
30	78	380	22	1040	---	1090	1030	1100	637	353	353	302
31	78	---	22	888	---	1150	---	1010	---	355	352	---
TOTAL	2464	2697	7724	24705	48935	31760	33552	32399	22723	15460	10977	10241
MEAN	79.5	89.9	249	797	1748	1025	1118	1045	757	499	354	341
MAX	85	380	451	3040	3990	1780	1320	1290	954	636	359	408
MIN	76	22	22	22	884	806	982	833	628	353	352	302
AC-FT	4890	5350	15320	49000	97060	63000	66550	64260	45070	30660	21770	20310

## 11422500 BEAR RIVER BELOW ROLLINS DAM, NEAR COLFAX, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1953, BY WATER YEAR (WY)

MEAN	46.0	300	474	804	778	635	586	314	133	46.2	36.3	47.0
MAX	73.8	1016	1372	1103	1354	1110	1126	578	226	109	102	89.7
(WY)	1951	1951	1951	1951	1916	1916	1952	1952	1953	1916	1916	1916
MIN	12.7	19.8	58.4	287	201	127	151	165	35.1	.000	.000	.000
(WY)	1913	1953	1953	1913	1913	1913	1912	1916	1913	1913	1913	1913

## SUMMARY STATISTICS

## WATER YEARS 1912 - 1953

ANNUAL MEAN	356	
HIGHEST ANNUAL MEAN	534	1951
LOWEST ANNUAL MEAN	126	1913
HIGHEST DAILY MEAN	5760	Nov 20 1950
LOWEST DAILY MEAN	.00	Jul 5 1912
ANNUAL SEVEN-DAY MINIMUM	.00	Sep 11 1912
INSTANTANEOUS PEAK FLOW	9620	Nov 20 1950
INSTANTANEOUS PEAK STAGE	21.40	Nov 20 1950
ANNUAL RUNOFF (AC-FT)	258000	
10 PERCENT EXCEEDS	879	
50 PERCENT EXCEEDS	138	
90 PERCENT EXCEEDS	1.0	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

MEAN	109	195	368	646	686	734	647	501	349	250	202	156
MAX	282	1267	1957	2973	2889	2324	2516	1211	757	538	420	383
(WY)	1984	1984	1997	1997	1986	1983	1982	1995	1998	1983	1995	1983
MIN	21.3	10.3	6.53	6.67	5.14	4.56	16.6	21.8	15.2	22.8	34.3	34.4
(WY)	1978	1978	1978	1977	1977	1977	1976	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1966 - 1998

ANNUAL TOTAL	169630		243637		
ANNUAL MEAN	465		667		402
HIGHEST ANNUAL MEAN					972
LOWEST ANNUAL MEAN					19.0
HIGHEST DAILY MEAN	22800	Jan 2	3990	Feb 3	22800
LOWEST DAILY MEAN	20	Feb 23	22	Nov 2	3.6
ANNUAL SEVEN-DAY MINIMUM	21	Feb 17	22	Nov 2	4.4
INSTANTANEOUS PEAK FLOW			5310	Feb 3	34300
INSTANTANEOUS PEAK STAGE			7.25	Feb 3	20.62
ANNUAL RUNOFF (AC-FT)	336500		483300		291400
10 PERCENT EXCEEDS	589		1270		970
50 PERCENT EXCEEDS	246		561		154
90 PERCENT EXCEEDS	22		38		22

## 11423800 BEAR RIVER FISH RELEASE BELOW NEW CAMP FAR WEST RESERVOIR, NEAR WHEATLAND, CA

LOCATION.—Lat 39°02'30", long 121°19'52", in NE 1/4 NW 1/4 sec.29, T.14 N., R.6 E., Placer County, Hydrologic Unit 18020108, on left bank 5.4 mi northeast of Wheatland and 1.2 mi downstream from New Camp Far West Reservoir.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—October 1989 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 120 ft above sea level, from topographic map.

REMARKS.—The gage measures required fish-release flow and is entirely regulated by New Camp Far West Reservoir. See schematic diagrams of Bear River basin and lower Sacramento River Basin.

COOPERATION.—Records provided by South Sutter Water District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 43 ft<sup>3</sup>/s, Dec. 4, 1994; minimum daily, 8.0 ft<sup>3</sup>/s, July 2, 1995.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	11	13	15	13	28	26	27	14	12	12
2	12	12	13	13	16	13	28	26	27	11	12	12
3	12	12	13	13	20	14	28	26	27	11	12	12
4	12	13	13	13	18	14	29	26	27	11	12	11
5	12	13	13	13	15	14	29	28	27	11	12	11
6	12	12	13	14	15	14	29	28	27	10	12	11
7	12	12	18	14	16	14	29	28	27	10	12	12
8	12	12	19	14	17	14	e28	28	27	11	12	12
9	12	12	14	14	16	14	e28	27	27	11	12	12
10	22	12	13	14	15	13	28	27	27	11	12	12
11	25	12	13	14	15	13	27	28	27	11	12	12
12	22	12	13	15	15	13	27	27	27	11	12	12
13	20	12	13	15	15	13	28	28	27	11	12	12
14	18	13	14	15	16	13	29	28	27	11	12	12
15	17	13	15	16	16	13	28	28	27	11	12	12
16	18	12	14	16	15	13	28	28	26	11	12	12
17	18	12	15	16	15	13	27	27	27	11	12	12
18	15	12	15	15	14	13	27	27	28	11	12	12
19	15	12	14	16	14	13	27	28	28	11	12	12
20	14	12	13	15	15	13	27	27	27	11	12	12
21	15	11	13	15	15	13	26	27	27	11	12	12
22	13	11	13	14	15	13	25	27	27	11	12	12
23	12	11	13	14	15	13	25	27	27	11	12	12
24	12	11	13	14	15	14	25	27	27	10	12	12
25	12	11	13	14	14	15	25	27	27	11	12	11
26	12	13	13	14	14	14	25	27	27	11	12	11
27	12	13	13	14	13	14	25	27	27	13	12	11
28	12	11	13	14	13	14	25	27	27	12	12	12
29	12	11	13	14	---	14	26	29	27	12	12	13
30	12	12	14	15	---	14	27	28	27	12	12	12
31	12	---	13	15	---	22	---	28	---	12	12	---
TOTAL	448	359	423	445	427	427	813	847	811	347	372	355
MEAN	14.5	12.0	13.6	14.4	15.3	13.8	27.1	27.3	27.0	11.2	12.0	11.8
MAX	25	13	19	16	20	22	29	29	28	14	12	13
MIN	12	11	11	13	13	13	25	26	26	10	12	11
AC-FT	889	712	839	883	847	847	1610	1680	1610	688	738	704

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1998, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
MEAN	12.6	12.5	12.9	13.7	13.4	14.0	28.0	28.0	27.8	11.4	11.4	11.4
MAX	14.5	18.0	16.4	21.7	18.7	21.7	32.0	30.5	30.1	12.9	13.0	13.0
(WY)	1998	1996	1996	1995	1995	1995	1995	1995	1995	1995	1995	1995
MIN	11.0	11.0	11.0	10.9	11.0	11.2	26.5	25.9	25.8	11.0	10.8	10.8
(WY)	1991	1991	1991	1991	1991	1991	1990	1990	1990	1997	1990	1990

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1990 - 1998

ANNUAL TOTAL	5927.8	6074	
ANNUAL MEAN	16.2	16.6	16.4
HIGHEST ANNUAL MEAN			19.5
LOWEST ANNUAL MEAN			15.0
HIGHEST DAILY MEAN	33	Apr 8	43
LOWEST DAILY MEAN	9.8	Jul 22	8.0
ANNUAL SEVEN-DAY MINIMUM	11	Jul 17	10
ANNUAL RUNOFF (AC-FT)	11760	12050	11890
10 PERCENT EXCEEDS	27		28
50 PERCENT EXCEEDS	13		12
90 PERCENT EXCEEDS	11		11

e Estimated.

## 11424000 BEAR RIVER NEAR WHEATLAND, CA

LOCATION.—Lat 39°00'00", long 121°24'20", in SE 1/4 SW 1/4 sec.3, T.13 N., R.5 E., Placer County, Hydrologic Unit 18020108, on right bank 200 ft downstream from bridge on State Highway 65, 1 mi southeast of Wheatland, and 6.5 mi downstream from New Camp Far West Reservoir.

DRAINAGE AREA.—292 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1928 to current year.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 71.92 ft above sea level. See WSP 2131 for history of changes prior to May 28, 1970.

REMARKS.—Records good. Natural flow of stream affected by inflow from Yuba and American River basins. Flow regulated by Lake Combie, usable capacity, 7,840 acre-ft, since 1928; Rollins Reservoir (station 11421800), since December 1964; and New Camp Far West Reservoir, usable capacity, 102,200 acre-ft, since October 1963. Many diversions for irrigation and power. See schematic diagrams of Bear River and lower Sacramento River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 48,000 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 21.60 ft, maximum gage height, 23.72 ft, Jan. 2, 1997 (backwater from Feather River); no flow at times.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	e13	15	16	1600	1530	1540	1140	993	123	17	17
2	17	e13	14	244	2680	1520	1460	1190	884	123	22	16
3	15	e13	14	638	13800	1470	1700	1360	810	106	23	11
4	15	e13	14	642	9110	1420	2180	1410	759	90	16	18
5	16	e13	18	619	4100	1380	2070	1460	684	94	19	14
6	15	e14	22	591	3670	1600	1960	1490	610	93	18	19
7	14	e14	34	574	5650	1620	1840	1430	584	87	20	21
8	14	e15	e29	573	6070	1480	1710	1420	601	70	20	23
9	17	e15	25	574	4300	1370	1590	1350	635	75	23	23
10	15	e15	22	586	3030	1240	1480	1190	659	72	21	20
11	18	15	21	606	2780	1180	1400	1060	670	69	20	32
12	17	15	20	1660	2740	1200	1450	695	693	66	19	61
13	16	16	20	3910	2890	1200	1790	891	666	51	18	66
14	15	17	24	2400	3850	1180	2080	1090	638	20	16	75
15	14	17	25	5600	4940	1150	1870	1100	614	20	18	89
16	13	16	21	6090	3300	1120	1650	1010	564	24	21	100
17	14	16	19	4170	2670	1100	1500	981	469	23	20	98
18	13	16	21	3570	2320	1110	1420	916	441	20	18	119
19	11	17	18	4460	2280	1060	1360	821	404	23	20	134
20	11	16	17	3030	2660	1090	1280	734	355	22	19	143
21	12	16	16	2160	2800	1120	1210	672	341	18	19	140
22	12	16	16	1820	4100	1160	1200	606	327	17	17	138
23	11	16	16	1680	3300	1280	1210	534	283	17	22	134
24	11	16	16	1690	3170	1890	1410	501	e158	16	22	136
25	12	16	16	1540	2640	2380	1490	506	e113	13	18	145
26	12	20	16	1320	2130	2060	1420	604	e113	16	17	146
27	12	17	16	1230	1850	1700	1330	628	e113	16	11	151
28	12	16	16	1180	1590	1550	1240	711	e113	15	17	68
29	12	15	15	1540	---	1510	1160	1550	e113	15	15	18
30	12	17	14	1950	---	1420	1170	1430	121	13	16	20
31	12	---	16	1740	---	1430	---	1160	---	14	17	---
TOTAL	426	464	586	58403	106020	43520	46170	31640	14528	1441	579	2195
MEAN	13.7	15.5	18.9	1884	3786	1404	1539	1021	484	46.5	18.7	73.2
MAX	18	20	34	6090	13800	2380	2180	1550	993	123	23	151
MIN	11	13	14	16	1590	1060	1160	501	113	13	11	11
AC-FT	845	920	1160	115800	210300	86320	91580	62760	28820	2860	1150	4350

e Estimated.

## 11424000 BEAR RIVER NEAR WHEATLAND, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1963, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	92.8	184	565	826	1240	1033	770	306	79.0	12.6	16.7	18.4
MAX	1348	1980	3501	3004	3360	2918	2553	939	245	55.4	148	215
(WY)	1963	1951	1956	1956	1936	1938	1958	1942	1932	1952	1935	1935
MIN	2.05	9.14	21.3	68.0	156	192	11.3	.57	.71	.53	.65	.30
(WY)	1961	1960	1960	1947	1933	1933	1959	1959	1959	1959	1939	1939

## SUMMARY STATISTICS

## WATER YEARS 1930 - 1963

ANNUAL MEAN	424
HIGHEST ANNUAL MEAN	891
LOWEST ANNUAL MEAN	70.0
HIGHEST DAILY MEAN	22100
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	.00
INSTANTANEOUS PEAK FLOW	33000
INSTANTANEOUS PEAK STAGE	20.83
ANNUAL RUNOFF (AC-FT)	307500
10 PERCENT EXCEEDS	1060
50 PERCENT EXCEEDS	77
90 PERCENT EXCEEDS	3.6

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	15.9	142	471	1002	1208	1156	732	252	73.5	19.8	15.5	16.2
MAX	58.5	1606	2668	3954	5201	3845	3796	1035	484	72.6	29.5	73.2
(WY)	1972	1984	1984	1997	1986	1983	1982	1983	1998	1995	1967	1998
MIN	.002	.056	.000	.14	.62	1.07	.60	4.05	3.17	2.95	4.72	1.31
(WY)	1978	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1966 - 1998

ANNUAL TOTAL	141856	305972	
ANNUAL MEAN	389	838	421
HIGHEST ANNUAL MEAN			1191
LOWEST ANNUAL MEAN			3.42
HIGHEST DAILY MEAN	28100	Jan 2	13800
LOWEST DAILY MEAN	11	Oct 19	11
ANNUAL SEVEN-DAY MINIMUM	11	Oct 19	11
INSTANTANEOUS PEAK FLOW			22000
INSTANTANEOUS PEAK STAGE			15.69
ANNUAL RUNOFF (AC-FT)	281400	606900	305300
10 PERCENT EXCEEDS	742	2100	1220
50 PERCENT EXCEEDS	20	134	23
90 PERCENT EXCEEDS	13	15	7.9

## 11425000 FEATHER RIVER NEAR NICOLAUS, CA

LOCATION.—Lat 38°53'26", long 121°36'12", in SE 1/4 NE 1/4 sec. 14, T.12 N, R.3 E, Sutter County, Hydrologic Unit 18020106, on left bank 1.7 mi southwest of Nicolaus, 4.2 mi downstream from Bear River, and at mile 8.1.

DRAINAGE AREA.—5,921 mi<sup>2</sup>.

PERIOD OF RECORD.—Water years 1996 to current year.

CHEMICAL DATA: February 1996 to current year.

SEDIMENT DATA: February 1996 to current year.

REMARKS.—Site was relocated 1.7 mi downstream on Sept. 20, 1973, where discharge data was recorded from June 1921 to December 1942 and April 1943 to September 1973 by the U.S. Geological Survey. The National Water-Quality Assessment (NAWQA) Program began monitoring this site for water-quality data in February 1996.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE OF (MM HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
		(00095)	(00400)	(00010)	(00025)	(00300)	(00301)	(00915)	(00925)	(00930)	(00932)	(00935)
OCT												
28...	1030	96	7.5	13.4	762	10.0	96	9.2	4.0	4.0	18	1.3
NOV												
24...	1000	93	7.6	12.1	764	10.6	98	9.1	3.8	3.7	17	1.4
DEC												
08...	1100	101	7.7	10.7	761	10.0	90	9.3	4.1	4.3	18	1.6
JAN												
12...	1100	98	7.6	10.3	759	10.6	11	8.7	4.1	4.2	19	1.2
FEB												
17...	1100	77	7.7	8.6	756	11.0	95	7.4	3.3	3.0	17	.9
MAR												
24...	1100	78	7.7	11.1	756	11.2	103	7.7	3.3	3.0	16	.7
APR												
20...	1020	82	7.7	13.2	764	13.6	129	8.0	3.4	3.2	17	.6
DATE		ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT												
28...	36	3.4	2.3	<.1	13	67	64	.09	<.01	.07	.02	<.2
NOV												
24...	37	3.3	1.9	<.1	13	66	64	.09	.03	.08	<.02	.1
DEC												
08...	35	4.9	3.5	<.1	13	76	68	.10	<.01	.36	.05	.3
JAN												
12...	36	4.1	3.1	<.1	14	75	65	.10	.01	.25	.03	.4
FEB												
17...	32	2.9	1.6	<.1	13	61	54	.08	<.01	.10	.03	.2
MAR												
24...	34	2.8	1.4	<.1	13	56	54	.08	<.01	.08	.03	<.1
APR												
20...	33	5.2	1.7	<.1	13	60	58	.08	<.01	.07	.06	<.1



## 11425000 FEATHER RIVER NEAR NICOLAUS, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)
OCT 28...	<.2	.03	<.01	.02	6	<1	<1	16	<1	<1	<1	<1
NOV 24...	<.1	.01	<.01	.02	6	<1	<1	15	<1	<1	<1	<1
DEC 08...	.3	.07	.02	.01	6	<1	<1	19	<1	<1	<1	<1
JAN 12...	.2	.06	.03	.02	7	<1	<1	15	<1	<1	<1	<1
FEB 17...	<.1	.05	<.01	.03	8	<1	<1	13	<1	<1	1	<1
MAR 24...	<.1	<.01	<.01	<.01	8	<1	<1	12	<1	<1	<1	<1
APR 20...	<.1	.04	.01	.01	9	<1	<1	12	<1	<1	<1	<1

DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT 28...	1	39	<1	12	<1	<1	<1	<1	2	<1	1.5	.3
NOV 24...	1	32	<1	4	<1	<1	<1	<1	2	<1	1.4	.6
DEC 08...	2	44	<1	4	<1	<1	<1	<1	<1	<1	2.9	--
JAN 12...	2	32	<1	2	<1	1	<1	<1	2	<1	3.2	.4
FEB 17...	1	18	<1	4	<1	<1	<1	<1	<1	<1	1.9	.3
MAR 24...	1	12	<1	3	<1	<1	<1	<1	2	<1	1.2	.2
APR 20...	<1	16	<1	7	<1	<1	<1	<1	<1	<1	1.4	.3

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 28...N	1030	13.4	28	62
NOV 24...N	1000	12.1	15	82
DEC 08...N	1100	10.7	71	89
JAN 12...N	1100	10.3	78	89
FEB 17...N	1100	8.6	35	89
MAR 24...N	1100	11.1	18	84
APR 20...N	1020	13.2	45	63

## 11425418 MORMON RAVINE NEAR NEWCASTLE, CA

LOCATION.—Lat 38°50'12", long 121°05'36", in SE 1/4 NW 1/4 sec.4, T.11 N., R.8 E., Placer County, Hydrologic Unit 18020128, on right bank 200 ft upstream from Folsom Lake, 700 ft north of Newcastle Powerplant, and 3.3 mi southeast of Newcastle.

DRAINAGE AREA.—3.84 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1989 to current year (low-flow records only).

GAGE.—Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 500 ft above sea level, from topographic map.

REMARKS.—Records not computed above 8.5 ft<sup>3</sup>/s. Low flow augmented by release from end of South Canal. Most of the water in South Canal is diverted to Newcastle Powerplant (station 11425416). See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	.80	---	7.0	---	---	---	---	---	7.8	---	7.5
2	8.3	.65	---	---	---	---	---	---	---	8.0	---	---
3	8.3	1.0	7.6	8.4	---	---	---	---	---	7.9	---	---
4	8.1	2.0	7.3	---	---	---	---	---	---	7.5	---	8.0
5	7.9	1.9	7.7	---	---	---	---	---	---	7.6	---	---
6	8.3	1.8	---	---	---	---	---	---	---	7.4	---	---
7	8.2	2.7	---	---	---	---	---	---	---	---	---	---
8	8.1	1.9	---	---	---	---	---	---	---	---	---	---
9	---	2.0	---	---	---	---	---	---	---	---	---	---
10	---	3.3	---	---	---	---	---	---	---	---	---	---
11	---	5.6	---	---	---	---	---	---	---	---	---	---
12	8.5	4.4	---	---	---	---	---	---	---	---	---	---
13	---	---	8.3	---	---	---	---	---	8.5	---	---	---
14	8.0	---	---	---	---	---	---	---	8.0	---	---	---
15	7.2	---	---	---	---	---	---	---	7.6	---	---	---
16	5.8	---	---	---	---	---	---	---	11	---	---	---
17	5.6	---	---	---	---	---	---	---	7.5	---	---	---
18	5.6	7.8	---	---	---	---	---	---	7.7	---	---	---
19	---	---	8.3	---	---	---	---	---	7.5	---	---	---
20	2.4	---	7.8	---	---	---	---	---	8.2	---	---	---
21	4.7	7.6	8.1	---	---	---	---	8.5	8.3	---	---	---
22	3.4	7.6	8.1	---	---	---	---	8.3	8.3	---	---	---
23	1.9	7.5	7.8	---	---	---	---	8.1	8.0	---	---	---
24	2.0	7.2	7.3	---	---	---	---	8.0	7.8	---	---	---
25	1.9	7.8	7.2	---	---	---	---	---	---	---	---	---
26	1.9	---	6.8	---	---	---	---	---	7.8	---	7.1	---
27	.85	---	6.8	---	---	---	---	---	7.4	---	8.2	---
28	1.0	---	7.0	---	---	---	---	---	7.0	---	7.4	---
29	2.2	---	---	---	---	---	---	---	6.9	---	7.5	---
30	.93	---	7.1	---	---	---	---	---	7.1	---	6.9	---
31	.82	---	7.3	---	---	---	---	---	---	---	6.6	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---
a	9050	5940	18240	18710	16020	17810	15260	12370	10250	819	1600	9560

CAL YR 1997 a 109300

WTR YR 1998 a 135600

a Diversion, in acre-feet, to Newcastle Powerplant, provided by Pacific Gas & Electric Co.

## 11425500 SACRAMENTO RIVER AT VERONA, CA

LOCATION.—Lat 38°46'28", long 121°35'50", in SW 1/4 NW 1/4 sec.25, T.11 N., R.3 E., Sutter County, Hydrologic Unit 18020109, on left bank 1.3 mi southeast of Verona, 1.5 mi downstream from Feather River, 6.2 mi east of Knights Landing, and at mile 19.1 upstream from Sacramento.

DRAINAGE AREA.—21,251 mi<sup>2</sup>.

## WATER DISCHARGE RECORDS

PERIOD OF RECORD.—May 1926 to September 1929 (low-water periods only), October 1929 to current year.

REVISED RECORDS.—WDR CA-77-4: Drainage area.

GAGE.—Water-stage recorder and crest-stage gage. Datum of gage is 3.00 ft below sea level. May 1926 to Sept. 30, 1987, at site 0.5 mi upstream at same datum.

REMARKS.—Records good. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation, return flow from irrigated areas, and bypassing for flood control. When discharge exceeds about 55,000 ft<sup>3</sup>/s, flow begins over Fremont Weir, 3.5 mi upstream on right bank, into Yolo Bypass (station 11453000). See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 94,000 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 42.09 ft; maximum gage height, Feb. 20, 1986, 42.11 ft, site then in use; minimum daily, 304 ft<sup>3</sup>/s, July 23, 24, 1931.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11700	8240	21800	11800	63300	63900	61600	32900	60100	28400	19800	21900
2	12000	8240	26300	12000	64100	62900	60200	33200	60500	27800	20000	22500
3	12000	8380	22800	13100	68800	62200	60000	34200	59400	27400	20200	23100
4	11800	8340	19600	16100	73400	61700	60200	35300	58300	27000	20500	23400
5	11700	8600	17700	22900	74300	60800	59600	36000	57500	26400	20400	24000
6	11500	8950	16600	24700	75200	60300	59100	36300	56800	26200	20600	24100
7	11400	9050	16700	22000	75500	59600	58900	36400	56200	25700	20500	24200
8	10900	8960	21800	20100	76300	58400	58600	35100	55400	24800	20300	24400
9	10700	8890	26600	21100	75600	57200	58400	33100	53700	24400	20900	24700
10	10900	9040	26300	20800	74200	55900	57400	32200	51300	23700	21400	24500
11	11200	9410	22700	22000	72200	53600	56100	32600	49200	23000	21400	23900
12	11500	9520	19600	31900	70700	50700	54200	32700	47500	22000	21000	22900
13	11300	9790	17500	44700	70000	47700	52000	34100	47400	21600	21200	21500
14	10600	10400	16400	49600	69900	44900	50400	36300	48200	21300	21400	20100
15	9710	11000	16800	56300	71100	43500	48100	37100	48900	20900	21200	19300
16	9270	11600	21500	63800	70100	42700	45200	36800	49400	20300	20700	19000
17	9070	12000	23600	64600	69600	41000	42000	36800	48300	19700	20600	19500
18	8820	12600	21300	64900	68300	38500	38500	38600	46400	19200	20800	20000
19	8570	13300	20000	65700	67600	37400	36100	39200	43500	19000	21200	20300
20	8530	13400	19700	65500	68100	38200	34900	38400	40600	19100	21400	20300
21	8620	14300	18300	65100	67700	39500	34300	36900	38400	19100	21400	19600
22	8290	14800	16800	64200	69700	43000	33700	35600	36900	19100	21500	19000
23	8130	13900	15300	63100	69500	47700	33600	34200	35900	19100	21600	19300
24	7760	13000	14400	62300	69100	55300	34000	33500	34700	19000	21900	19200
25	7570	12700	13800	61800	68100	61900	35000	33700	32900	19300	22300	19100
26	7640	13700	13500	61100	67200	64100	35600	34900	30900	19400	22800	18800
27	8200	17600	13000	61300	66100	65200	35600	37200	30100	19600	22400	18700
28	8200	23000	12600	61500	65100	65500	35500	38200	30000	19500	22000	18800
29	8220	22700	12400	62800	---	65200	34500	41800	29500	19400	21800	18700
30	8130	19500	12200	64300	---	64400	33300	47900	29000	19600	21800	18700
31	8120	---	12000	63700	---	63300	---	54800	---	19700	21800	---
TOTAL	302050	364910	569600	1404800	1960800	1676200	1396600	1136000	1366900	680700	656800	633500
MEAN	9744	12160	18370	45320	70030	54070	46550	36650	45560	21960	21190	21120
MAX	12000	23000	26600	65700	76300	65500	61600	54800	60500	28400	22800	24700
MIN	7570	8240	12000	11800	63300	37400	33300	32200	29000	19000	19800	18700
AC-FT	599100	723800	1130000	2786000	3889000	3325000	2770000	2253000	2711000	1350000	1303000	1257000

## 11425500 SACRAMENTO RIVER AT VERONA, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1943, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	5623	8493	17140	28130	33500	35320	34370	24600	12750	3943	2603	4242
MAX	7816	23510	41690	56930	57860	57700	55330	53730	33480	9176	5036	5895
(WY)	1939	1938	1938	1941	1942	1938	1938	1938	1938	1938	1938	1938
MIN	3462	3923	5968	7819	11730	13860	5932	3103	1872	497	846	2960
(WY)	1933	1933	1937	1937	1933	1931	1931	1931	1931	1931	1931	1934

## SUMMARY STATISTICS

## WATER YEARS 1930 - 1943

ANNUAL MEAN	17470
HIGHEST ANNUAL MEAN	31300 1938
LOWEST ANNUAL MEAN	6286 1931
HIGHEST DAILY MEAN	76900 Feb 8 1942
LOWEST DAILY MEAN	304 Jul 23 1931
ANNUAL SEVEN-DAY MINIMUM	313 Jul 18 1931
INSTANTANEOUS PEAK FLOW	79200 Mar 1 1940
INSTANTANEOUS PEAK STAGE	41.20 Mar 1 1940
ANNUAL RUNOFF (AC-FT)	12650000
10 PERCENT EXCEEDS	50700
50 PERCENT EXCEEDS	8620
90 PERCENT EXCEEDS	2680

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	10590	13930	22550	30160	34580	31900	25190	20380	14640	11570	12040	12800
MAX	24920	43300	64470	71040	70030	71340	62140	51600	45560	24550	21400	22110
(WY)	1963	1974	1984	1997	1998	1983	1982	1952	1998	1983	1983	1971
MIN	4725	5987	6586	8561	7591	6731	6188	5118	4858	4848	5385	6300
(WY)	1978	1993	1960	1991	1991	1977	1977	1992	1992	1947	1947	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1946 - 1998

ANNUAL TOTAL	7836370	12148860	
ANNUAL MEAN	21470	33280	19960
HIGHEST ANNUAL MEAN			39150 1983
LOWEST ANNUAL MEAN			7178 1977
HIGHEST DAILY MEAN	90200 Jan 3	76300 Feb 8	92300 Feb 20 1986
LOWEST DAILY MEAN	7430 May 10	7570 Oct 25	3590 Jun 24 1992
ANNUAL SEVEN-DAY MINIMUM	7620 May 6	7960 Oct 23	3960 Jun 22 1992
INSTANTANEOUS PEAK FLOW		76600 Feb 8	94000 Jan 2 1997
INSTANTANEOUS PEAK STAGE		37.06 Feb 8	42.11 Feb 20 1986
ANNUAL RUNOFF (AC-FT)	15540000	24100000	14460000
10 PERCENT EXCEEDS	62100	64200	47500
50 PERCENT EXCEEDS	14400	24700	13400
90 PERCENT EXCEEDS	8550	11100	7440

## 11425500 SACRAMENTO RIVER AT VERONA, CA—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1952, 1969–70, 1980, 1996 to current year.

CHEMICAL DATA: Water years 1952, 1969–70, 1996 to current year.

SPECIFIC CONDUCTANCE: Water year 1995 to September 1998 (discontinued).

WATER TEMPERATURE: Water year 1980, 1995 to September 1998 (discontinued).

SEDIMENT DATA: Water year 1980, 1996 to current year.

PERIOD OF DAILY RECORD.—

SPECIFIC CONDUCTANCE: October 1995 to September 1998 (discontinued).

WATER TEMPERATURE: October 1995 to September 1998 (discontinued).

INSTRUMENTATION.—Water-quality monitor since October 1995.

REMARKS.—Interruption in record was due to malfunction of the recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.—

SPECIFIC CONDUCTANCE: Maximum recorded, 223 microsiemens, June 1, 1997; minimum recorded, 59 microsiemens, July 25, 1996.

WATER TEMPERATURE: Maximum recorded, 24.5°C, May 18, 19, 1997; minimum recorded, 6.0°C, Jan. 14, 15, 1997.

EXTREMES FOR CURRENT YEAR.—

SPECIFIC CONDUCTANCE: Maximum recorded, 215 microsiemens, Nov. 27; minimum recorded, 62 microsiemens, Nov. 19.

WATER TEMPERATURE: Maximum recorded, 22.5°C, July 18–20; minimum recorded, 6.5°C, Dec. 25–28.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 29...	1100	8270	152	7.9	14.3	765	10.0	97	12	6.8
NOV 25...	1230	12600	182	7.9	12.7	764	9.6	90	14	7.8
DEC 16...	1230	21800	186	8.1	8.7	770	10.5	89	15	8.0
JAN 28...	1230	61500	138	7.7	10.2	759	7.3	65	12	5.8
FEB 24...	1130	69200	103	8.0	9.0	756	10.8	94	9.3	4.8
MAR 25...	1300	62300	123	7.8	13.1	755	10.8	104	12	5.7
APR 22...	1230	33700	135	7.7	16.3	755	9.9	102	13	6.5
MAY 20...	1130	38500	102	7.8	14.5	763	10.1	99	9.6	4.5
DATE		SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT. DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)
OCT 29...	8.8	24	1.5	60	6.5	5.8	<.1	18	105	101
NOV 25...	12	27	2.0	73	9.8	6.9	<.1	20	126	121
DEC 16...	11	25	1.7	71	11	7.2	<.1	22	113	122
JAN 28...	7.0	22	1.3	56	5.0	4.5	<.1	20	101	92
FEB 24...	4.4	18	1.2	41	4.0	2.5	.1	15	83	70
MAR 25...	5.8	19	1	51	4.8	3.6	<.1	16	88	82
APR 22...	5.9	18	.8	53	6.3	3.5	<.1	18	91	91
MAY 20...	4.6	19	.8	44	4.1	2.2	<.1	17	58	71

## 11425500 SACRAMENTO RIVER AT VERONA, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT										
29...	.14	<.01	.12	<.02	.2	.2	.05	.02	.03	6
NOV										
25...	.17	.02	.16	<.02	.3	.2	.07	.03	.04	5
DEC										
16...	.15	.04	.06	<.02	.3	.1	.10	.05	.02	7
JAN										
28...	.14	.01	.19	<.02	.2	<.1	.05	.01	.03	7
FEB										
24...	.11	.01	.22	.02	.3	.1	.09	.03	.04	8
MAR										
25...	.12	<.01	.08	.05	.3	<.1	.08	.01	.02	9
APR										
22...	.12	<.01	.16	.03	.2	<.1	.09	.01	.02	8
MAY										
20...	.08	<.01	.08	.04	.2	<.1	.05	<.01	<.01	8

DATE	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT										
29...	<1	1	22	<1	<1	1	<1	2	24	<1
NOV										
25...	<1	2	27	<1	<1	<1	<1	2	26	<1
DEC										
16...	<1	1	27	<1	<1	1	<1	2	14	<1
JAN										
28...	<1	1	22	<1	<1	2	<1	2	<10	<1
FEB										
24...	<1	<1	21	<1	<1	1	<1	2	18	<1
MAR										
25...	<1	1	21	<1	<1	1	<1	2	13	<1
APR										
22...	<1	<1	22	<1	<1	2	<1	1	17	<1
MAY										
20...	<1	1	16	<1	<1	<1	<1	1	11	<1

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)
OCT									
29...	6	<1	1	<1	<1	<1	<1	1.7	.3
NOV									
25...	4	<1	1	<1	<1	1	<1	3.3	.5
DEC									
16...	6	<1	1	<1	<1	2	<1	2.2	.5
JAN									
28...	7	<1	1	<1	<1	3	<1	2	.5
FEB									
24...	4	<1	1	<1	<1	<1	<1	2	.7
MAR									
25...	6	<1	1	<1	<1	2	<1	2	.5
APR									
22...	8	<1	<1	<1	<1	<1	<1	1.5	.3
MAY									
20...	2	<1	<1	<1	<1	2	<1	1.5	.4

## 11425500 SACRAMENTO RIVER AT VERONA, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
29...N	1100	8270	14.3	27	603	87
NOV						
25...N	1230	12600	12.7	44	1500	83
DEC						
16...N	1230	21800	8.7	114	6710	62
JAN						
28...N	1230	61500	10.2	61	10100	65
FEB						
24...N	1130	69200	9.0	77	14400	93
MAR						
25...N	1300	62300	13.1	117	19700	84
APR						
22...N	1230	33700	16.3	95	8640	74
MAY						
20...N	1130	38500	14.5	75	7800	79

## 11425500 SACRAMENTO RIVER AT VERONA, CA—Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	138	132	152	137	168	139	199	189	122	118	107	107
2	134	123	157	138	159	147	200	184	125	121	108	107
3	123	103	159	138	158	122	194	170	123	101	108	107
4	112	97	164	135	134	122	174	163	101	93	108	106
5	116	98	160	129	144	132	163	134	96	93	109	108
6	130	116	158	125	157	144	136	128	100	96	118	109
7	139	130	135	123	160	155	138	127	101	96	116	113
8	140	138	140	118	162	134	143	136	96	94	114	113
9	144	140	138	117	142	134	---	---	97	94	115	114
10	147	144	149	118	144	137	---	---	99	97	116	114
11	149	146	156	143	158	144	---	---	102	99	117	114
12	148	138	179	137	167	158	---	---	105	102	120	117
13	138	129	185	152	177	163	---	---	106	105	125	117
14	129	127	183	150	196	177	---	---	107	105	126	125
15	134	128	163	155	197	193	---	---	106	101	125	122
16	143	134	155	145	193	181	---	---	104	101	124	122
17	154	143	145	137	181	175	---	---	106	104	126	122
18	162	154	144	115	176	171	---	---	107	105	129	126
19	165	147	117	62	178	172	---	---	112	107	130	122
20	147	128	103	76	178	172	---	---	112	107	124	117
21	145	128	122	103	181	172	---	---	107	104	120	114
22	160	145	146	122	175	171	---	---	105	102	114	104
23	169	160	161	146	173	170	---	---	103	100	106	103
24	170	168	175	161	172	168	---	---	104	102	107	105
25	168	165	193	175	177	169	---	---	103	101	110	105
26	166	163	214	193	177	175	---	---	104	102	110	106
27	163	159	215	173	184	177	---	---	105	104	107	102
28	176	159	175	139	186	182	---	---	107	105	102	98
29	159	151	155	125	196	183	---	---	---	---	99	97
30	170	145	168	150	196	191	130	119	---	---	101	97
31	183	138	---	---	191	188	119	118	---	---	102	100
MONTH	183	97	215	62	197	122	---	---	125	93	130	97

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	106	100	127	121	104	101	84	79	135	122	104	87
2	108	106	142	121	109	104	88	80	141	128	105	88
3	107	106	130	121	111	107	85	81	143	131	112	92
4	113	107	122	114	113	109	85	79	137	106	107	88
5	113	111	118	114	110	107	81	79	139	92	107	88
6	114	113	115	111	111	105	82	78	130	90	116	98
7	116	114	115	110	111	107	79	75	110	89	111	93
8	117	115	115	112	116	109	80	75	104	84	113	94
9	118	115	121	115	120	110	79	76	106	81	134	113
10	120	117	122	115	110	102	83	76	109	82	134	120
11	121	119	118	113	107	101	90	80	121	87	132	115
12	123	119	113	106	108	104	96	85	127	86	136	119
13	122	120	110	105	106	103	101	91	129	86	148	127
14	120	117	112	104	105	102	131	96	116	85	151	141
15	117	115	109	102	107	102	136	98	100	82	167	144
16	116	112	106	102	107	97	138	101	101	80	177	157
17	117	111	110	106	101	96	142	114	106	86	171	153
18	122	117	108	104	101	97	151	127	101	84	174	143
19	123	119	105	101	103	97	159	142	98	84	157	143
20	---	---	103	99	99	97	169	159	97	82	165	139
21	---	---	103	98	100	94	170	166	100	84	161	132
22	---	---	99	93	100	92	166	163	103	83	155	130
23	139	136	99	94	98	88	165	125	102	84	154	131
24	138	131	98	93	91	87	127	108	103	86	154	126
25	131	120	97	93	91	87	137	126	99	79	148	126
26	120	115	94	89	95	88	141	136	98	82	151	129
27	121	114	93	89	92	84	144	122	105	82	153	121
28	124	121	95	92	88	83	152	128	102	85	141	120
29	125	122	106	95	85	80	150	142	103	85	148	123
30	132	123	103	99	84	80	151	138	104	85	141	119
31	---	---	103	101	---	---	140	118	112	88	---	---
MONTH	---	---	142	89	120	80	170	75	143	79	177	87



## 11425500 SACRAMENTO RIVER AT VERONA, CA—Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	19.5	18.5	16.5	15.5	11.5	11.0	8.0	8.0	10.0	10.0	10.5	10.0
2	19.0	18.0	16.5	15.5	11.0	10.5	9.0	8.0	10.0	9.5	11.0	10.5
3	18.5	17.5	16.5	15.5	11.0	10.5	9.5	9.0	11.0	10.0	11.0	10.5
4	18.5	17.5	16.5	15.5	10.5	10.5	9.5	9.0	10.5	9.5	10.5	10.0
5	18.0	17.0	16.5	15.5	10.5	10.5	9.0	8.5	10.0	9.5	10.5	9.5
6	17.0	16.0	15.5	15.0	11.0	10.5	8.5	8.0	9.5	9.5	10.0	9.5
7	16.5	15.0	15.5	15.0	11.0	11.0	8.0	7.5	9.5	9.0	10.0	9.5
8	15.0	14.5	15.0	14.0	11.0	10.5	8.0	7.5	9.0	9.0	10.0	9.0
9	15.5	14.5	14.0	13.5	10.5	10.0	---	---	9.5	9.0	10.5	9.5
10	15.0	14.0	13.5	13.0	10.5	9.5	---	---	9.5	9.0	11.0	10.0
11	14.5	13.5	13.5	13.0	9.5	9.0	---	---	9.5	9.0	11.5	10.5
12	14.5	13.5	13.5	13.0	9.0	8.5	---	---	9.5	9.0	11.5	11.0
13	14.5	13.5	13.0	12.5	9.0	8.5	---	---	9.5	9.5	11.5	11.5
14	15.0	14.0	13.0	12.5	8.5	8.5	---	---	10.5	9.5	12.0	11.5
15	15.5	14.5	12.5	12.0	8.5	8.0	---	---	10.5	10.0	12.5	11.5
16	16.5	15.5	12.5	12.0	9.0	8.5	---	---	10.0	9.5	13.0	12.0
17	17.0	16.0	12.5	12.0	9.0	9.0	---	---	9.5	9.0	13.5	12.5
18	17.5	16.0	12.5	12.0	9.5	9.0	---	---	9.5	9.0	13.5	13.0
19	17.0	16.0	12.0	11.5	9.0	8.5	---	---	9.5	9.5	13.5	13.0
20	17.0	16.0	12.0	11.5	8.5	8.0	---	---	9.5	9.0	13.0	12.5
21	17.0	16.0	12.0	11.5	8.5	8.0	---	---	9.0	8.5	12.5	11.5
22	17.0	16.0	12.0	11.5	8.0	7.0	---	---	9.0	8.5	11.5	11.5
23	17.0	16.0	12.5	12.0	7.5	7.0	---	---	9.0	9.0	11.5	11.0
24	16.0	14.5	13.0	12.0	7.5	7.0	---	---	9.5	9.0	12.0	11.0
25	15.0	14.0	13.0	12.5	7.0	6.5	---	---	9.5	9.0	12.5	12.0
26	15.0	14.0	13.0	12.5	7.0	6.5	---	---	10.0	9.5	12.5	12.0
27	15.0	14.0	13.0	12.5	7.0	6.5	---	---	10.0	9.5	12.0	11.5
28	14.5	13.5	12.5	12.0	7.0	6.5	---	---	10.5	10.0	11.5	11.0
29	14.5	13.5	12.0	11.5	7.5	7.0	---	---	---	---	11.0	10.5
30	15.5	14.0	12.0	11.5	7.5	7.0	10.5	10.0	---	---	11.0	10.5
31	16.0	14.5	---	---	8.0	7.5	10.0	10.0	---	---	11.0	10.5
MONTH	19.5	13.5	16.5	11.5	11.5	6.5	---	---	11.0	8.5	13.5	9.0

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

## 11426000 SACRAMENTO WEIR SPILL TO YOLO BYPASS, NEAR SACRAMENTO, CA

LOCATION.—Lat 38°36'25", long 121°33'15", unsurveyed, Sacramento County, Hydrologic Unit 18020109, on right bank 100 ft upstream from weir, 3.2 mi upstream from American River, 4 mi northwest of Sacramento, and 4.2 mi upstream from Sacramento.

PERIOD OF RECORD.—October 1939 to current year. Monthly discharge only for water years 1940–51, published in WSP 1735. Published as Sacramento Weir near Sacramento 1939–61. Gage-height records collected at same site February 1926 to September 1934 and major flood flows only October 1934 to September 1939 are contained in reports of California Department of Water Resources.

GAGE.—Water-stage recorder and concrete weir crest. Datum of gage is 3.00 ft below sea level. October 1939 to September 1942, October 1959 to September 1963, water-stage recorder or nonrecording gage at downstream end of weir. October 1942 to September 1959, water-stage recorder on left bank of Sacramento River opposite center of weir. February 1963 to September 1985, water-stage recorder on right bank of Sacramento River 100 ft downstream from end of weir.

REMARKS.—Crest of weir is at gage height 20.2 ft and top of movable gates at 28.0 ft. Weir consists of 48 gates each 38.1 ft long. Flow over weir enters Yolo Bypass by way of Sacramento Bypass. Flow regulated by weir gates. February 1963 to September 1985, stage was obtained by averaging the stage obtained at sites on the Sacramento River above and below the weir. See schematic diagram of lower Sacramento River Basin.

COOPERATION.—Records provided by California Department of Water Resources; not reviewed by the U.S. Geological Survey.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 128,000 ft<sup>3</sup>/s, Feb. 20, 1986, gage height, 30.84 ft; maximum gage height, 33.01 ft, Dec. 23, 1955; no flow all or most of each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	125	186	152	.00	78	.00	.00	.00
2	.00	.00	.00	.00	168	154	113	.00	132	.00	.00	.00
3	.00	.00	.00	.00	1200	131	109	.00	95	.00	.00	.00
4	.00	.00	.00	.00	16300	113	115	.00	55	.00	.00	.00
5	.00	.00	.00	.00	16300	93	98	.00	19	.00	.00	.00
6	.00	.00	.00	.00	13700	93	85	.00	2	.00	.00	.00
7	.00	.00	.00	.00	13200	68	79	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	14800	35	72	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	12800	6	66	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	10900	.00	45	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	9240	.00	15	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	8030	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	5780	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	3130	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	12	476	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	146	454	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	182	428	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	265	381	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	294	350	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	259	354	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	222	328	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	185	362	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	146	366	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	112	346	15	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	85	309	159	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	65	282	244	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	61	252	277	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	68	221	278	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	108	---	256	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	145	---	222	.00	.00	.00	.00	.00	.00
31	.00	---	.00	132	---	186	---	.00	---	.00	.00	---
TOTAL	0.00	0.00	0.00	2487.00	130582	2516.00	949.00	0.00	381.00	0.00	0.00	0.00
MEAN	.000	.000	.000	80.2	4664	81.2	31.6	.000	12.7	.000	.000	.000
MAX	.00	.00	.00	294	16300	278	152	.00	132	.00	.00	.00
MIN	.00	.00	.00	.00	125	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	4930	259000	4990	1880	.00	756	.00	.00	.00

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1998, BY WATER YEAR (WY)

	MEAN	1.32	132	562	831	810	555	91.0	2.28	.23	.000	.000	.000
MAX	72.6	7014	12470	19700	23920	17830	2042	79.1	12.7	.000	.000	.000	.000
(WY)	1963	1951	1965	1997	1986	1983	1982	1983	1998	1943	1943	1943	1943
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1944	1944	1944	1944	1944	1944	1944	1943	1943	1943	1943	1943	1943

## SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1943 - 1998
ANNUAL TOTAL	613553.00	136915.00	
ANNUAL MEAN	1681	375	244
HIGHEST ANNUAL MEAN			2075
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	96100	Jan 3	123000
LOWEST DAILY MEAN	.00	Feb 14	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Feb 14	.00
INSTANTANEOUS PEAK FLOW		17100	128000
INSTANTANEOUS PEAK STAGE		26.79	33.01
ANNUAL RUNOFF (AC-FT)	1217000	271600	176500
10 PERCENT EXCEEDS	163	186	.00
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

## 11426170 LAKE VALLEY RESERVOIR NEAR CISCO, CA

LOCATION.—Lat 39°18'01", long 120°35'46", in NE 1/4 NW 1/4 sec.35, T.17 N., R.12 E., Placer County, Hydrologic Unit 18020128, on dam near left abutment on North Fork of North Fork American River and 1.3 mi west of Cisco.

DRAINAGE AREA.—4.54 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1987 to current year. Unpublished records for water years 1980–86 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 5,727.4 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to July 1987, nonrecording gage at same site and datum.

REMARKS.—Lake is formed by an earthfill dam; storage began in 1911. Usable capacity, 7,960 acre-ft between gage heights 6.2 ft, natural rim of lake, and 57.5 ft, top of flashboards. Released water is diverted downstream to Lake Valley Canal (station 11426190) and then to several powerplants. Records, including extremes, represent usable contents at 2400 hours. See schematic diagrams of Bear and Yuba River Basins.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 8,225 acre-ft, Jan. 1, 1997, gage height, 58.35 ft; minimum, 1,153 acre-ft, Feb. 28, 1990, gage height, 25.01 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 7,925 acre-ft, June 26, gage height, 57.37 ft; minimum, 3,048 acre-ft, Jan. 10, gage height, 38.02 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co., dated June 18, 1965)

8	41	17	476	40	3,455
10	102	20	693	50	5,810
12	189	25	1,152	59	8,411
14	304	30	1,830		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4734	4121	3574	3177	e4637	4405	5071	5674	7522	7880	e7573	6416
2	4739	e4082	3548	3181	e4659	4377	5067	5925	7572	7866	7558	6347
3	4723	e4043	3530	3179	e4681	4350	5053	5986	7608	7845	7531	6278
4	4711	e4004	3512	3187	e4703	4316	5032	e6110	7632	7836	7516	6214
5	4698	e3965	3512	3167	e4725	4300	5008	6234	7659	7827	7498	6168
6	4682	e3926	3516	3139	e4747	4266	4992	e6347	7701	7824	7480	6105
7	4662	e3887	3580	3110	e4769	4229	4973	e6460	7719	e7822	7459	6036
8	4652	e3848	3592	3076	4791	4196	4957	e6573	7722	7821	7441	6027
9	4686	3808	3578	3049	4773	4157	4943	6685	7716	e7819	7423	5958
10	4702	e3805	3569	3048	4770	4121	4943	6752	7761	e7817	7405	5895
11	4698	e3802	3553	3082	4754	4086	4943	e6776	7785	7815	7381	5821
12	4695	3799	3539	3243	4743	4053	4920	e6800	7785	e7813	7366	5752
13	4680	3687	3525	3270	4734	4028	4894	e6824	7806	e7811	7348	5724
14	4675	e3674	3528	3355	4759	4003	4867	e6848	7812	7809	7331	5721
15	4648	e3661	3514	3831	4734	3985	4839	e6872	7809	e7801	7310	5716
16	4614	e3648	3500	4123	4720	3978	4818	6893	7800	e7793	7292	5716
17	4579	e3635	3496	4440	4695	3975	4802	e6906	7788	e7785	7271	5705
18	4547	e3622	3491	4572	4666	3969	4798	e6919	7797	e7776	7253	5685
19	4514	e3609	3471	4621	4671	3971	4812	6931	7812	7767	7233	5666
20	4479	e3595	3460	4628	4639	3982	4858	e6931	7818	e7752	7215	5652
21	4444	e3581	3446	4625	4652	4012	4915	e6931	7827	e7737	7167	5639
22	4412	3567	3429	4619	4632	4049	5011	e6931	7836	e7722	7101	5628
23	4380	e3576	3408	4605	4616	4014	5064	6931	7857	e7707	7032	5606
24	4348	e3585	3383	4587	4584	4568	5096	e7109	7892	e7692	6960	5606
25	4304	e3595	3350	4568	4549	4990	5117	7286	7919	e7677	6888	5570
26	4270	e3605	3323	4549	4512	5043	5153	e7314	7925	e7662	6822	5530
27	4236	e3614	3293	4530	4474	5085	5216	e7342	7916	e7647	6755	5496
28	4205	3624	3243	e4571	---	5114	5403	e7398	7913	e7617	6620	5403
30	4142	e3590	3218	e4593	---	5108	5518	e7426	7901	e7602	6551	5360
31	4109	---	3198	e4615	---	5108	---	7453	---	e7587	6484	---
MAX	4739	4121	3592	4628	4791	5114	5518	7453	7925	7880	7573	6416
MIN	4109	3567	3198	3048	4440	3969	4798	5674	7522	7587	6484	5360
a	42.85		38.85		44.30	47.20	48.93	55.79	57.29		52.45	48.28
b	-645	-519	-392	+1417	-175	+668	+410	+1935	+448	-314	-1103	-1124
c	699	823	1030	1760	1930	2190	1900	2060	2110	768	680	974
CAL YR 1997	MAX 8225	MIN 3198	b -4509	c +12590								
WTR YR 1998	MAX 7925	MIN 3048	b +609	c +16940								

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

c Diversion, in acre-feet, to Lake Valley Canal provided by Pacific Gas & Electric Co.

## 11426180 KELLY LAKE NEAR CISCO, CA

LOCATION.—Lat 39°18'40", long 120°34'49", in SE 1/4 NW 1/4 sec.25, T.17 N., R.12 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on outlet structure on Kelly Lake Dam on unnamed tributary to North Fork of North Fork American River, and 2.2 mi west of Cisco.

DRAINAGE AREA.—0.58 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1991 to current year. Unpublished records for water years 1965–91 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 5,888.9 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to October 1991, nonrecording gage at same site and datum.

REMARKS.—No record Oct. 1 to June 29 due to equipment malfunction. Reservoir is formed on natural lake by rock-fill dam completed in 1928. Usable capacity, 336 acre-ft between gage heights 0.0 ft, invert of outlet, and 17.1 ft, top of flashboards. Water is used for power development downstream. Records, including extremes, represent usable contents at 2400 hours. See schematic diagram of Bear River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 359 acre-ft, May 15, 1996, gage height, 17.96 ft; no storage many days in October 1991.

EXTREMES FOR CURRENT YEAR.—Maximum contents recorded, 335 acre-ft, July 6, gage height, 17.06 ft; minimum recorded, 271 acre-ft, Sept. 30, gage height, 14.51 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co., dated December 1933)

0	0	12	213
4	61	16	308
8	130	19	387

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	334	314	302
2	---	---	---	---	---	---	---	---	---	334	313	298
3	---	---	---	---	---	---	---	---	---	334	313	297
4	---	---	---	---	---	---	---	---	---	334	313	294
5	---	---	---	---	---	---	---	---	---	335	313	295
6	---	---	---	---	---	---	---	---	---	335	312	293
7	---	---	---	---	---	---	---	---	---	335	312	292
8	---	---	---	---	---	---	---	---	---	334	310	291
9	---	---	---	---	---	---	---	---	---	334	309	292
10	---	---	---	---	---	---	---	---	---	334	308	292
11	---	---	---	---	---	---	---	---	---	334	307	291
12	---	---	---	---	---	---	---	---	---	334	307	289
13	---	---	---	---	---	---	---	---	---	334	307	288
14	---	---	---	---	---	---	---	---	---	334	306	286
15	---	---	---	---	---	---	---	---	---	333	306	286
16	---	---	---	---	---	---	---	---	---	334	305	285
17	---	---	---	---	---	---	---	---	---	333	305	285
18	---	---	---	---	---	---	---	---	---	332	304	282
19	---	---	---	---	---	---	---	---	---	331	306	283
20	---	---	---	---	---	---	---	---	---	329	306	281
21	---	---	---	---	---	---	---	---	---	328	304	280
22	---	---	---	---	---	---	---	---	---	327	302	278
23	---	---	---	---	---	---	---	---	---	326	304	278
24	---	---	---	---	---	---	---	---	---	324	304	278
25	---	---	---	---	---	---	---	---	---	323	304	276
26	---	---	---	---	---	---	---	---	---	322	303	276
27	---	---	---	---	---	---	---	---	---	321	303	276
28	---	---	---	---	---	---	---	---	---	319	302	275
29	---	---	---	---	---	---	---	---	---	318	302	274
30	---	---	---	---	---	---	---	---	334	317	304	271
31	---	---	---	---	---	---	---	---	---	315	303	---
MAX	---	---	---	---	---	---	---	---	---	335	314	302
MIN	---	---	---	---	---	---	---	---	---	315	302	271
a									17.01	16.27	15.81	14.51
b										-19	-12	-32

WTR YR 1998 b +165

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## 11427000 NORTH FORK AMERICAN RIVER AT NORTH FORK DAM, CA

LOCATION.—Lat 38°56'10", long 121°01'22", in SW 1/4 NW 1/4 sec.31, T.13 N., R.9 E., Placer County, Hydrologic Unit 18020128, on left bank 50 ft upstream from crest of North Fork Dam, 2 mi upstream from Middle Fork, and 4 mi northeast of Auburn.

DRAINAGE AREA.—342 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1941 to current year.

CHEMICAL DATA: Water years 1977–80.

WATER TEMPERATURE: Water years 1959–83.

SEDIMENT DATA: Water year 1980 (periodic record).

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder and ogee section of concrete debris dam. Datum of gage is 715.0 ft above sea level (levels by U.S. Army Corps of Engineers).

REMARKS.—Records good. Minor regulation by Lake Clementine, usable capacity, 12,800 acre-ft, formed by North Fork Dam. Storage in Big Reservoir and Lake Valley Reservoir (station 11426170), combined capacity, 10,300 acre-ft upstream from station. Lake Valley Canal (station 11426190) diverts from North Fork of North Fork American River into Bear River Basin for power development in powerplants of Pacific Gas & Electric Co. Combined storage and diversion have small effect on natural flow. See schematic diagrams of Bear and lower Sacramento River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 65,400 ft<sup>3</sup>/s, Dec. 23, 1964, gage height, 11.87 ft, from rating curve extended above 24,000 ft<sup>3</sup>/s on basis of computed flow over crest of dam at gage height 10.22 ft; no flow Aug. 27–30, Sept. 2–11, 1944; Oct. 5, 6, 1963; Nov. 7–10, 1965, caused by operation of valve in North Fork Dam.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 4,300 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 15	1800	10,400	5.02	Feb. 14	1900	4,890	3.73
Feb. 3	1115	13,300	5.57	Mar. 24	0900	12,400	5.41
Feb. 7	0015	6,280	4.10	May 3	0145	4,580	3.64

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	63	168	167	e1500	1340	1720	3250	2470	1320	216	98
2	57	63	147	215	e3000	1280	1590	4170	2920	1190	204	97
3	62	62	133	361	9360	1360	1880	3990	2690	1140	196	95
4	58	61	125	803	5230	1340	2020	3360	2240	1030	189	94
5	53	61	123	562	3230	1250	1890	2930	2520	1010	180	96
6	49	62	142	400	3710	1270	1840	3100	2600	973	173	116
7	53	73	1110	358	5340	1130	1780	2700	3420	963	166	117
8	55	68	1310	378	5050	1060	1670	2960	2980	895	160	106
9	137	63	573	359	3390	1010	1580	3090	2820	823	154	107
10	160	63	378	493	2670	973	1560	2650	2890	777	150	106
11	142	67	298	2330	2710	976	1550	2150	2800	705	147	107
12	110	67	255	6000	2470	1050	1550	2030	2720	600	143	102
13	86	74	225	4060	2540	1080	1880	2020	2890	555	139	98
14	78	98	220	2110	3580	1080	2160	1940	2970	532	136	96
15	74	99	297	7320	3710	1200	1880	1800	2930	477	132	94
16	72	112	246	6050	2760	1450	1690	1870	2820	440	137	90
17	72	93	229	e6800	2380	1630	1620	1730	2500	429	132	86
18	68	84	286	4610	1990	1580	1630	1590	2320	416	127	84
19	68	107	270	4130	1950	1530	1730	1710	2550	398	125	83
20	67	230	226	2700	2180	1650	1900	1930	2420	371	124	85
21	67	150	204	1990	2450	1790	2240	1940	2260	348	122	85
22	66	109	186	e1610	3150	2610	2820	1650	e2000	330	121	85
23	66	108	171	1380	2670	3560	3240	1790	e1900	325	117	84
24	63	125	166	e1220	2540	8690	3180	1680	e1800	310	113	85
25	62	165	156	e1070	2100	5120	2650	2960	1800	296	110	89
26	62	1050	148	e957	1790	3460	2350	2600	1830	283	108	91
27	61	830	142	e890	1590	2870	2430	1920	1620	269	107	101
28	62	348	139	e900	1430	2520	2710	1840	1510	258	105	109
29	63	238	138	e850	---	2150	2990	2230	1520	240	105	99
30	64	198	147	e1000	---	1890	3170	1920	1440	230	102	95
31	64	---	165	e900	---	1820	---	1980	---	225	100	---
TOTAL	2270	4991	8523	62973	86470	61719	62900	73480	72150	18158	4340	2880
MEAN	73.2	166	275	2031	3088	1991	2097	2370	2405	586	140	96.0
MAX	160	1050	1310	7320	9360	8690	3240	4170	3420	1320	216	117
MIN	49	61	123	167	1430	973	1550	1590	1440	225	100	83
AC-FT	4500	9900	16910	124900	171500	122400	124800	145700	143100	36020	8610	5710

e Estimated.

## 11427000 NORTH FORK AMERICAN RIVER AT NORTH FORK DAM, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	105	375	918	1388	1433	1503	1580	1625	803	198	66.9	50.3
MAX	1749	3307	5781	7303	8403	5187	4490	3688	2855	928	214	121
(WY)	1963	1951	1965	1997	1986	1995	1982	1952	1983	1983	1983	1982
MIN	18.3	35.6	33.9	44.6	70.5	114	207	273	71.7	25.8	13.4	14.9
(WY)	1978	1960	1977	1991	1991	1977	1977	1992	1992	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1942 - 1998	
ANNUAL TOTAL	391804		460854			
ANNUAL MEAN	1073		1263		834	
HIGHEST ANNUAL MEAN					1843	
LOWEST ANNUAL MEAN					88.5	
HIGHEST DAILY MEAN	50100		9360		50100	
LOWEST DAILY MEAN	49		49		.00	
ANNUAL SEVEN-DAY MINIMUM	51		54		.00	
INSTANTANEOUS PEAK FLOW			13300		65400	
INSTANTANEOUS PEAK STAGE			5.57		11.87	
ANNUAL RUNOFF (AC-FT)	777100		914100		604100	
10 PERCENT EXCEEDS	1570		2960		2070	
50 PERCENT EXCEEDS	246		830		277	
90 PERCENT EXCEEDS	57		74		42	

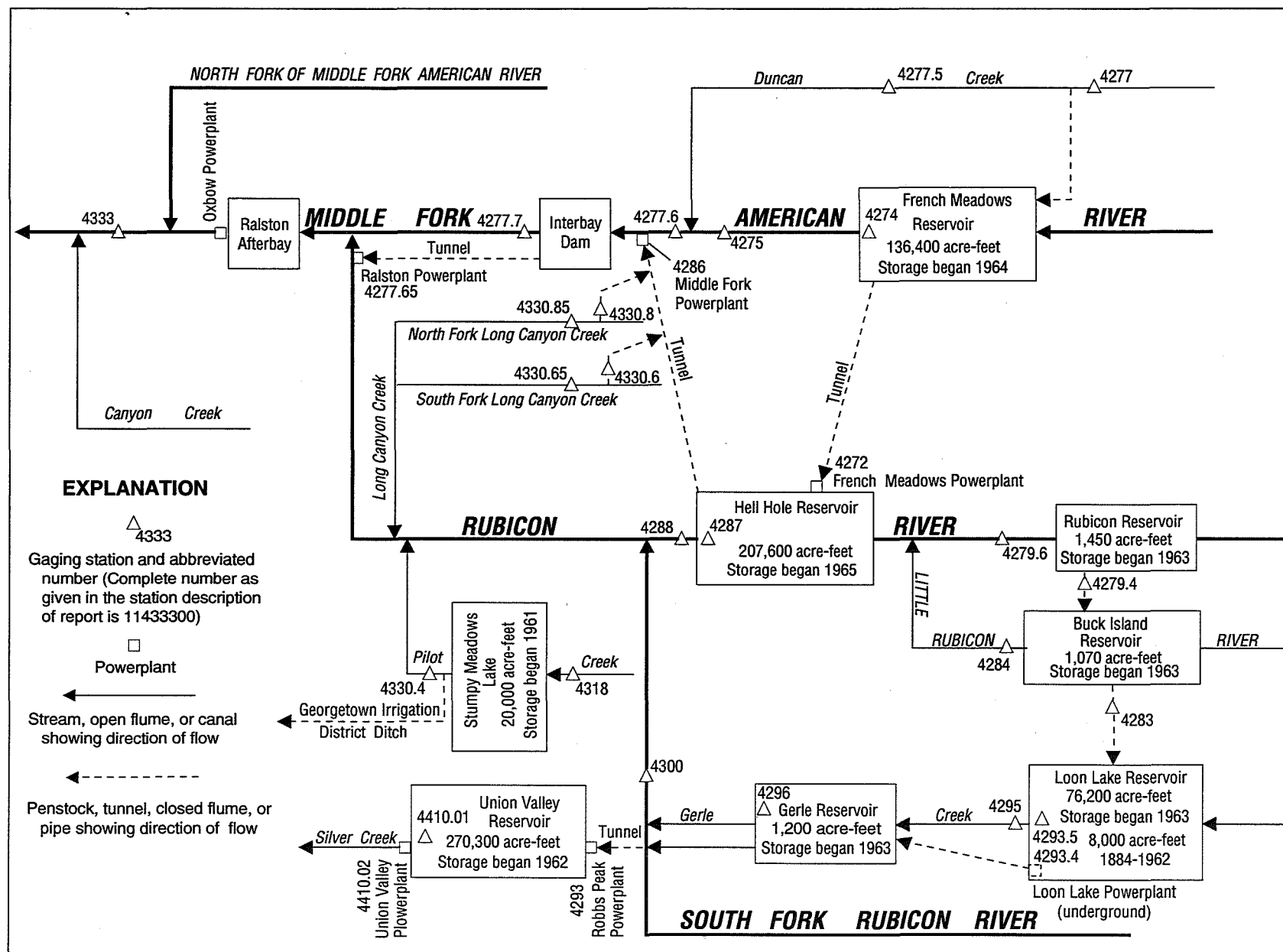


Figure 33. Diversions and storage in Middle Fork American and Rubicon River Basins.

## 11427400 FRENCH MEADOWS RESERVOIR NEAR FORESTHILL, CA

LOCATION.—Lat 39°06'32", long 120°25'49", in SW 1/4 NE 1/4 sec.32, T.15 N., R.14 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on left bank 2.2 mi upstream from dam on Middle Fork American River, 6.9 mi upstream from Chipmunk Creek, and 21 mi northeast of Foresthill.

DRAINAGE AREA.—47.0 mi<sup>2</sup>.

PERIOD OF RECORD.—December 1964 to current year.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Placer County Water Agency).

REMARKS.—Reservoir is formed by rockfill dam with earth core. Storage began Dec. 21, 1964. Usable capacity, 125,601 acre-ft between elevations 5,125 ft, minimum operating level, and 5,263 ft, top of radial gates. Dead storage, 10,804 acre-ft. Reservoir is used to store water for hydroelectric power. Up to 400 ft<sup>3</sup>/s diverted from Duncan Creek through a tunnel to reservoir. Water is released through a tunnel to French Meadows Powerplant (station 11427200) at Hell Hole Reservoir (station 11428700) on the Rubicon River; releases began Dec. 13, 1965. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 137,700 acre-ft, May 19, 1966, elevation, 5,263.9 ft; minimum since reservoir first filled, 28,500 acre-ft, Oct. 21–24, 1991, elevation, 5,157.6 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 134,900 acre-ft, June 30, elevation, 5,261.9 ft; minimum, 49,900 acre-ft, Dec. 23, elevation, 5,186.1 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on a survey by Placer County Water Agency in 1965)

5,125	10,800	5,200	62,400
5,130	13,100	5,230	94,100
5,150	23,700	5,270	146,500
5,170	37,100		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87300	74600	62300	50700	68400	70700	77500	79500	108500	134600	128100	107800
2	87300	74000	61800	50800	69100	70400	77200	81900	110000	134200	127500	107100
3	87300	73500	61500	50900	70200	70200	77000	83600	111100	134000	126800	106400
4	86900	73000	61200	51000	70400	69900	76500	84900	112100	133900	126100	105600
5	86400	72900	60800	51100	70500	69700	76100	86100	113400	133900	125500	105000
6	85900	72300	60600	51100	70700	69200	75700	87400	115300	133900	124800	104300
7	85400	71800	60700	51200	71300	68900	75300	88400	118000	134000	124000	103600
8	84800	71300	60200	51200	71700	68800	74800	89600	120100	134200	123400	102800
9	84600	70800	59600	51400	71700	68500	74200	91000	121600	134400	122900	102100
10	84300	70300	59000	51500	71600	68200	74000	91900	122200	134400	122400	101400
11	83800	69800	58200	52000	71400	67900	73500	92300	122900	134400	121800	100700
12	83400	69300	57600	52800	71300	67600	73300	92700	124000	134400	121000	100100
13	82800	68800	56900	53300	71100	67400	73000	92900	124700	134300	120500	99400
14	82600	68300	56200	53800	71600	67100	72500	92900	124800	134200	119900	98500
15	82100	67900	55600	56200	71900	67000	72000	93000	125200	133900	119300	97800
16	81500	67400	54900	58600	72100	67000	71500	93500	126100	134000	118800	97100
17	81100	66900	54300	61300	72000	67000	70900	94100	126800	134000	118200	96500
18	80700	66400	53500	62800	71700	67100	70500	94900	127800	133700	117500	95700
19	80300	66100	52800	63700	71500	67200	70100	95900	128700	133600	116900	95100
20	80000	65600	52200	64400	71300	67100	69900	97100	129700	133200	116300	94500
21	79800	64900	51600	64800	71700	67200	70200	98200	130500	132900	115700	93700
22	79300	64600	50800	65200	71900	68500	70900	99100	131400	132600	115200	93200
23	78800	64100	49900	65500	71800	70200	71800	100300	131900	132300	114500	92500
24	78300	63600	50400	65900	71500	75100	72500	101500	132300	132100	113800	91900
25	77800	63200	50400	66200	71100	76600	73100	103800	133000	131500	113100	91200
26	77500	63400	50400	66500	70800	77400	73600	104800	133600	130900	112500	90600
27	77000	63500	50400	66800	70500	77900	74200	105300	134000	130500	111700	90200
28	76500	63400	50500	67100	70500	78100	75200	105800	134400	130000	110800	89600
29	76000	63100	50500	67500	---	78000	76400	106100	134700	129600	110100	89200
30	75500	62800	50500	67800	---	77900	77900	106500	134900	129000	109300	88500
31	75100	---	50600	68000	---	77700	---	107200	---	128600	108600	---
MAX	87300	74600	62300	68000	72100	78100	77900	107200	134900	134600	128100	107800
MIN	75100	62800	49900	50700	68400	67000	69900	79500	108500	128600	108600	88500
a	5212.7	5200.4	5186.9	5205.7	5208.2	5215.2	5215.4	5241.0	5261.9	5257.4	5242.1	5225.1
b	-12600	-12300	-12200	+17400	+2500	+7200	+200	+29300	+27700	-6300	-20000	-20100

CAL YR 1997 b -44500

WTR YR 1998 b +800

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.



## 11427500 MIDDLE FORK AMERICAN RIVER AT FRENCH MEADOWS, CA

LOCATION.—Lat 39°06'35", long 120°28'49", in SW 1/4 NW 1/4 sec.36, T.15 N., R.13 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on left bank 0.6 mi downstream from French Meadows Dam, 4.1 mi upstream from Chipmunk Creek, and 14 mi south of Cisco.

DRAINAGE AREA.—47.9 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1951 to current year.

REVISED RECORDS.—WSP 1445: 1953–54. WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Elevation of gage is 4,920 ft above sea level, from topographic map. Prior to Oct. 1, 1962, at site 0.8 mi upstream at different datum.

REMARKS.—Considerable regulation by French Meadows Reservoir (station 11427400) 0.6 mi upstream beginning December 1964. Water diverted into basin from Duncan Creek to French Meadows Reservoir since December 1964. Water diverted out of basin from French Meadows Reservoir through French Meadows Powerplant (station 11427200) to Hell Hole Reservoir (station 11428700) since December 1965. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 21,500 ft<sup>3</sup>/s, Jan. 31, 1963, gage height, 14.20 ft, from rating curve extended above 1,100 ft<sup>3</sup>/s on basis of peak flow at former site; minimum, 0.3 ft<sup>3</sup>/s, Oct. 4, 5, 21–25, 1960, Oct. 5, 6, 1961. Maximum discharge since construction of French Meadows Dam in 1964, 6,050 ft<sup>3</sup>/s, May 16, 1996, gage height, 11.61 ft, from flow over spillway of French Meadows Reservoir; minimum daily, 0.8 ft<sup>3</sup>/s, Oct. 22–25, 1964.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	9.7	9.7	10	13	10	13	21	13	303	11	10
2	9.9	9.7	9.6	11	21	11	13	26	13	271	11	9.9
3	9.8	9.7	9.5	11	29	11	13	23	13	216	11	10
4	9.7	9.7	9.5	11	19	11	13	21	13	159	11	10
5	9.7	9.7	9.7	11	16	11	12	21	13	62	11	11
6	9.8	9.8	9.9	10	17	11	12	19	14	11	11	11
7	9.7	9.8	12	11	16	10	12	16	14	11	11	11
8	9.8	9.7	11	11	14	10	12	16	14	11	10	11
9	10	9.7	10	11	14	10	12	16	224	11	10	11
10	10	9.7	9.8	12	13	10	12	14	540	11	10	10
11	10	9.7	9.7	17	12	11	12	13	379	11	10	10
12	9.7	9.7	9.7	29	12	11	12	14	329	11	10	10
13	9.7	9.8	9.5	17	13	11	12	15	578	11	10	10
14	9.7	9.8	9.6	16	13	11	12	15	690	11	10	10
15	9.7	9.7	9.5	50	12	12	11	15	427	11	10	10
16	9.7	9.7	11	35	11	13	11	15	205	11	10	10
17	9.7	9.7	11	35	11	13	12	14	205	11	10	10
18	9.7	9.7	9.9	22	11	13	12	14	88	11	10	10
19	9.7	10	11	18	11	14	13	14	10	11	10	10
20	9.7	9.8	12	16	11	15	14	14	10	11	10	10
21	9.7	9.7	10	14	11	15	16	13	10	11	10	10
22	9.7	9.6	10	13	11	22	18	13	10	11	10	10
23	9.7	9.7	10	13	11	27	19	13	10	11	10	9.9
24	9.7	9.7	10	13	11	75	21	13	11	11	10	10
25	9.7	9.8	10	12	10	28	19	16	11	11	10	9.9
26	9.7	12	10	12	10	21	18	15	11	11	10	10
27	9.7	10	10	13	10	19	18	14	11	11	10	10
28	9.7	10	10	13	10	17	19	14	11	11	10	9.9
29	9.7	9.9	10	13	---	15	20	14	49	11	10	9.9
30	9.7	9.7	10	13	---	14	20	14	208	11	10	9.9
31	9.7	---	10	13	---	14	---	13	---	11	10	---
TOTAL	301.8	294.9	313.6	506	373	496	433	488	4134	1297	317	304.4
MEAN	9.74	9.83	10.1	16.3	13.3	16.0	14.4	15.7	138	41.8	10.2	10.1
MAX	10	12	12	50	29	75	21	26	690	303	11	11
MIN	9.4	9.6	9.5	10	10	10	11	13	10	11	10	9.9
AC-FT	599	585	622	1000	740	984	859	968	8200	2570	629	604
a	12520	13290	13130	0	8060	17780	21980	15040	21520	18980	20920	20580

a Diversion, in acre-feet, from French Meadows Reservoir to Hell Hole Reservoir through French Meadows Powerplant, provided by Placer County Water Agency.

## 11427500 MIDDLE FORK AMERICAN RIVER AT FRENCH MEADOWS, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1964, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	19.8	20.3	101	92.5	143	151	356	550	297	52.4	6.04	2.10
MAX	222	106	882	377	561	367	537	1110	775	232	25.3	5.06
(WY)	1963	1964	1956	1956	1963	1960	1962	1958	1952	1952	1952	1952
MIN	.40	1.60	1.76	5.57	40.1	55.2	187	210	69.7	6.22	1.57	.64
(WY)	1961	1960	1960	1960	1955	1962	1955	1959	1959	1959	1959	1961

## SUMMARY STATISTICS

## WATER YEARS 1952 - 1964

ANNUAL MEAN	149
HIGHEST ANNUAL MEAN	265
LOWEST ANNUAL MEAN	68.7
HIGHEST DAILY MEAN	11300
LOWEST DAILY MEAN	.30
ANNUAL SEVEN-DAY MINIMUM	.34
INSTANTANEOUS PEAK FLOW	21500
INSTANTANEOUS PEAK STAGE	14.20
ANNUAL RUNOFF (AC-FT)	108000
10 PERCENT EXCEEDS	446
50 PERCENT EXCEEDS	38
90 PERCENT EXCEEDS	1.5

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	15.3	10.3	13.0	20.2	18.4	23.1	23.9	50.5	44.8	16.7	8.48	11.9
MAX	266	42.7	83.3	249	201	375	248	518	272	136	15.0	136
(WY)	1966	1966	1965	1997	1982	1986	1965	1965	1995	1983	1965	1965
MIN	1.67	3.16	3.91	4.37	4.53	4.40	4.47	3.95	3.68	2.98	2.76	2.70
(WY)	1965	1978	1977	1977	1977	1977	1977	1976	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1965 - 1998

ANNUAL TOTAL	11131.0	9258.7	
ANNUAL MEAN	30.5	25.4	21.4
HIGHEST ANNUAL MEAN			97.3
LOWEST ANNUAL MEAN			3.90
HIGHEST DAILY MEAN	3280	Jan 2	690
LOWEST DAILY MEAN	9.2	Aug 15	9.4
ANNUAL SEVEN-DAY MINIMUM	9.2	Aug 15	9.7
INSTANTANEOUS PEAK FLOW			1570
INSTANTANEOUS PEAK STAGE			9.30
ANNUAL RUNOFF (AC-FT)	22080	18360	15490
TOTAL DIVERSION (AC-FT) a	164800	183800	
10 PERCENT EXCEEDS	12	20	15
50 PERCENT EXCEEDS	10	11	9.5
90 PERCENT EXCEEDS	9.5	9.7	5.7

a Diversion, in acre-feet, from French Meadows Reservoir to Hell Hole Reservoir through French Meadows Powerplant, provided by Placer County Water Agency.

## 11427700 DUNCAN CREEK NEAR FRENCH MEADOWS, CA

LOCATION.—Lat 39°08'09", long 120°28'39", in NE 1/4 NW 1/4 sec.24, T.15 N., R.13 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on left bank 0.2 mi upstream from diversion dam, 0.5 mi downstream from Little Duncan Creek, 2 mi northwest of French Meadows, and 20 mi northeast of Foresthill.

DRAINAGE AREA.—9.94 mi<sup>2</sup>.

PERIOD OF RECORD.—August 1960 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 5,270 ft above sea level, from topographic map. Prior to Sept. 3, 1965, at site 150 ft upstream at datum 9.56 ft higher.

REMARKS.—No regulation or diversion upstream from station. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 3,650 ft<sup>3</sup>/s, Dec. 22, 1964, gage height, 10.6 ft, from floodmarks, from rating curve extended above 400 ft<sup>3</sup>/s on basis of computation of flow over diversion dam; maximum gage height, 10.95, Jan. 1, 1997 (backwater from debris dam); minimum daily, 0.10 ft<sup>3</sup>/s, several days during July and August 1977.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 250 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 16	2145	562	7.83	May 25	0900	290	7.25
Mar. 24	0245	752	8.12	June 7	0400	382	7.48
May 2	1900	340	7.38				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.87	1.5	8.5	10	31	20	63	236	214	116	5.7	e1.6
2	2.2	1.4	7.4	e9.5	48	21	57	313	245	106	5.2	e1.5
3	1.4	1.4	6.7	e9.5	111	24	53	281	222	95	4.8	e1.5
4	1.1	1.3	6.3	e9.2	70	22	48	235	205	87	4.5	e1.5
5	1.0	1.3	8.1	e9.2	e58	21	44	211	221	81	4.3	e2.3
6	1.0	1.3	21	e9.2	e51	19	41	198	262	77	4.1	e5.4
7	1.2	1.7	32	13	e45	e19	38	188	354	71	3.9	e4.0
8	1.3	1.5	17	11	e40	18	36	198	305	63	3.7	e2.5
9	10	1.5	e12	13	e38	18	36	222	287	56	3.6	e3.6
10	9.6	1.4	e10	20	e34	19	37	175	290	49	3.5	e2.6
11	6.2	1.9	10	24	e32	22	35	144	312	42	3.3	e2.2
12	4.5	1.9	e9.8	93	e30	23	32	125	305	36	3.2	e2.0
13	4.5	2.3	9.2	60	e29	22	e31	106	317	31	3.0	e1.9
14	4.2	2.9	9.1	48	e28	24	e29	94	327	28	3.1	e1.8
15	3.9	2.4	8.7	358	e27	33	e28	93	321	24	2.9	e1.7
16	3.4	2.6	8.7	348	e27	44	28	98	310	21	2.7	e1.7
17	2.8	3.1	13	384	e26	49	31	85	271	19	2.7	1.6
18	2.4	2.9	12	209	e25	52	37	89	277	17	2.6	1.5
19	2.2	25	10	129	e24	59	47	110	277	15	2.6	1.4
20	2.0	8.9	9.6	91	e24	70	64	125	263	14	2.5	1.4
21	1.9	5.7	e9.2	72	e23	79	98	117	250	12	2.5	1.4
22	1.8	5.7	e8.3	61	e22	168	126	112	234	12	2.4	1.4
23	1.7	9.3	e8.0	55	e20	223	156	119	203	11	2.3	1.4
24	1.6	12	e7.7	50	e20	556	140	136	187	10	2.2	2.2
25	1.5	24	e7.4	44	19	283	125	233	186	9.3	2.2	2.4
26	1.5	51	e7.1	40	19	187	123	176	172	8.5	2.1	3.3
27	1.5	17	e6.8	39	19	143	137	135	155	7.7	e2.1	4.5
28	1.5	13	7.3	38	19	115	161	122	149	7.0	e1.8	2.7
29	1.5	11	9.3	e34	---	94	191	113	141	6.6	e1.7	3.0
30	1.5	9.9	9.7	34	---	80	222	113	131	6.3	e1.7	2.5
31	1.5	---	10	32	---	72	---	152	---	6.0	e1.7	---
TOTAL	83.27	226.8	319.9	2356.6	959	2599	2294	4854	7393	1144.4	94.6	68.5
MEAN	2.69	7.56	10.3	76.0	34.3	83.8	76.5	157	246	36.9	3.05	2.28
MAX	10	51	32	384	111	556	222	313	354	116	5.7	5.4
MIN	.87	1.3	6.3	9.2	19	18	28	85	131	6.0	1.7	1.4
AC-FT	165	450	635	4670	1900	5160	4550	9630	14660	2270	188	136

e Estimated.

## 11427700 DUNCAN CREEK NEAR FRENCH MEADOWS, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4.12	18.0	35.1	44.2	41.3	51.8	75.8	119	61.9	9.55	1.60	1.13
MAX	51.1	172	256	213	291	161	162	245	316	100	10.4	4.51
(WY)	1963	1984	1965	1997	1986	1986	1989	1993	1983	1983	1983	1982
MIN	.22	1.09	.76	1.76	3.24	5.75	12.7	12.9	2.71	.51	.19	.34
(WY)	1978	1977	1977	1991	1977	1977	1977	1992	1992	1977	1977	1960

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1960 - 1998			
ANNUAL TOTAL	14817.67				22393.07							
ANNUAL MEAN	40.6				61.4				38.6			
HIGHEST ANNUAL MEAN									86.8			
LOWEST ANNUAL MEAN									4.27			
HIGHEST DAILY MEAN	2800				556				2800			
LOWEST DAILY MEAN	.72				.87				.10			
ANNUAL SEVEN-DAY MINIMUM	.75				1.3				.11			
INSTANTANEOUS PEAK FLOW					752				3650			
INSTANTANEOUS PEAK STAGE					8.12				10.95			
ANNUAL RUNOFF (AC-FT)	29390				44420				27960			
10 PERCENT EXCEEDS	82				207				106			
50 PERCENT EXCEEDS	10				20				9.2			
90 PERCENT EXCEEDS	1.0				1.7				.74			

## 11427750 DUNCAN CREEK BELOW DIVERSION DAM, NEAR FRENCH MEADOWS, CA

LOCATION.—Lat 39°07'59", long 120°28'58", in NE 1/4 SE 1/4 sec.23, T.15 N., R.13 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on right bank 800 ft downstream from unnamed right bank tributary, 1,000 ft downstream from Duncan Creek Diversion Dam, and 20 mi northeast of Foresthill.

DRAINAGE AREA.—10.5 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1964 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 5,210 ft above sea level, from topographic map.

REMARKS.—Natural flow affected by transmountain diversion through Duncan Creek Diversion Tunnel to French Meadows Reservoir (station 11427400). Maximum design flow of tunnel is 400 ft<sup>3</sup>/s. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 3,640 ft<sup>3</sup>/s, Dec. 22, 1964, gage height, 8.74 ft, in gage well, 10.0 ft, from floodmarks, from rating curve extended above 400 ft<sup>3</sup>/s on basis of computation of peak flow over diversion dam; no flow at times in 1965–66.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.93	1.5	5.8	11	14	13	12	26	18	12	5.9	1.6
2	1.8	1.4	7.1	e10	16	13	12	63	19	12	5.4	1.5
3	1.5	1.4	7.0	e10	22	13	12	42	17	12	5.0	1.5
4	1.2	1.4	6.7	e10	18	13	12	24	16	12	4.8	1.5
5	1.1	1.4	8.1	e10	17	13	12	22	16	12	4.5	2.3
6	1.1	1.3	12	e10	16	13	12	22	18	12	4.2	5.4
7	1.3	1.6	14	12	16	13	12	20	65	12	4.0	4.0
8	1.3	1.5	13	12	15	13	12	21	33	12	3.8	2.5
9	9.4	1.4	12	12	15	13	12	21	20	11	3.7	3.6
10	9.6	1.4	12	13	14	13	12	19	100	11	3.5	2.6
11	6.5	1.7	11	15	14	13	12	17	237	11	3.4	2.2
12	4.7	1.8	10	22	14	14	12	15	228	11	3.2	2.0
13	4.5	2.1	9.8	18	14	14	12	14	241	11	3.1	1.9
14	4.4	2.8	9.5	17	14	14	12	14	252	11	3.1	1.8
15	4.0	2.3	8.9	185	14	15	12	14	244	11	2.9	1.7
16	3.5	2.4	9.2	160	14	18	12	14	229	11	2.7	1.5
17	2.8	2.9	11	216	14	19	12	13	183	11	2.7	1.6
18	2.4	2.8	12	52	13	19	12	13	191	11	2.6	1.6
19	2.1	11	11	22	13	20	12	15	191	11	2.6	1.5
20	2.0	8.9	10	19	13	21	14	16	173	11	2.5	1.5
21	1.9	5.7	9.2	17	13	22	20	16	159	11	2.5	1.5
22	1.8	5.4	e8.3	16	13	31	23	15	143	11	2.4	1.5
23	1.7	8.6	8.6	15	13	54	26	15	114	11	2.3	1.5
24	1.6	9.2	8.1	15	13	410	21	16	103	9.8	2.2	2.2
25	1.5	8.8	e7.8	15	13	82	18	21	67	9.3	2.3	2.6
26	1.5	11	e7.8	14	13	22	18	17	38	8.5	2.1	3.4
27	1.5	7.1	7.6	14	13	18	20	15	26	7.7	2.1	4.8
28	1.5	6.6	7.8	15	13	16	22	15	24	7.2	1.4	2.9
29	1.6	6.3	9.8	15	---	14	25	15	21	6.7	1.7	3.2
30	1.5	6.1	10	14	---	13	26	14	15	6.4	1.7	2.7
31	1.5	---	11	14	---	13	---	16	---	6.2	1.7	---
TOTAL	83.73	127.8	296.1	1000	404	992	461	600	3201	322.8	96.0	70.1
MEAN	2.70	4.26	9.55	32.3	14.4	32.0	15.4	19.4	107	10.4	3.10	2.34
MAX	9.6	11	14	216	22	410	26	63	252	12	5.9	5.4
MIN	.93	1.3	5.8	10	13	13	12	13	15	6.2	1.4	1.5
AC-FT	166	253	587	1980	801	1970	914	1190	6350	640	190	139

e Estimated.

## 11427750 DUNCAN CREEK BELOW DIVERSION DAM, NEAR FRENCH MEADOWS, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2.15	8.69	22.5	31.5	22.1	19.4	15.6	29.1	13.9	3.99	1.42	1.10
MAX	17.3	76.1	244	225	237	80.3	91.7	149	107	21.9	5.87	3.61
(WY)	1983	1982	1965	1997	1986	1986	1982	1967	1998	1983	1983	1983
MIN	.061	1.15	.76	1.69	2.02	2.63	4.80	3.88	2.15	.44	.28	.090
(WY)	1966	1991	1977	1991	1974	1965	1974	1976	1965	1965	1977	1965

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1965 - 1998			
ANNUAL TOTAL	10242.02				7654.53							
ANNUAL MEAN	28.1				21.0				14.3			
HIGHEST ANNUAL MEAN									43.1			
LOWEST ANNUAL MEAN									2.16			
HIGHEST DAILY MEAN	2560				410				2560			
LOWEST DAILY MEAN	.79				.93				.00			
ANNUAL SEVEN-DAY MINIMUM	.81				1.3				.00			
INSTANTANEOUS PEAK FLOW					697				3640			
INSTANTANEOUS PEAK STAGE					4.68				8.74			
ANNUAL RUNOFF (AC-FT)	20320				15180				10350			
10 PERCENT EXCEEDS	29				23				16			
50 PERCENT EXCEEDS	10				12				5.4			
90 PERCENT EXCEEDS	1.1				1.6				.71			

## 11427760 MIDDLE FORK AMERICAN RIVER ABOVE MIDDLE FORK POWERPLANT, NEAR FORESTHILL, CA

LOCATION.—Lat 39°01'31", long 120°35'40", in NW 1/4 NW 1/4 sec.36, T.14 N., R.12 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on right bank 300 ft upstream from Middle Fork Powerplant, 3.7 mi upstream from Big Mosquito Creek, and 11 mi east of Foresthill.

DRAINAGE AREA.—87.8 mi<sup>2</sup>.

PERIOD OF RECORD.—August 1965 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 2,540 ft above sea level, from topographic map. Prior to May 15, 1980, at datum 5.00 ft higher. May 15, 1980, to Oct. 11, 1984, at datum 4.00 ft higher.

REMARKS.—Considerable regulation by French Meadows Reservoir (station 11427400) 11 mi upstream. Transbasin diversions from French Meadows Reservoir to Hell Hole Reservoir (station 11428700) through French Meadows Powerplant (station 11427200). See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 13,900 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 14.6 ft, from floodmark, from rating curve extended above 4,200 ft<sup>3</sup>/s; minimum daily, 5.3 ft<sup>3</sup>/s, Sept. 11, 1977.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	18	31	36	138	133	250	351	205	320	37	22
2	22	18	29	53	226	133	232	452	212	295	36	22
3	20	17	31	53	470	150	231	421	203	234	35	21
4	20	17	29	55	342	145	216	368	191	176	34	21
5	19	17	30	45	279	143	213	351	186	117	33	23
6	19	17	41	44	297	142	206	352	187	67	32	31
7	20	19	113	51	312	131	197	322	237	65	31	29
8	19	18	81	53	299	129	188	317	204	63	31	24
9	36	17	55	55	251	125	185	312	323	62	31	25
10	36	17	47	76	228	123	187	280	684	60	30	24
11	34	19	43	185	225	127	188	255	694	59	30	22
12	26	19	40	390	215	133	183	243	568	58	29	22
13	23	21	38	239	232	139	187	240	811	57	29	21
14	22	28	39	173	268	143	177	234	952	55	28	21
15	22	23	39	718	251	158	169	224	734	54	28	21
16	21	21	37	600	225	184	165	224	434	53	27	21
17	21	20	43	734	206	204	165	209	392	52	27	20
18	20	21	43	430	187	210	171	200	336	51	27	20
19	19	37	40	321	191	218	183	203	256	50	27	20
20	19	35	41	245	181	238	203	205	238	49	27	20
21	19	27	37	204	189	253	243	200	222	48	26	20
22	19	24	33	179	184	344	291	189	205	48	26	20
23	19	26	35	164	181	404	332	188	179	48	25	20
24	18	29	34	150	169	1270	360	185	161	46	25	21
25	18	44	31	138	157	754	325	243	145	44	25	22
26	18	96	30	129	149	531	300	221	113	42	25	23
27	18	52	32	129	141	451	302	205	101	41	24	29
28	18	39	32	126	136	385	316	206	94	40	24	25
29	18	34	33	152	---	329	334	205	98	39	23	23
30	18	32	36	137	---	290	348	198	199	38	23	24
31	18	---	36	130	---	271	---	197	---	38	23	---
TOTAL	657	822	1259	6194	6329	8390	7047	8000	9564	2469	878	677
MEAN	21.2	27.4	40.6	200	226	271	235	258	319	79.6	28.3	22.6
MAX	36	96	113	734	470	1270	360	452	952	320	37	31
MIN	18	17	29	36	136	123	165	185	94	38	23	20
AC-FT	1300	1630	2500	12290	12550	16640	13980	15870	18970	4900	1740	1340

## 11427760 MIDDLE FORK AMERICAN RIVER ABOVE MIDDLE FORK POWERPLANT, NEAR FORESTHILL, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	27.8	47.5	92.2	181	172	212	181	175	101	37.3	19.6	17.4
MAX	270	262	446	781	969	696	601	600	451	184	33.2	29.5
(WY)	1966	1984	1997	1997	1986	1986	1982	1982	1995	1983	1983	1982
MIN	7.43	12.9	12.2	15.7	18.4	21.7	19.3	21.5	15.4	8.64	6.35	6.59
(WY)	1978	1978	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1966 - 1998

ANNUAL TOTAL	45381	52286	
ANNUAL MEAN	124	143	105
HIGHEST ANNUAL MEAN			271
LOWEST ANNUAL MEAN			14.3
HIGHEST DAILY MEAN	7600	Jan 2	1270
LOWEST DAILY MEAN	16	Sep 8	17
ANNUAL SEVEN-DAY MINIMUM	17	Sep 4	17
INSTANTANEOUS PEAK FLOW			1690
INSTANTANEOUS PEAK STAGE			8.64
ANNUAL RUNOFF (AC-FT)	90010	103700	76090
10 PERCENT EXCEEDS	200	322	252
50 PERCENT EXCEEDS	41	63	39
90 PERCENT EXCEEDS	18	20	15



## 11427770 MIDDLE FORK AMERICAN RIVER BELOW INTERBAY DAM, NEAR FORESTHILL, CA

LOCATION.—Lat 39°01'35", long 120°36'09", in SW 1/4 SE 1/4 sec.26, T.14 N., R.12 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on left bank at Interbay Dam (revised), 3.3 mi upstream from Big Mosquito Creek, and 10.6 mi east of Foresthill.

DRAINAGE AREA.—89.1 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1965 to current year (since October 1985, operated as low-flow station only).

GAGE.—Acoustic-velocity meter system. Elevation of gage is 2,470 ft above sea level, from topographic map. Prior to February 1986, water-stage recorder at same site. March 1986 to September 1987, nonrecording gage and V-notch sharp-crested weir at same site and datum as previous gage.

REMARKS.—Flow regulated by French Meadows Reservoir (station 11427400) and after Aug. 22, 1966, by Interbay Reservoir (usable capacity, 130 acre-ft between normal operating limits) 500 ft upstream. Water is diverted out of the basin from French Meadows Reservoir to Hell Hole Reservoir (station 11428700) and from Interbay Reservoir to Ralston Powerplant (station 11427765). Water is diverted into the basin from Hell Hole Reservoir to Middle Fork Powerplant (station 11428600) and through South Fork and Middle Fork Long Canyon Creek Diversion Tunnels (stations 11433060 and 11433080). See schematic diagram of Middle Fork American and Rubicon River Basins. Beginning October 1985, only flows less than 35 ft<sup>3</sup>/s are computed.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge (water years 1966–85), 9,900 ft<sup>3</sup>/s, Jan. 13, 1980, gage height, 7.95 ft; minimum daily, 1.0 ft<sup>3</sup>/s, Oct. 25–30, 1966, Jan. 19, 1967.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	23	24	24	24	24	24	24	---	---	24	24
2	22	23	24	24	24	24	24	24	---	---	24	24
3	21	23	24	24	24	24	24	24	---	---	24	24
4	20	23	24	24	24	24	24	24	---	---	24	24
5	20	25	24	24	24	24	24	24	---	---	24	24
6	20	23	24	24	24	24	24	24	---	24	24	24
7	22	23	24	24	24	24	24	24	---	24	24	24
8	21	23	24	24	24	24	24	24	---	24	24	24
9	25	23	24	24	24	24	24	24	---	24	24	24
10	23	23	24	24	24	24	24	24	---	24	24	24
11	23	24	24	24	24	24	24	24	---	24	24	24
12	24	24	24	24	24	24	24	24	---	24	24	24
13	23	24	24	---	24	24	24	24	---	24	24	24
14	23	24	24	24	24	24	24	24	---	24	24	24
15	23	23	24	---	24	24	24	24	---	24	24	24
16	23	23	24	---	24	24	24	---	---	24	24	24
17	23	23	24	---	24	24	24	---	---	24	24	24
18	23	23	24	24	24	24	24	---	---	24	24	24
19	23	23	24	24	24	24	24	---	---	24	24	24
20	23	23	24	24	24	24	24	---	---	24	24	24
21	23	23	24	24	24	24	24	---	---	24	24	24
22	24	23	24	24	24	24	24	---	---	24	24	24
23	24	23	24	24	24	24	24	---	---	24	24	24
24	24	23	24	24	24	---	24	---	---	24	24	24
25	23	24	24	24	24	---	24	---	---	24	24	24
26	23	24	24	24	24	24	24	---	24	24	24	24
27	23	24	24	24	24	24	24	---	24	24	24	26
28	23	24	24	24	24	24	24	24	24	24	24	28
29	23	24	24	24	---	24	24	---	---	24	24	24
30	23	24	24	24	---	24	24	---	---	24	24	25
31	23	---	24	24	---	24	---	---	---	24	24	---
TOTAL	699	702	744	---	672	---	720	---	---	---	744	727
MEAN	22.5	23.4	24.0	---	24.0	---	24.0	---	---	---	24.0	24.2
MAX	25	25	24	---	24	---	24	---	---	---	24	28
MIN	18	23	24	---	24	---	24	---	---	---	24	24
AC-FT	1390	1390	1480	---	1330	---	1430	---	---	---	1480	1440
a	35440	29520	30020	14700	39990	49150	53380	54370	54330	55380	54480	35900

a Diversion, in acre-feet, through Ralston Powerplant, provided by Placer County Water Agency.

## 11427770 MIDDLE FORK AMERICAN RIVER BELOW INTERBAY DAM, NEAR FORESTHILL, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1985, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	30.5	27.4	73.8	93.7	86.6	101	117	118	78.2	29.4	18.8	18.3
MAX	270	140	548	398	928	508	868	857	313	152	23.7	24.7
(WY)	1966	1984	1984	1980	1982	1983	1982	1982	1967	1983	1983	1983
MIN	5.84	6.38	6.22	6.15	9.32	7.61	11.6	11.1	11.3	7.52	5.86	5.68
(WY)	1978	1968	1968	1968	1968	1968	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## WATER YEARS 1966 - 1985

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

ANNUAL MEAN	66.0		
HIGHEST ANNUAL MEAN	347	1982	
LOWEST ANNUAL MEAN	10.0	1968	
HIGHEST DAILY MEAN	8090	Feb 16 1982	
LOWEST DAILY MEAN	1.0	Oct 25 1966	
ANNUAL SEVEN-DAY MINIMUM	1.3	Oct 25 1966	
INSTANTANEOUS PEAK FLOW	9900	Jan 13 1980	
INSTANTANEOUS PEAK STAGE	7.95	Jan 13 1980	
ANNUAL RUNOFF (AC-FT)	47810		
TOTAL DIVERSION (AC-FT) a			
10 PERCENT EXCEEDS	141		381300
50 PERCENT EXCEEDS	22		506700
90 PERCENT EXCEEDS	11		

a Diversion, in acre-feet, through Ralston Powerplant, provided by Placer County Water Agency.

## 11427940 RUBICON-ROCKBOUND TUNNEL NEAR MEEKS BAY, CA

LOCATION.—Lat 38°59'16", long 120°13'29", in NE 1/4 SE 1/4 sec.8, T.13 N., R.16 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank at tunnel intake 100 ft upstream from diversion dam on Rubicon River, 3.5 mi upstream from Rubicon Springs, and 6.4 mi southwest of Meeks Bay.

PERIOD OF RECORD.—December 1963 to current year.

GAGE.—Water-stage recorder. Datum of gage is 6,533.23 ft above sea level (levels by Sacramento Municipal Utility District). Auxiliary water-stage recorder since Aug. 26, 1966, 220 ft downstream from tunnel outlet at different datum.

REMARKS.—Tunnel diverts water from Rubicon River to Rockbound Lake which flows into Buck Island Lake. Water is then diverted via Buck-Loon tunnel (station 11428300) to Loon Lake (station 11429350) for power development. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	4.0	18	15	28	20	52	473	413	551	108	9.8
2	.01	2.5	14	18	34	22	47	512	527	512	104	9.0
3	.00	1.3	12	17	121	25	45	424	456	531	63	9.0
4	.00	.57	10	16	93	24	42	345	391	476	7.2	9.3
5	.00	.39	9.6	15	52	21	40	279	487	499	53	12
6	.00	.24	11	14	39	20	39	245	594	541	91	46
7	.00	.22	18	13	35	26	37	195	896	586	95	31
8	.00	.41	20	13	34	17	36	292	761	563	80	20
9	.01	.33	22	12	35	17	35	403	643	551	61	76
10	.01	.22	21	13	30	19	39	303	671	572	52	79
11	.10	.16	17	14	28	24	38	203	620	506	49	33
12	1.3	.18	15	29	29	32	35	170	618	386	50	20
13	2.3	.27	13	50	30	31	33	141	838	379	51	15
14	4.9	.50	13	38	29	27	33	116	803	365	58	12
15	7.4	.72	13	221	28	37	31	105	781	303	96	9.5
16	9.7	.76	12	319	29	55	30	139	805	291	64	105
17	9.8	.78	14	509	25	71	35	120	686	346	48	79
18	7.5	.92	14	323	24	75	56	102	662	367	36	21
19	5.9	38	13	167	22	75	95	132	813	337	27	9.7
20	4.9	53	11	106	24	97	145	186	767	303	23	6.3
21	3.8	26	10	70	24	112	217	198	741	272	19	4.2
22	2.8	14	20	52	32	253	326	158	736	264	17	2.2
23	2.2	18	9.9	44	31	621	419	199	607	251	14	.70
24	1.8	17	8.8	38	30	937	261	221	534	244	12	.14
25	1.3	18	8.8	34	26	530	174	407	671	210	10	.01
26	.83	99	7.7	31	21	245	162	278	749	187	10	.02
27	.53	74	6.3	31	19	146	202	170	610	177	9.7	2.8
28	99	45	5.4	33	19	105	277	155	596	163	9.3	6.5
29	68	32	7.7	34	---	82	352	193	672	161	9.2	8.0
30	17	23	10	32	---	65	434	165	652	159	9.6	14
31	7.3	---	12	30	---	58	---	247	---	132	9.7	---
TOTAL	258.39	471.47	397.2	2351	971	3889	3767	7276	19800	11185	1345.7	650.17
MEAN	8.34	15.7	12.8	75.8	34.7	125	126	235	660	361	43.4	21.7
MAX	99	99	22	509	121	937	434	512	896	586	108	105
MIN	.00	.16	5.4	12	19	17	30	102	391	132	7.2	.01
AC-FT	513	935	788	4660	1930	7710	7470	14430	39270	22190	2670	1290

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

MEAN	16.5	49.6	46.2	50.5	43.8	67.9	155	357	323	118	19.2	10.9
MAX	149	277	204	222	187	196	295	655	789	519	168	91.0
(WY)	1983	1984	1965	1970	1986	1986	1989	1969	1983	1983	1983	1982
MIN	.000	.000	.000	.000	3.44	13.5	24.6	110	33.8	.77	.000	.000
(WY)	1964	1964	1977	1977	1991	1977	1975	1977	1976	1976	1964	1964

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1964 - 1998

ANNUAL TOTAL	40738.25	52361.93	
ANNUAL MEAN	112	143	105
HIGHEST ANNUAL MEAN			197
LOWEST ANNUAL MEAN			30.5
HIGHEST DAILY MEAN	1180	Jan 1	1180
LOWEST DAILY MEAN	.00	Aug 18	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 18	.00
ANNUAL RUNOFF (AC-FT)	80800	103900	75990
10 PERCENT EXCEEDS	359	518	340
50 PERCENT EXCEEDS	32	34	27
90 PERCENT EXCEEDS	.00	2.0	.00

## 11427960 RUBICON RIVER BELOW RUBICON DAM, NEAR MEEKS BAY, CA

LOCATION.—Lat 38°59'20", long 120°13'20", in NW 1/4 SW 1/4 sec.9, T.13 N., R.16 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, at outlet structure on diversion dam on Rubicon River, 3.3 mi upstream from Rubicon Springs, and 6.2 mi southwest of Meeks Bay.

PERIOD OF RECORD.—October 1991 to current year (low-flow records only). Unpublished records for water years 1964–91 available in files of the U.S. Geological Survey.

GAGE.—Differential-pressure gage and orifice control in outlet pipes. Auxiliary nonrecording gage 1,300 ft downstream at different datum. Datum of gage is 6,520 ft above sea level from topographic map. Prior to Sept. 4, 1991, nonrecording gage at site 1,300 ft downstream at different datum.

REMARKS.—Records not computed above 10 ft<sup>3</sup>/s. Flow regulated by Rubicon Reservoir. Flow over the spillway bypasses this station. Most of the water is diverted through Rubicon–Rockbound Tunnel (station 11427940) to Rockbound Lake, which flows into Buck Island Lake. Water is then diverted via Buck–Loon Tunnel (station 11428300) to Loon Lake (station 11429350) for power development. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	3.5	6.3	6.4	6.6	6.5	6.5	7.9	7.7	8.0	6.8	7.5
2	1.4	3.5	6.3	6.4	6.6	6.5	6.5	8.0	8.0	7.9	6.8	7.0
3	1.4	3.5	6.3	6.4	7.0	6.6	6.5	7.8	7.8	8.0	6.8	6.5
4	1.4	3.2	6.3	6.4	6.9	6.5	6.5	7.6	7.7	7.9	7.3	6.5
5	1.4	2.8	6.2	6.4	6.7	6.5	6.4	7.4	7.9	7.9	7.7	6.5
6	1.4	2.8	6.3	6.4	6.6	6.5	6.4	7.3	8.1	8.0	7.8	6.6
7	2.1	2.8	6.3	6.4	6.6	6.5	6.4	7.1	8.1	8.1	7.8	6.6
8	3.0	2.8	6.3	6.4	6.5	6.5	6.4	7.4	8.4	8.0	7.8	6.6
9	3.0	2.9	6.4	6.4	6.6	6.5	6.4	7.7	8.2	8.0	7.8	6.7
10	3.1	3.0	6.3	6.4	6.4	6.5	6.4	7.4	8.3	8.0	7.7	6.7
11	3.2	2.9	6.3	6.4	6.4	6.6	6.4	7.1	8.2	7.9	7.7	6.6
12	3.2	3.0	6.3	6.5	6.4	6.6	6.4	7.0	8.1	7.6	7.7	6.5
13	3.2	2.9	6.3	6.6	6.4	6.6	6.4	6.9	8.4	7.6	7.7	6.5
14	3.2	3.0	6.3	6.6	6.4	6.6	6.4	6.8	8.4	7.6	7.7	6.3
15	3.2	3.1	6.3	7.3	6.4	6.6	6.4	6.7	e8.3	7.4	7.8	7.0
16	3.2	3.1	6.3	7.6	6.4	6.7	6.4	6.9	e8.2	7.4	7.8	7.2
17	3.2	3.1	6.3	8.0	6.4	6.8	6.4	6.8	e8.2	7.5	7.7	7.5
18	3.2	3.1	6.3	7.7	6.5	6.8	6.5	6.7	8.2	7.6	7.7	7.5
19	3.2	3.2	6.3	7.2	6.5	6.8	6.7	6.8	8.4	7.5	7.7	7.5
20	3.2	4.6	6.3	6.9	6.5	6.9	6.9	7.0	8.3	7.4	7.6	7.4
21	3.2	6.3	6.3	6.8	6.6	6.9	7.2	7.1	8.4	7.3	7.6	7.4
22	3.2	6.3	6.3	6.7	6.5	7.3	7.5	6.9	8.4	7.3	7.6	7.4
23	3.2	6.3	6.3	6.6	6.6	8.1	7.8	7.1	8.1	7.3	7.6	7.4
24	3.2	6.3	6.3	6.6	6.6	8.3	7.3	7.2	8.0	7.3	7.6	7.3
25	3.2	6.3	6.3	6.6	6.5	7.9	7.0	7.7	8.2	7.2	7.5	7.3
26	3.2	6.7	6.3	6.6	6.5	7.3	7.0	7.4	8.4	7.1	7.5	7.3
27	3.2	6.6	6.3	6.6	6.5	6.9	7.1	7.0	8.1	7.0	7.5	7.4
28	3.6	6.5	6.3	6.6	6.5	6.7	7.4	6.9	8.1	7.0	7.5	7.4
29	3.7	6.4	6.3	6.6	---	6.6	7.6	7.1	8.2	7.0	7.5	7.5
30	3.6	6.4	6.3	6.6	---	6.6	7.8	7.0	8.2	7.0	7.5	7.5
31	3.5	---	6.4	6.6	---	6.5	---	7.4	---	6.9	7.5	---
TOTAL	88.4	126.9	195.4	207.7	183.1	211.2	203.0	223.1	245.0	233.7	234.3	211.1
MEAN	2.85	4.23	6.30	6.70	6.54	6.81	6.77	7.20	8.17	7.54	7.56	7.04
MAX	3.7	6.7	6.4	8.0	7.0	8.3	7.8	8.0	8.4	8.1	7.8	7.5
MIN	1.4	2.8	6.2	6.4	6.4	6.5	6.4	6.7	7.7	6.9	6.8	6.3
AC-FT	175	252	388	412	363	419	403	443	486	464	465	419

CAL YR 1997 TOTAL 2267.1 MEAN 6.21 MAX 9.4 MIN 1.3 AC-FT 4500  
WTR YR 1998 TOTAL 2362.9 MEAN 6.47 MAX 8.4 MIN 1.4 AC-FT 4690

e Estimated.

## 11428300 BUCK-LOON TUNNEL NEAR MEEKS BAY, CA

LOCATION.—Lat 39°00'17", long 120°15'21", in SE 1/4 NW 1/4 sec.6, T.13 N., R.16 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank at tunnel intake near left abutment of diversion dam, 7.4 mi southwest of Meeks Bay.

PERIOD OF RECORD.—November 1963 to current year.

GAGE.—Water-stage recorder. Datum of gage is 6,425.0 ft above sea level (levels by Sacramento Municipal Utility District).

REMARKS.—Tunnel diverts water from Buck Island Lake and discharges into Loon Lake (station 11429350). Buck Island Lake receives water from Rubicon River via Rubicon-Rockbound Tunnel (station 11427940). Gates are closed at the tunnel entrance during the summer to raise the level of Buck Island Lake for recreational purposes. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	10	30	14	36	23	66	595	457	701	138	6.9
2	.13	6.1	24	24	43	24	59	645	652	616	119	7.0
3	.13	4.0	20	27	122	27	55	610	645	633	66	7.1
4	.13	2.7	16	28	147	28	53	503	519	586	.34	7.0
5	.13	1.9	15	26	89	26	50	402	590	588	.36	7.8
6	.13	1.4	17	21	61	28	49	353	659	615	18	22
7	.13	1.1	27	20	54	24	46	275	970	683	74	38
8	.13	.79	38	18	49	22	43	340	951	675	83	33
9	.13	.47	33	17	43	21	43	490	856	645	70	41
10	.13	.21	29	19	40	21	44	454	854	662	59	80
11	.13	.19	26	21	40	23	47	306	839	639	53	63
12	.13	.13	22	34	36	30	46	236	757	511	50	39
13	.13	.04	20	63	38	35	44	195	961	459	50	24
14	.13	.06	19	58	42	33	43	156	967	464	51	15
15	.13	.06	19	207	39	35	39	133	955	400	64	11
16	.13	.03	17	465	35	50	36	157	967	349	72	12
17	.13	.00	17	637	35	70	37	168	907	389	59	80
18	.13	.01	18	537	30	80	49	136	814	438	48	60
19	.14	14	17	298	30	81	85	141	951	427	39	29
20	.14	63	15	163	31	96	150	212	946	382	30	13
21	.14	47	15	104	32	125	237	261	912	346	24	7.3
22	.14	28	13	71	33	230	376	222	923	318	19	3.4
23	.14	22	11	56	31	605	513	243	810	306	15	1.6
24	.14	24	10	47	33	973	418	271	675	304	12	1.0
25	.14	28	9.8	42	30	793	265	482	737	274	10	.61
26	.14	109	8.6	38	27	404	207	455	911	239	8.5	.39
27	.14	129	7.8	37	25	228	235	270	799	215	7.4	.43
28	132	78	7.4	37	23	154	325	192	704	201	7.1	.47
29	141	52	7.5	43	---	110	427	242	767	190	6.8	.83
30	51	39	9.0	40	---	82	521	223	793	181	6.7	3.5
31	21	---	11	36	---	72	---	268	---	171	6.9	---
TOTAL	348.60	662.19	549.1	3248	1274	4553	4608	9636	24248	13607	1267.10	615.33
MEAN	11.2	22.1	17.7	105	45.5	147	154	311	808	439	40.9	20.5
MAX	141	129	38	637	147	973	521	645	970	701	138	80
MIN	.13	.00	7.4	14	23	21	36	133	457	171	.34	.39
AC-FT	691	1310	1090	6440	2530	9030	9140	19110	48100	26990	2510	1220

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	MEAN	21.4	67.3	63.2	69.2	58.6	89.2	199	456	402	139	20.9	13.4
	MAX	182	405	264	297	254	239	356	861	994	643	197	116
	(WY)	1983	1984	1965	1970	1986	1989	1989	1969	1983	1995	1983	1982
	MIN	.000	.000	.000	.25	5.46	19.1	36.8	145	31.8	.97	.000	.000
	(WY)	1964	1964	1977	1991	1991	1977	1967	1977	1976	1987	1964	1964

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1964 - 1998

ANNUAL TOTAL	50039.82	64616.32	
ANNUAL MEAN	137	177	133
HIGHEST ANNUAL MEAN			245
LOWEST ANNUAL MEAN			39.2
HIGHEST DAILY MEAN	1100	Jan 2	973
LOWEST DAILY MEAN	.00	Nov 17	.00
ANNUAL SEVEN-DAY MINIMUM	.05	Nov 12	.05
ANNUAL RUNOFF (AC-FT)	99250	128200	96700
10 PERCENT EXCEEDS	465	638	427
50 PERCENT EXCEEDS	36	43	36
90 PERCENT EXCEEDS	.14	.29	.05

## 11428400 LITTLE RUBICON RIVER BELOW BUCK ISLAND DAM, NEAR MEEKS BAY, CA

LOCATION.—Lat 39°00'18", long 120°15'19", in SW 1/4 NW 1/4 sec.6, T.13 N., R.16 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, at outlet structure on Buck Island Diversion Dam, 7.4 mi southwest of Meeks Bay.

DRAINAGE AREA.—6.00 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1990 to current year (low-flow records only). Unpublished records for water years 1964–90 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,420 ft above sea level, from topographic map. Aug. 14, 1964, to Oct. 4, 1973, nonrecording gage at site 60 ft downstream at different datum. Nonrecording gage at present site Oct. 4, 1973, to Aug. 26, 1986, at different datum and Aug. 27, 1986, to Sept. 30, 1990, at same datum.

REMARKS.—No records computed above 2 ft<sup>3</sup>/s. Flow regulated by Buck Island Reservoir. Flow over the spillway bypasses this station. Most of the water is diverted at Buck Island Reservoir via Buck–Loon Tunnel (station 11428300) to Loon Lake (station 11429350). Buck Island Lake receives water from Rubicon River via Rubicon–Rockbound Tunnel (station 11427940). See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.3	1.2	1.2	1.2	1.3	1.2	1.4	1.3	1.3	1.2	1.1
2	1.2	1.3	1.2	1.2	1.2	1.3	1.1	1.5	1.3	1.2	1.3	1.2
3	1.2	1.3	1.2	1.2	1.2	1.3	1.1	1.4	1.3	1.2	1.2	1.2
4	1.2	1.2	1.2	1.2	1.3	1.3	1.1	1.4	1.2	1.2	1.1	1.2
5	1.2	1.1	1.2	1.2	1.2	1.3	1.1	1.4	1.3	1.2	e1.1	1.0
6	1.2	1.1	1.2	1.2	1.2	1.3	1.1	1.3	1.3	1.2	e1.2	1.2
7	1.2	1.1	1.2	1.2	1.2	1.3	1.1	1.3	---	1.2	1.2	1.5
8	1.2	1.1	1.2	1.2	1.2	1.3	1.1	1.3	---	1.2	1.2	1.5
9	1.2	1.1	1.2	1.2	1.2	1.3	1.1	1.4	1.3	1.2	1.2	1.5
10	1.2	1.1	1.1	1.2	1.2	1.3	1.1	1.4	1.3	1.2	1.1	1.5
11	1.2	1.1	1.1	1.2	1.2	1.3	1.1	1.3	1.3	1.2	1.1	1.5
12	1.2	1.1	1.1	1.2	1.2	1.3	1.1	1.3	1.3	1.1	1.2	1.5
13	1.2	1.1	1.1	1.2	1.2	1.3	1.1	1.2	---	1.1	1.2	1.5
14	1.2	1.1	1.2	1.2	1.2	1.3	1.1	1.2	---	1.1	1.1	1.4
15	1.2	1.1	1.2	1.3	1.2	1.3	1.2	1.2	---	1.1	1.1	1.2
16	1.2	1.1	1.2	1.4	1.2	1.3	1.1	1.2	---	1.1	1.1	1.2
17	1.2	1.1	1.2	1.5	1.2	1.3	1.1	1.2	---	1.1	1.1	1.3
18	1.2	1.1	1.2	1.5	1.2	1.3	1.2	1.2	1.2	1.1	1.0	1.2
19	1.2	1.1	1.2	1.4	1.2	1.2	1.2	1.2	---	1.1	1.1	1.2
20	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.2	---	1.1	1.2	1.2
21	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	---	1.1	1.2	1.2
22	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.3	---	1.1	1.2	1.2
23	1.2	1.2	1.2	1.2	1.2	1.5	1.4	1.3	1.1	e1.1	1.2	1.2
24	1.2	1.2	1.2	1.2	1.3	---	1.4	1.3	1.2	e1.2	1.2	1.2
25	1.1	1.2	1.2	1.2	1.3	---	1.3	1.4	1.3	1.2	1.2	1.2
26	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	---	1.2	1.2	1.2
27	1.1	1.2	1.2	1.2	1.3	1.2	1.3	1.3	1.3	1.2	1.2	1.2
28	1.2	1.2	1.2	1.2	1.3	1.2	1.3	1.2	1.3	1.2	1.2	1.2
29	1.1	1.2	1.2	1.2	---	1.2	1.4	1.3	1.3	1.1	1.1	1.2
30	1.0	1.2	1.2	1.2	---	1.2	1.4	1.3	1.3	1.1	1.1	1.2
31	1.2	---	1.2	1.2	---	1.2	---	1.3	---	1.1	1.1	---
TOTAL	36.6	34.8	36.8	38.4	34.2	---	36.0	40.4	---	35.8	35.9	38.1
MEAN	1.18	1.16	1.19	1.24	1.22	---	1.20	1.30	---	1.15	1.16	1.27
MAX	1.2	1.3	1.2	1.5	1.3	---	1.4	1.5	---	1.3	1.3	1.5
MIN	1.0	1.1	1.1	1.2	1.2	---	1.1	1.2	---	1.1	1.0	1.0
AC-FT	73	69	73	76	68	---	71	80	---	71	71	76

e Estimated.

## 11428700 HELL HOLE RESERVOIR NEAR MEEKS BAY, CA

LOCATION.—Lat 39°03'54", long 120°24'50", in SE 1/4 NW 1/4 sec.16, T.14 N., R.14 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 0.3 mi upstream from Hell Hole Dam on Rubicon River and 15.6 mi west of Meeks Bay.

DRAINAGE AREA.—114 mi<sup>2</sup>.

PERIOD OF RECORD.—December 1965 to current year.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Placer County Water Agency).

REMARKS.—Reservoir is formed by rockfill dam with earth core. Storage began Dec. 6, 1965. Usable capacity, 207,342 acre-ft between elevations 4,287.65 ft, invert of river outlet, and 4,630.0 ft, crest of ogee spillway. Dead storage 248 acre-ft. Reservoir is used to store water for hydroelectric power. Water is diverted into reservoir from French Meadows Reservoir (11427400) on the Middle Fork American River through French Meadows Powerplant (station 11427200). Water is diverted out of reservoir to the Middle Fork American River through Middle Fork Powerplant. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 217,400 acre-ft, Jan. 2, 1997, elevation, 4,637.7 ft; minimum since reservoir first filled, 37,499 acre-ft, Mar. 23, 1973, elevation, 4,428.28 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 209,100 acre-ft, June 22, 25, elevation, 4,631.2 ft; minimum, 54,500 acre-ft, Dec. 31, elevation, 4,458.0 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Placer County Water Agency in 1966)

4,340	5,220	4,400	24,200	4,550	122,700
4,360	9,840	4,450	49,600	4,600	171,900
4,380	16,200	4,500	83,000	4,650	233,400

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104300	79700	66100	54600	80400	78400	104400	127400	157900	208700	190800	156700
2	104300	79200	65100	54800	81400	78000	104400	131400	159900	208600	189700	155600
3	104200	78100	64000	54900	83800	78000	104500	134400	161400	208600	189000	154600
4	104500	76900	63300	54900	84700	77600	104500	136900	162700	208600	188500	153400
5	104900	76200	63200	54700	84700	77300	104600	139100	164200	208500	187700	152300
6	105300	75000	63800	54600	85000	77000	104600	141200	166400	208600	186600	151200
7	105800	73800	64600	54800	85600	76500	104500	143000	170600	208500	185700	150100
8	106300	73700	64300	54900	85300	75900	104400	145100	173200	208200	185300	149100
9	106800	73900	64100	55000	84800	75500	104200	147200	175700	208000	184600	148000
10	107100	73500	63900	55400	84700	75100	104200	148600	178100	207800	183500	146900
11	106600	72800	63800	56300	84600	74900	104500	149500	180700	207500	182200	145700
12	105200	71900	63900	57600	84400	74700	104300	150400	183700	207000	181000	145400
13	104000	71200	64000	58100	84400	74400	104300	151100	187600	206600	179900	143900
14	102300	70300	64500	58900	84400	74300	104300	151700	191200	206100	178600	143700
15	101000	69300	64300	63300	83900	74400	104100	152400	194300	205300	177300	143500
16	99500	68800	63700	66800	83200	74900	103800	152800	197100	204300	175900	143300
17	98100	67700	63100	70700	83500	75300	103700	152700	199300	203500	174700	143100
18	96600	67000	62600	72400	83000	75500	103700	152400	201600	203000	173400	142900
19	95600	66100	61900	73500	82800	76100	104000	152600	204200	202200	172300	142600
20	94700	65000	61200	74300	82500	77100	104700	152500	206600	201500	171000	142200
21	94700	65500	60600	74900	81900	78400	106400	152200	208600	200800	169600	142000
22	93300	66000	60000	75400	81100	81300	108500	151800	209100	199900	168400	141700
23	91900	66400	59200	76000	80700	85300	110800	151700	209000	199000	167200	141500
24	90600	65700	57900	76500	80200	93900	112600	151900	208800	198200	166000	141200
25	88900	65700	56500	76900	79800	97500	113800	153400	209100	197500	164800	141000
26	87300	66900	55300	77400	79400	99800	115100	154000	209000	196600	163600	140700
27	85900	66900	54800	77800	78900	101400	116700	154300	209000	195800	162500	141000
28	84400	66700	54800	78300	79100	102500	118900	154700	209000	194900	161400	141500
29	83000	66900	54900	78900	---	103300	121400	155000	209000	193900	160200	142000
30	81600	66500	54800	79400	---	103700	124400	155300	208800	193000	159100	142700
31	80200	---	54500	79800	---	104100	---	156100	---	191900	157900	---
MAX	107100	79700	66100	79800	85600	104100	124400	156100	209100	208700	190800	156700
MIN	80200	65000	54500	54600	78900	74300	103700	127400	157900	191900	157900	140700
a	4496.1	4476.6	4458.0	4495.6	4494.6	4527.5	4552.0	4585.5	4631.0	4617.2	4587.2	4572.1
b	-23700	-13700	-12000	+25300	-700	+25000	+20300	+31700	+52700	-16900	-34000	-15200

CAL YR 1997 b -103800

WTR YR 1998 b +38800

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11428800 RUBICON RIVER BELOW HELL HOLE DAM, NEAR MEEKS BAY, CA

LOCATION.—Lat 39°03'24", long 120°24'25", in NE 1/4 NE 1/4 sec.21, T.14 N., R.14 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 600 ft downstream from outlet of dam, and 15.3 mi west of Meeks Bay.

DRAINAGE AREA.—114 mi<sup>2</sup>.

PERIOD OF RECORD.—November 1965 to current year.

GAGE.—Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 4,231.52 ft above sea level (levels by Placer County Water Agency).

REMARKS.—Flow completely regulated by Hell Hole Reservoir (station 11428700) 600 ft upstream from station. During years when Hell Hole Dam spills, records include flow which bypasses the station. Transbasin diversions upstream from station through Buck-Loon Tunnel (station 11428300) to Loon Lake Reservoir (station 11429350); from Middle Fork American River basin through tunnel from French Meadows Reservoir (station 11427400) to Hell Hole Reservoir; from Hell Hole Reservoir through tunnel to Middle Fork Powerplant (station 11428600). Diversion began Sept. 8, 1966. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 28,800 ft<sup>3</sup>/s, Jan. 2, 1997, including flow over spillway; no flow Aug. 25 to Sept. 11, 1966.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	22	22	12	13	13	12	17	26	1140	22	22
2	30	22	22	12	23	13	12	21	27	969	22	22
3	30	22	22	12	24	14	12	19	25	890	22	22
4	30	22	22	12	15	12	11	18	24	828	22	22
5	30	24	22	12	14	12	11	17	24	812	22	22
6	31	22	22	12	17	11	11	18	26	798	22	22
7	31	22	25	12	15	11	11	16	29	783	22	22
8	31	22	24	12	14	11	11	20	26	545	22	22
9	31	22	23	12	13	11	10	28	26	306	22	22
10	29	22	23	13	13	12	10	25	27	183	22	22
11	23	22	23	16	13	13	10	18	27	43	22	22
12	23	22	23	20	13	13	10	14	26	25	22	22
13	22	22	22	13	14	13	10	19	28	23	22	22
14	26	22	22	14	15	13	10	22	27	23	22	22
15	22	22	16	31	12	14	10	21	26	23	22	22
16	22	22	12	22	11	14	10	21	32	26	22	22
17	22	22	12	24	11	14	10	27	36	26	22	22
18	22	22	12	18	12	14	11	20	36	22	22	22
19	22	22	12	23	12	14	11	20	37	22	22	22
20	24	22	12	23	12	15	11	22	37	22	22	22
21	25	22	12	17	12	15	12	23	247	22	22	22
22	23	22	11	13	12	19	14	23	1330	22	22	22
23	23	22	11	13	13	23	15	23	1430	22	22	22
24	23	22	11	13	13	48	15	23	1210	22	22	22
25	22	23	12	12	12	27	13	25	1250	22	22	30
26	22	26	12	12	12	19	13	24	1390	22	22	33
27	22	23	12	12	12	17	13	24	1390	22	22	34
28	22	22	12	11	12	14	15	24	1280	22	22	34
29	22	22	12	12	---	13	16	24	1280	22	22	34
30	22	22	12	12	---	13	17	24	1250	22	22	34
31	22	---	12	11	---	12	---	24	---	22	22	---
TOTAL	779	668	522	463	384	477	357	664	12629	7751	682	727
MEAN	25.1	22.3	16.8	14.9	13.7	15.4	11.9	21.4	421	250	22.0	24.2
MAX	31	26	25	31	24	48	17	28	1430	1140	22	34
MIN	22	22	11	11	11	11	10	14	24	22	22	22
AC-FT	1550	1320	1040	918	762	946	708	1320	25050	15370	1350	1440
a	34600	28050	27680	3140	26940	35080	40970	45250	53480	55770	55340	35970

a Diversion, in acre-feet, from Hell Hole Reservoir through Middle Fork Powerplant, provided by Placer County Water Agency.



## 11428800 RUBICON RIVER BELOW HELL HOLE DAM, NEAR MEEKS BAY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	18.0	17.2	25.3	64.7	22.2	31.9	22.4	70.0	114	46.9	15.1	16.6
MAX	40.6	25.8	318	1615	172	478	129	1053	1007	303	23.6	36.7
(WY)	1989	1984	1982	1997	1982	1986	1982	1996	1995	1983	1995	1989
MIN	7.14	7.51	7.57	6.24	6.34	6.33	7.78	7.92	7.74	6.93	6.50	6.43
(WY)	1974	1977	1989	1977	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1966 - 1998	
ANNUAL TOTAL	57375		26103			
ANNUAL MEAN	157		71.5		39.5	
HIGHEST ANNUAL MEAN					158	
LOWEST ANNUAL MEAN					7.11	
HIGHEST DAILY MEAN	17100	Jan 2	1430	Jun 23	17100	Jan 2 1997
LOWEST DAILY MEAN	10	Mar 13	10	Apr 9	.00	Aug 25 1966
ANNUAL SEVEN-DAY MINIMUM	10	Mar 13	10	Apr 9	.00	Aug 25 1966
INSTANTANEOUS PEAK FLOW			1670	Jun 23	28800	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	113800		51780		28600	
TOTAL DIVERSION (AC-FT) a	458800		442300			
10 PERCENT EXCEEDS	32		31		28	
50 PERCENT EXCEEDS	23		22		18	
90 PERCENT EXCEEDS	12		12		8.8	

a Diversion, in acre-feet, from Hell Hole Reservoir through Middle Fork Powerplant, provided by Placer County Water Agency.

## 11429350 LOON LAKE NEAR MEEKS BAY, CA

LOCATION.—Lat 38°58'59", long 120°19'22", in SE 1/4 SW 1/4 sec.8, T.13 N., R.15 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, in powerplant intake structure, 1.6 mi southwest of right bank end of Loon Lake Dam on Gerle Creek, and 10 mi southwest of Meeks Bay.

DRAINAGE AREA.—7.96 mi<sup>2</sup>.

PERIOD OF RECORD.—December 1963 to current year.

CHEMICAL ANALYSES: June to September 1996.

REVISED RECORDS.—WDR CA-76-4: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District). Prior to Sept. 23, 1975, at site 1.6 mi northeast on right bank end of Loon Lake Dam at same datum.

REMARKS.—Reservoir is formed by an earthfill dam completed Dec. 27, 1963; storage began Dec. 5, 1963. Prior to September 1962, reservoir was formed by granite-block dam built in 1884, capacity, 8,000 acre-ft. Usable capacity, 73,868 acre-ft, between elevations 6,325 ft, invert of fishwater release valve, and 6,410 ft, crest of spillway. Dead storage, 2,300 acre-ft. Lake receives water from Rubicon River via Rubicon-Rockbound Tunnel to Buck Island Lake and from Buck Island Lake to Loon Lake via Buck-Loon Tunnel (stations 11427940, 11428300). Records, including extremes, represent total contents. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 77,700 acre-ft, June 6, 1969, elevation, 6,411.1 ft; minimum since reservoir first filled, 3,262 acre-ft, Nov. 8, 9, 1988, elevation, 6,328.70 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 75,707 acre-ft, June 30, elevation, 6,409.67 ft; minimum, 17,267 acre-ft, Mar. 12, elevation, 6,357.01 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Sacramento Municipal Utility District recomputed October 1991)

6,330	3,478	6,370	28,323
6,340	7,116	6,390	50,058
6,350	12,469	6,412	78,983
6,360	19,570		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35048	27754	25424	26632	33626	19881	25297	30032	44552	75344	68641	51355
2	34975	27745	25451	26809	33698	18861	24004	31987	45795	74927	68735	50239
3	34923	27265	25478	26883	33801	17967	22933	33431	46721	74913	68089	49071
4	34891	26651	25496	26939	33884	17657	21409	34298	47630	74899	66909	48343
5	34860	26577	25569	26864	33554	17657	20349	34797	48593	74927	65126	48021
6	34808	26319	25660	26809	33236	17680	19921	35563	50299	74871	63674	47594
7	34714	26309	25961	26512	33175	17649	19753	35933	52567	74871	63136	47168
8	34693	26254	26089	25614	33195	17574	19705	36442	54459	75177	62221	46885
9	34829	26218	26172	25524	33021	17387	19649	37697	56287	75497	61402	47027
10	34850	25144	26236	25533	32634	17387	19689	38784	58429	75469	60586	47192
11	34850	24642	26227	25433	32088	17275	19705	39453	60457	75107	60289	47286
12	34787	23934	26263	25478	31207	17267	19554	39750	62495	74468	59452	47133
13	34745	23934	26291	25660	30563	17334	19594	40016	64821	74413	58250	47015
14	34714	23934	26374	25961	30572	17432	19649	39872	67016	74122	56968	46791
15	34433	23916	26402	27284	30061	17507	19578	39960	68708	73665	56640	46439
16	34049	23898	26438	28936	29312	17574	19554	40226	70076	73017	56513	46321
17	34028	23881	26466	30919	28734	17687	19506	39916	71151	72411	55960	46439
18	33997	23872	26531	32290	28313	17717	19594	39828	71863	71822	55872	46532
19	33956	24013	26512	32685	27735	17816	19713	39828	72714	71466	55621	46556
20	33677	24039	26540	33001	27051	17914	20066	39916	73762	70756	55570	46556
21	32858	24127	26568	33021	26744	18265	20658	39717	74441	70715	55520	46532
22	32199	24172	26568	33216	26282	18916	21559	39806	74927	70565	55508	46497
23	31306	24198	26577	33287	25642	20634	22847	40226	75149	69953	55495	46439
24	30533	24287	26595	33410	24473	23969	23837	40404	74954	69492	54883	46415
25	29807	24269	26586	33410	23097	26034	24429	41927	75038	68884	54708	46356
26	29788	24731	26577	33134	21810	27060	24991	42901	75428	68627	54683	46368
27	29700	25027	26595	33226	21201	27303	25578	43186	75553	68022	54223	46368
28	29051	25198	26577	33338	20519	26957	26457	42992	75581	67739	54123	46333
29	28161	25306	26577	33318	---	26558	27509	43175	75595	67901	53652	46321
30	28095	25379	26595	33400	---	26181	28705	43254	75707	68237	53405	46298
31	27754	---	26605	33492	---	25587	---	43598	---	68493	52677	---
MAX	35048	27754	26605	33492	33884	27303	28705	43598	75707	75497	68735	51355
MIN	27754	23872	25424	25433	20519	17267	19506	30032	44552	67739	52677	46298
a	6369.40	6366.83	6368.17	6375.22	6361.18	6367.06	6370.40	6384.51	6409.67	6404.41	6392.15	6386.84
b	-7357	-2375	+1226	+6887	-12973	+5068	+3118	+14893	+32109	-7214	-15816	-6379

CAL YR 1997 MAX 76056 MIN 17067 b -31009

WTR YR 1998 MAX 75707 MIN 17267 b +11187

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11429500 GERLE CREEK BELOW LOON LAKE DAM, NEAR MEEKS BAY, CA

LOCATION.—Lat 39°00'20", long 120°18'52", in NE 1/4 NE 1/4 sec.5, T.13 N., R.15 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 0.3 mi downstream from Loon Lake Dam, and 11 mi southwest of Meeks Bay.

DRAINAGE AREA.—8.01 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1910 to April 1914 (fragmentary), August 1962 to current year. Prior to August 1962, published as "near Rubicon Springs."

GAGE.—Water-stage recorder and V-notch sharp-crested weir. Elevation of gage is 6,250 ft above sea level, from topographic map. Prior to August 1962, nonrecording gage at site 1,400 ft upstream at different datum.

REMARKS.—Records good. Beginning in 1884, flow regulated by Loon Lake (station 11429350). Original dam was dismantled during September and October 1962 to permit construction of a new earthfill dam, which was completed Dec. 27, 1963. Loon Lake receives water from Rubicon River via Buck-Loon Tunnel (station 11428300). Since August 1971, most of the water is diverted past the station via Loon Lake Powerplant (station 11429340) and returns to Gerle Creek at Gerle Creek Dam. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 3,240 ft<sup>3</sup>/s, unregulated, Feb. 1, 1963, gage height, 12.65 ft, from rating curve extended above 970 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow Oct. 15, 1913. Maximum discharge since construction of Loon Lake Dam in 1963, 1,050 ft<sup>3</sup>/s, June 5, 1969, gage height, 9.03 ft; minimum daily, 3.6 ft<sup>3</sup>/s, Sept. 27, 28, Nov. 3, 1977.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	9.8	11	9.8	10	10	11	12	14	11	12	12
2	10	9.8	10	9.8	11	9.8	11	13	14	11	12	12
3	9.8	9.8	10	9.8	12	9.9	11	13	13	11	12	12
4	9.8	9.8	10	10	11	9.9	11	12	13	11	12	12
5	9.8	9.8	11	9.5	10	10	11	12	13	11	12	12
6	9.9	9.8	11	9.5	10	10	11	12	15	12	12	12
7	10	9.8	11	9.7	10	10	11	12	15	12	12	12
8	10	9.8	11	9.6	10	9.8	11	12	14	12	12	12
9	11	9.8	10	9.8	10	9.8	11	13	14	12	12	13
10	11	9.7	10	9.8	10	9.8	11	12	15	13	12	12
11	11	9.5	10	9.8	10	9.8	11	11	14	13	11	12
12	10	9.5	10	11	10	10	11	11	15	12	11	12
13	10	9.6	10	9.9	10	10	11	11	15	12	11	12
14	10	9.6	10	10	10	10	11	11	15	12	11	12
15	10	9.5	10	16	10	11	11	12	14	12	11	12
16	10	9.5	10	14	10	11	11	11	13	12	11	12
17	10	9.7	10	14	10	11	11	11	13	12	11	12
18	10	10	10	11	10	11	11	12	13	12	13	12
19	10	11	10	11	10	11	11	12	13	12	12	12
20	10	10	10	10	9.8	11	12	12	13	12	12	12
21	10	10	10	10	10	11	12	12	13	12	12	12
22	10	10	11	10	9.8	12	11	12	13	12	12	12
23	9.8	10	11	10	9.8	13	11	12	12	12	12	12
24	9.8	10	10	10	9.8	18	11	13	12	12	12	12
25	9.8	11	10	10	9.8	13	11	14	12	12	12	12
26	9.8	11	10	10	9.5	12	11	12	12	12	12	12
27	9.8	10	10	10	9.4	12	12	12	12	12	12	12
28	9.8	10	10	10	9.8	12	12	12	12	12	12	12
29	9.8	10	10	10	---	12	12	12	12	12	12	12
30	9.8	10	9.8	10	---	12	12	12	12	12	12	12
31	9.8	---	9.8	10	---	12	---	13	---	12	12	---
TOTAL	310.3	297.8	316.6	324.0	281.7	343.8	336	373	400	369	366	361
MEAN	10.0	9.93	10.2	10.5	10.1	11.1	11.2	12.0	13.3	11.9	11.8	12.0
MAX	11	11	11	16	12	18	12	14	15	13	13	13
MIN	9.8	9.5	9.8	9.5	9.4	9.8	11	11	12	11	11	12
AC-FT	615	591	628	643	559	682	666	740	793	732	726	716
a	6960	3630	20	3730	16330	8380	9800	12030	23980	34060	16890	6580

a Diversion, in acre-feet, to Loon Lake Powerplant, provide by Sacramento Municipal Utility District.

## 11429500 GERLE CREEK BELOW LOON LAKE DAM, NEAR MEEKS BAY, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1970, BY WATER YEAR (WY)

MEAN	112	132	165	74.7	103	192	133	63.0	390	341	232	115
MAX	190	356	343	134	261	347	244	209	721	493	351	338
(WY)	1970	1966	1966	1968	1970	1970	1967	1969	1969	1967	1969	1967
MIN	7.53	7.93	8.95	8.41	9.13	9.57	8.75	10.5	185	196	50.8	8.20
(WY)	1965	1968	1969	1965	1968	1968	1965	1968	1966	1965	1965	1970

## SUMMARY STATISTICS

## WATER YEARS 1965 - 1970

ANNUAL MEAN	171	
HIGHEST ANNUAL MEAN	217	1970
LOWEST ANNUAL MEAN	127	1965
HIGHEST DAILY MEAN	1030	Jun 5 1969
LOWEST DAILY MEAN	6.0	Dec 2 1969
ANNUAL SEVEN-DAY MINIMUM	6.4	Dec 10 1969
INSTANTANEOUS PEAK FLOW	1050	Jun 5 1969
INSTANTANEOUS PEAK STAGE	9.03	Jun 5 1969
ANNUAL RUNOFF (AC-FT)	124100	
10 PERCENT EXCEEDS	394	
50 PERCENT EXCEEDS	28	
90 PERCENT EXCEEDS	8.1	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1998, BY WATER YEAR (WY)

MEAN	8.86	8.72	9.38	9.09	9.02	9.09	8.98	10.9	9.01	9.00	8.60	8.63
MAX	13.3	9.97	23.9	13.0	12.8	11.6	11.2	48.7	13.3	15.7	11.8	12.0
(WY)	1993	1995	1984	1997	1996	1996	1998	1996	1998	1995	1998	1998
MIN	3.93	4.00	4.45	4.61	5.12	4.67	4.27	4.64	4.13	4.30	4.09	3.99
(WY)	1978	1978	1978	1978	1978	1977	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1972 - 1998

ANNUAL TOTAL	3666.6		4079.2	
ANNUAL MEAN	10.0		11.2	9.11
HIGHEST ANNUAL MEAN				13.5
LOWEST ANNUAL MEAN				6.06
HIGHEST DAILY MEAN	42	Jan 1	18	Mar 24
LOWEST DAILY MEAN	8.6	Mar 9	9.4	Feb 27
ANNUAL SEVEN-DAY MINIMUM	8.8	Mar 4	9.6	Nov 10
INSTANTANEOUS PEAK FLOW			67	Aug 18
INSTANTANEOUS PEAK STAGE			3.09	Aug 18
ANNUAL RUNOFF (AC-FT)	7270		8090	6600
ANNUAL DIVERSION (AC-FT) a	143800		142400	
10 PERCENT EXCEEDS	11		13	10
50 PERCENT EXCEEDS	9.8		11	8.8
90 PERCENT EXCEEDS	9.2		9.8	7.9

a Diversion, in acre-feet, to Loon Lake Powerplant, provide by Sacramento Municipal Utility District.

## 11429600 GERLE RESERVOIR NEAR MEEKS BAY, CA

LOCATION.—Lat 38°57'59", long 120°23'33", in SE 1/4 SW 1/4 sec.15, T.13 N., R.14 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on left bank side of upstream face of dam on Gerle Creek, 0.2 mi downstream from Angel Creek, and 15.2 mi southwest of Meeks Bay.

DRAINAGE AREA.—28.7 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1993 to current year. Unpublished records for water years 1980–93 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District). Prior to June 9, 1988, nonrecording gage at same site and datum.

REMARKS.—Reservoir is formed by concrete dam completed in 1970. Storage began in 1970. Usable capacity, 1,200 acre-ft, below elevation 5,230.9 ft, crest of spillway. Most of the water is diverted at this reservoir to Robbs Peak Powerplant (station 11429300). Records, including extremes, represent total contents at 2400 hours. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 1,469 acre-ft, Jan. 1, 1997, elevation, 5,235.39 ft; minimum, 845 acre-ft, Dec. 15, 1994, elevation, 5,222.15 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 1,291 acre-ft, Mar. 24, elevation, 5,231.97 ft; minimum, 863 acre-ft, Dec. 16, elevation, 5,222.58 ft.

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

(Based on table provided by Sacramento Municipal Utility District, recomputed October 1991)

5,200	203	5,220	761
5,205	304	5,225	964
5,210	431	5,230	1,193
5,215	583	5,235	1,448

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	925	953	928	961	965	997	1022	1105	1123	1188	1069	1128
2	1029	960	952	873	1013	1133	1136	1153	1091	1171	1084	1082
3	990	980	977	923	1072	1064	1101	1099	1106	1125	1088	1128
4	993	963	888	913	998	938	1149	1090	1079	1098	1162	1040
5	988	949	924	935	1040	923	1061	1109	1098	1104	1167	997
6	987	1003	933	940	967	946	974	1024	1072	1143	1131	1063
7	1041	939	908	1042	961	936	934	1064	1052	1120	1063	1092
8	1042	969	897	1049	947	962	955	1096	1091	1035	1123	1092
9	1026	975	960	924	936	988	998	1039	1032	1062	1096	1094
10	982	1060	884	946	1019	961	943	993	1054	1109	1050	1073
11	949	1033	894	977	1002	986	997	992	1019	1193	1108	1080
12	919	1014	939	1025	1097	940	982	996	1057	1164	1126	1114
13	917	925	931	937	1039	917	937	1010	1038	1047	1126	1150
14	893	936	940	943	975	932	930	1048	1049	1156	1080	1011
15	963	945	939	1160	982	980	948	1043	1116	1101	1048	1042
16	970	954	863	1125	1033	1014	930	1024	1126	1152	1079	1088
17	941	963	915	1061	986	971	944	1073	1108	1161	1046	1094
18	942	939	969	994	982	1019	957	1016	1161	1115	1063	1094
19	944	963	895	1060	998	996	999	1065	1093	1141	1081	1094
20	942	932	940	918	1032	1000	1039	1083	1095	1110	1033	1094
21	1035	953	e920	927	987	991	1072	1109	1162	1059	1073	1095
22	1024	902	900	919	983	1072	1086	1098	1184	1119	1077	1095
23	970	920	937	947	1032	1166	1039	1021	1161	1199	1082	1094
24	1016	879	964	915	1092	1291	1001	1054	1186	1120	1069	1096
25	1036	892	937	934	1108	1067	1007	1056	1141	1139	1029	1108
26	907	921	925	954	1073	984	1018	1002	1181	1083	1034	1111
27	949	948	956	921	973	1005	1079	997	1129	1123	1065	1118
28	1131	960	880	915	977	1122	1095	1132	1148	1034	1072	1124
29	1065	877	938	977	---	1077	1099	1005	1196	1062	1111	972
30	980	905	995	933	---	1043	1099	1066	1199	1094	1044	980
31	989	---	900	911	---	1063	---	1112	---	1132	1128	---
MAX	1131	1060	995	1160	1108	1291	1149	1153	1199	1199	1167	1150
MIN	893	877	863	873	936	917	930	992	1019	1034	1029	972
a	5225.56	5223.60	5223.48	5223.75	5225.28	5227.22	5228.00	5228.28	5230.11	5228.72	5228.63	5225.36
b	+62	-84	-5	+11	+66	+86	+36	+13	+87	-67	-4	-148
CAL YR 1997	MAX 1469	MIN 855	b -169									
WTR YR 1998	MAX 1291	MIN 863	b +53									

e Estimated.

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet

## 11430000 SOUTH FORK RUBICON RIVER BELOW GERLE CREEK, NEAR GEORGETOWN, CA

LOCATION.—Lat 38°57'17", long 120°24'02", in SW 1/4 SW 1/4 sec.22, T.13 N., R.14 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on left bank 600 ft downstream from Gerle Creek, 1.2 mi downstream from South Fork Rubicon River Diversion Dam, and 18 mi east of Georgetown.

DRAINAGE AREA.—47.6 mi<sup>2</sup>.

PERIOD OF RECORD.—February 1910 to June 1914 (published as Little South Fork Rubicon River below Gerle Creek near Quintette), August 1961 to current year.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Elevation of gage is 4,970 ft above sea level, from topographic map. Feb. 1, 1910, to June 21, 1914, nonrecording gage at site about 700 ft downstream at different datum.

REMARKS.—Beginning in 1884, flow regulated by Loon Lake (station 11429350). Original dam was dismantled during September and October 1962 to permit construction of a new earthfill dam completed Dec. 27, 1963. Loon Lake receives water from Rubicon River via Rubicon-Rockbound Tunnel to Buck Island Lake and from Buck Island Lake to Loon Lake via Buck-Loon Tunnel (stations 11427940 and 11428300). Prior to Dec. 3, 1961, water was diverted out of the basin in Georgetown Divide Ditch. Water is diverted 1.2 mi upstream at South Fork Rubicon River Diversion Dam to Robbs Peak Powerplant (station 11429300). Diversion of up to 1,440 ft<sup>3</sup>/s to Silver Creek Basin began in October 1962. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 12,600 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 12.65 ft, from rating curve extended above 2,500 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 0.8 ft<sup>3</sup>/s, Sept. 21, 1962.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	9.6	7.0	7.3	12	11	13	16	11	12	11	11
2	12	6.4	6.9	9.9	23	11	13	101	11	12	10	11
3	15	6.6	7.3	9.0	28	13	14	28	10	12	11	11
4	23	6.7	7.4	9.0	17	12	14	16	10	12	11	10
5	13	6.4	7.6	8.1	15	11	14	16	11	11	11	10
6	12	6.4	8.6	8.2	18	11	14	17	11	11	11	11
7	11	6.5	13	8.8	16	11	13	15	37	11	11	11
8	11	6.4	10	9.6	14	11	13	14	11	11	11	11
9	14	6.6	8.6	9.9	13	11	12	14	11	11	10	11
10	12	7.0	8.5	11	13	11	13	13	12	11	10	11
11	13	6.9	8.2	14	13	11	13	12	12	11	10	10
12	12	6.7	7.9	21	13	11	13	12	12	11	12	11
13	12	6.9	7.9	14	14	11	12	12	12	11	12	11
14	12	6.6	8.1	14	16	11	12	12	11	10	12	11
15	12	6.8	8.3	112	14	12	11	12	11	11	12	10
16	11	6.9	7.4	73	13	12	11	12	11	11	11	11
17	11	6.9	7.2	202	12	13	12	12	11	11	11	11
18	11	6.8	7.3	17	12	13	12	11	11	11	11	11
19	12	8.4	7.6	15	12	13	13	11	23	11	12	11
20	12	6.9	7.4	13	12	14	14	11	11	11	11	11
21	12	6.6	7.2	12	12	15	15	11	11	11	11	11
22	13	6.5	7.0	11	11	18	16	10	14	11	11	11
23	13	6.4	7.2	11	11	38	17	10	16	11	11	11
24	13	6.8	7.2	11	11	1210	17	10	11	11	11	11
25	13	7.8	7.2	11	11	109	16	12	12	11	11	11
26	13	13	7.0	10	11	19	15	11	11	11	10	12
27	13	9.1	7.2	11	11	18	16	11	11	11	10	12
28	13	8.5	7.3	10	11	16	16	11	11	11	10	12
29	13	7.9	7.1	12	---	15	16	12	11	11	10	12
30	13	7.5	7.4	11	---	14	16	12	12	11	10	12
31	13	---	7.9	10	---	13	---	11	---	11	10	---
TOTAL	395	218.5	241.9	705.8	389	1719	416	488	380	344	336	331
MEAN	12.7	7.28	7.80	22.8	13.9	55.5	13.9	15.7	12.7	11.1	10.8	11.0
MAX	23	13	13	202	28	1210	17	101	37	12	12	12
MIN	11	6.4	6.9	7.3	11	11	11	10	10	10	10	10
AC-FT	783	433	480	1400	772	3410	825	968	754	682	666	657
a	6650	4540	1820	16040	24460	26790	29650	43870	55220	39250	17170	6990

a Diversion, in acre-feet, to Robbs Peak Powerplant, provided by Sacramento Municipal Utility District.

## 11430000 SOUTH FORK RUBICON RIVER BELOW GERLE CREEK, NEAR GEORGETOWN, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

MEAN	10.8	19.7	37.7	61.2	36.9	20.9	13.5	27.4	20.9	13.1	9.16	9.30
MAX	52.2	268	396	530	524	130	141	276	249	92.5	12.5	22.3
(WY)	1963	1984	1965	1997	1986	1986	1982	1996	1983	1967	1983	1982
MIN	2.40	2.75	4.79	4.86	5.03	3.11	2.35	2.42	2.29	2.36	2.03	1.99
(WY)	1978	1978	1968	1968	1966	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1963 - 1998	
ANNUAL TOTAL	19849.8		5964.2			
ANNUAL MEAN	54.4		16.3		23.3	
HIGHEST ANNUAL MEAN					67.1	
LOWEST ANNUAL MEAN					3.59	
HIGHEST DAILY MEAN	8050	Jan 1	1210	Mar 24	8050	Jan 1 1997
LOWEST DAILY MEAN	5.3	Mar 23	6.4	Nov 2	1.3	Sep 29 1963
ANNUAL SEVEN-DAY MINIMUM	5.8	Apr 2	6.5	Nov 2	1.5	Sep 28 1963
INSTANTANEOUS PEAK FLOW			1980	Mar 24	12600	Jan 1 1997
INSTANTANEOUS PEAK STAGE			7.26	Mar 24	12.65	Jan 1 1997
ANNUAL RUNOFF (AC-FT)	39370		11830		16910	
ANNUAL DIVERSION (AC-FT) a	210200		272400			
10 PERCENT EXCEEDS	13		15		13	
50 PERCENT EXCEEDS	12		11		8.4	
90 PERCENT EXCEEDS	6.3		7.3		5.2	

a Diversion, in acre-feet, to Robbs Peak Powerplant, provided by Sacramento Municipal Utility District.

## 11431800 PILOT CREEK ABOVE STUMPY MEADOWS LAKE, CA

LOCATION.—Lat 38°53'41", long 120°34'02", in NE 1/4 NW 1/4 sec.18, T.12 N., R.13 E., El Dorado County, Hydrologic Unit 18020128, on right bank 2.1 mi upstream from Stumpy Meadows Dam and 12.5 mi east of Georgetown.

DRAINAGE AREA.—11.7 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1960 to current year. Prior to October 1971, published as "above Stumpy Meadows Reservoir."

GAGE.—Water-stage recorder. Elevation of gage is 4,280 ft above sea level, from topographic map.

REMARKS.—Records good except estimated daily discharges, which are fair. No regulation or diversion upstream from station. See schematic diagram of Middle Fork American and Rubicon River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 3,510 ft<sup>3</sup>/s, Feb. 17, 1986, gage height, 7.15 ft, from rating curve extended above 540 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 6.31 ft; maximum gage height, 8.05 ft, Jan. 31, 1963; minimum daily, 0.14 ft<sup>3</sup>/s, Aug. 16, 1977.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 140 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 15	1715	283	2.95	Mar. 24	0500	796	4.29
Feb. 3	Unknown	Unknown	Unknown	May 2	1700	165	2.49

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	6.5	8.7	8.9	33	e31	82	110	52	23	13	8.5
2	6.8	6.3	8.5	17	88	e30	74	147	51	23	13	8.3
3	6.4	6.3	8.2	19	e180	e38	73	130	48	22	12	8.3
4	5.9	6.2	8.2	18	143	e34	67	111	e47	22	11	8.4
5	5.7	6.2	8.8	e17	109	e34	64	111	e46	21	11	9.2
6	5.7	6.4	10	e17	115	e39	61	114	46	21	11	10
7	6.1	6.8	24	17	111	e30	57	96	53	21	11	9.3
8	6.2	6.8	16	17	102	e30	54	93	46	21	11	9.2
9	10	6.8	13	17	82	e28	54	91	43	20	11	11
10	8.7	6.5	11	24	72	e27	56	82	45	20	11	9.7
11	8.2	6.6	11	50	e74	e30	e59	75	45	19	11	9.1
12	7.6	6.8	10	144	e68	34	e64	73	43	19	11	8.9
13	7.0	7.2	10	91	e71	37	e69	72	41	19	10	8.6
14	6.7	7.7	10	54	e98	38	e59	67	39	19	10	8.5
15	6.3	7.6	10	191	e89	41	e51	64	37	18	10	8.4
16	6.0	7.4	e10	144	e75	47	e48	64	35	18	9.9	8.3
17	5.8	7.2	e9.5	138	e67	56	e48	59	34	17	9.9	8.3
18	5.8	7.2	8.9	102	e56	59	e49	56	33	17	10	8.2
19	6.0	9.4	8.7	91	e60	63	e52	57	31	17	10	8.1
20	6.0	8.8	8.5	66	e55	70	e56	56	31	16	10	8.2
21	6.0	8.1	8.6	52	e59	77	e62	53	30	16	9.9	8.1
22	5.9	7.7	8.5	44	e54	105	e76	50	29	16	9.7	8.3
23	5.9	7.7	9.9	40	e51	151	e87	49	29	16	9.5	8.6
24	6.0	7.8	9.0	35	e46	559	e95	48	28	15	9.4	9.1
25	6.2	10	8.7	32	e40	310	e88	63	27	15	9.3	9.2
26	6.2	19	14	31	e36	209	e80	56	26	14	9.3	9.6
27	6.3	12	12	30	e34	170	e72	51	26	14	9.1	11
28	6.3	10	8.5	28	e32	140	e70	52	25	14	9.0	9.8
29	6.4	9.3	8.5	34	---	117	e66	54	24	13	8.9	9.7
30	6.4	8.8	8.7	31	---	100	e72	53	23	13	8.7	9.6
31	6.5	---	8.8	29	---	91	---	52	---	13	8.5	---
TOTAL	200.2	241.1	318.2	1628.9	2100	2825	1965	2309	1113	552	318.1	269.5
MEAN	6.46	8.04	10.3	52.5	75.0	91.1	65.5	74.5	37.1	17.8	10.3	8.98
MAX	10	19	24	191	180	559	95	147	53	23	13	11
MIN	5.2	6.2	8.2	8.9	32	27	48	48	23	13	8.5	8.1
AC-FT	397	478	631	3230	4170	5600	3900	4580	2210	1090	631	535

e Estimated.



## 11431800 PILOT CREEK ABOVE STUMPY MEADOWS LAKE, CA --Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1998, BY WATER YEAR (WY)

MEAN	6.51	12.8	26.6	48.3	48.5	54.1	47.8	36.7	15.6	8.48	5.40	4.85
MAX	24.8	74.1	159	268	373	195	139	118	50.4	17.8	16.2	16.3
(WY)	1963	1984	1965	1997	1986	1983	1982	1967	1967	1998	1961	1961
MIN	.87	2.79	3.35	4.55	4.64	4.82	3.38	4.06	1.93	.64	.18	.50
(WY)	1978	1977	1977	1991	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1961 - 1998	
ANNUAL TOTAL	13947.7		13840.0			
ANNUAL MEAN	38.2		37.9		26.2	
HIGHEST ANNUAL MEAN					64.8	
LOWEST ANNUAL MEAN					2.96	
HIGHEST DAILY MEAN	1790	Jan 1	559	Mar 24	2840	Feb 17 1986
LOWEST DAILY MEAN	3.8	Sep 24	5.2	Oct 1	.14	Aug 16 1977
ANNUAL SEVEN-DAY MINIMUM	3.9	Sep 23	5.9	Oct 17	.15	Aug 12 1977
INSTANTANEOUS PEAK FLOW			796	Mar 24	3510	Feb 17 1986
INSTANTANEOUS PEAK STAGE			4.29	Mar 24	8.05	Jan 31 1963
ANNUAL RUNOFF (AC-FT)	27670		27450		18990	
10 PERCENT EXCEEDS	55		88		60	
50 PERCENT EXCEEDS	12		20		10	
90 PERCENT EXCEEDS	4.9		6.8		3.4	

## 11433040 PILOT CREEK BELOW MUTTON CANYON, NEAR GEORGETOWN, CA

LOCATION.—Lat 38°55'25", long 120°38'27", in NE 1/4 NW 1/4 sec.4, T.12 N., R.12 E., El Dorado County, Hydrologic Unit 18020128, Eldorado National Forest, on left bank 450 ft downstream from Mutton Canyon, 500 ft downstream from Georgetown Divide Diversion Dam, 2.5 mi downstream from Stumpy Meadows Dam, and 10 mi east of Georgetown.

DRAINAGE AREA.—21.1 mi<sup>2</sup>.

PERIOD OF RECORD.—June 1961 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 3,760 ft above sea level, from topographic map.

REMARKS.—Records good. Flow regulated by Stumpy Meadows Lake 2.5 mi upstream, usable capacity, 17,500 acre-ft, completed in November 1961. Georgetown Irrigation District Ditch, capacity, about 60 ft<sup>3</sup>/s, diverts water out of Pilot Creek, 500 ft upstream from station. See schematic diagram of Middle Fork American and Rubicon River Basins.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 7,830 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 10.95 ft, from rating curve extended above 970 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 10.06 ft; minimum daily, 0.20 ft<sup>3</sup>/s, Sept. 24, Nov. 1–5, 1966.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	4.3	4.7	4.3	64	82	163	138	78	22	6.2	4.9
2	4.4	4.3	4.7	7.5	141	79	144	194	75	20	6.2	4.9
3	4.1	4.2	4.5	6.0	392	101	157	201	72	18	6.1	4.9
4	4.0	4.2	4.5	5.6	309	90	141	166	70	17	6.0	4.9
5	4.0	4.2	4.8	5.1	233	90	139	163	67	16	6.0	5.5
6	4.0	4.2	5.5	4.9	272	102	131	173	71	15	6.1	5.8
7	4.0	4.4	15	5.7	291	83	121	151	91	14	6.1	5.0
8	4.0	4.3	8.4	5.4	294	78	114	144	74	13	6.0	4.7
9	6.0	4.3	6.1	5.4	212	73	110	143	67	13	6.0	4.9
10	4.8	4.3	5.6	8.3	196	70	111	131	64	12	5.9	4.8
11	4.8	4.5	5.4	25	209	68	118	119	67	11	5.8	4.7
12	4.3	4.5	5.1	64	179	68	127	126	65	10	5.8	4.7
13	4.2	4.6	5.1	36	186	77	138	128	61	10	5.8	4.7
14	4.4	4.8	5.4	26	259	76	119	114	57	9.7	5.8	4.5
15	4.0	4.8	5.7	84	234	78	102	105	53	8.4	5.9	4.5
16	4.0	4.6	5.2	56	198	84	97	104	51	7.5	5.9	4.5
17	4.0	4.3	5.1	51	177	95	96	100	46	6.8	5.9	4.5
18	3.8	4.3	5.1	54	147	101	99	92	43	7.6	5.6	4.5
19	3.8	5.3	5.0	46	159	103	103	89	41	7.5	5.6	4.5
20	3.8	4.7	4.9	32	144	108	111	87	39	7.5	5.6	4.5
21	3.9	4.4	4.9	26	154	116	125	85	38	7.3	5.6	4.5
22	4.1	4.3	4.8	21	143	143	151	81	36	6.7	5.5	4.5
23	4.3	4.3	4.7	18	135	188	174	78	33	6.7	5.5	4.5
24	4.3	4.5	4.7	15	120	778	190	75	29	6.6	5.4	4.7
25	4.3	5.4	4.7	12	104	615	176	109	29	6.5	5.4	4.7
26	4.3	13	4.7	11	95	400	159	97	30	6.5	5.4	4.8
27	4.3	7.5	4.6	10	89	330	144	91	29	6.4	5.2	4.9
28	4.7	5.5	4.5	9.6	84	286	132	93	29	6.3	5.2	4.9
29	4.6	5.0	4.4	30	---	227	134	100	25	6.3	5.0	4.7
30	4.3	4.9	4.3	37	---	191	136	89	23	6.4	4.8	4.7
31	4.3	---	4.3	36	---	184	---	81	---	6.3	4.8	---
TOTAL	131.8	147.9	166.4	757.8	5220	5164	3962	3647	1553	318.0	176.1	142.8
MEAN	4.25	4.93	5.37	24.4	186	167	132	118	51.8	10.3	5.68	4.76
MAX	6.0	13	15	84	392	778	190	201	91	22	6.2	5.8
MIN	3.8	4.2	4.3	4.3	64	68	96	75	23	6.3	4.8	4.5
AC-FT	261	293	330	1500	10350	10240	7860	7230	3080	631	349	283

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1998, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
	2.82	7.19	1963	.46	1962
	5.78	28.6	1984	.46	1962
	31.1	340	1965	.54	1962
	64.1	621	1997	.53	1962
	76.4	585	1986	.89	1991
	77.1	370	1983	1.21	1977
	68.8	289	1982	.98	1977
	39.3	171	1995	1.12	1977
	9.90	54.4	1967	.66	1977
	4.28	15.6	1983	.45	1977
	3.29	13.4	1983	.38	1977
	2.82	8.54	1983	.37	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1961 - 1998

ANNUAL TOTAL	26073.6	21386.8	
ANNUAL MEAN	71.4	58.6	31.9
HIGHEST ANNUAL MEAN			109
LOWEST ANNUAL MEAN			.84
HIGHEST DAILY MEAN	5210	778	5210
LOWEST DAILY MEAN	3.8	3.8	.20
ANNUAL SEVEN-DAY MINIMUM	3.9	3.9	.23
INSTANTANEOUS PEAK FLOW		886	7830
INSTANTANEOUS PEAK STAGE		7.14	10.95
ANNUAL RUNOFF (AC-FT)	51720	42420	23140
10 PERCENT EXCEEDS	100	155	87
50 PERCENT EXCEEDS	5.5	10	4.0
90 PERCENT EXCEEDS	4.2	4.3	1.1

## 11433060 SOUTH FORK LONG CANYON CREEK DIVERSION TUNNEL NEAR VOLCANOVILLE, CA

LOCATION.—Lat 39°03'04", long 120°28'14", in SW 1/4 NE 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank at diversion dam, 3.3 mi upstream from confluence with North and South Forks Long Canyon Creek, and 17.2 mi east of Volcanoville.

PERIOD OF RECORD.—October 1965 to current year.

GAGE.—Water-stage recorder and sharp-crested weir. Elevation of gage is 4,630 ft above sea level, from topographic map.

REMARKS.—Tunnel completed in September 1965; diversion began in February 1966. Flow is diverted from South Fork Long Canyon Creek to a tunnel from Hell Hole Reservoir to Middle Fork Powerplant on the Middle Fork American River. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 251 ft<sup>3</sup>/s, Nov. 12, 1973; no flow for part of each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	19	14	45	110	66	18	.00	.00
2	.00	.00	.00	.00	54	16	42	144	67	16	.00	.00
3	.00	.00	.00	.00	112	22	41	122	63	6.9	.00	.00
4	.00	.00	.00	.00	62	21	37	112	59	.00	.00	.00
5	.00	.00	.00	.00	45	21	35	110	61	.00	.00	.00
6	.00	.00	.00	.00	48	19	34	110	71	.00	.00	.00
7	.00	.00	.00	.00	44	16	31	102	89	.00	.00	.00
8	.00	.00	.00	.00	36	15	30	103	75	.00	.00	.00
9	.00	.00	.00	.00	31	15	30	101	70	.00	.00	.00
10	.00	.00	.00	.00	28	15	31	82	74	.00	.00	.00
11	.00	.00	.00	7.2	26	19	32	71	79	.00	.00	.00
12	.00	.00	.00	56	26	22	28	67	72	.00	.00	.00
13	.00	.00	.00	26	35	22	27	63	75	.00	.00	.00
14	.00	.00	.00	18	38	26	25	60	71	.00	.00	.00
15	.00	.00	.00	130	32	34	23	60	67	.00	.00	.00
16	.00	.00	.00	145	28	44	22	59	62	.00	.00	.00
17	.00	.00	.00	157	24	49	24	51	55	.00	.00	.00
18	.00	.00	.00	81	22	50	29	51	52	.00	.00	.00
19	.00	.00	.00	53	22	52	36	55	50	.00	.00	.00
20	.00	.00	.00	37	20	60	49	55	46	.00	.00	.00
21	.00	.00	.00	30	20	63	69	52	42	.00	.00	.00
22	.00	.00	.00	26	18	98	82	49	38	.00	.00	.00
23	.00	.00	.00	23	18	125	86	50	35	.00	.00	.00
24	.00	.00	.00	22	16	84	87	51	32	.00	.00	.00
25	.00	.00	.00	19	15	126	75	77	30	.00	.00	.00
26	.00	.00	.00	18	14	120	73	58	28	.00	.00	.00
27	.00	.00	.00	18	13	102	83	50	26	.00	.00	.00
28	.00	.00	.00	19	13	80	94	50	23	.00	.00	.00
29	.00	.00	.00	22	---	65	102	51	21	.00	.00	.00
30	.00	.00	.00	19	---	55	108	52	20	.00	.00	.00
31	.00	---	.00	18	---	51	---	57	---	.00	.00	---
TOTAL	0.00	0.00	0.00	944.20	879	1521	1510	2285	1619	40.90	0.00	0.00
MEAN	.000	.000	.000	30.5	31.4	49.1	50.3	73.7	54.0	1.32	.000	.000
MAX	.00	.00	.00	157	112	126	108	144	89	18	.00	.00
MIN	.00	.00	.00	.00	13	14	22	49	20	.00	.00	.00
AC-FT	.00	.00	.00	1870	1740	3020	3000	4530	3210	81	.00	.00

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1966	.002	.034	1980	.000	1966
1967	3.43	37.2	1974	.000	1966
1968	5.64	38.6	1984	.000	1966
1969	10.3	42.1	1974	.000	1966
1970	12.5	77.3	1996	.000	1991
1971	21.4	77.7	1989	.000	1974
1972	27.2	67.8	1980	.000	1974
1973	24.7	80.6	1975	.000	1974
1974	8.85	54.0	1998	.000	1966
1975	.34	4.54	1983	.000	1966
1976	.002	.067	1983	.000	1966
1977	.000	.001	1972	.000	1966
1978	.000	.000	1972	.000	1966
1979	.000	.000	1972	.000	1966

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1966 - 1998
ANNUAL TOTAL	.00	8799.10	
ANNUAL MEAN	.00	24.1	9.51
HIGHEST ANNUAL MEAN			24.1
LOWEST ANNUAL MEAN			.43
HIGHEST DAILY MEAN		157	251
LOWEST DAILY MEAN	.00 Jan 1	.00 Oct 1	.00 Oct 1
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 1	.00 Oct 1	.00 Oct 1
ANNUAL RUNOFF (AC-FT)		17450	6890
10 PERCENT EXCEEDS	.00	73	32
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

## 11433065 SOUTH FORK LONG CANYON CREEK BELOW DIVERSION DAM, NEAR VOLCANOVILLE, CA

LOCATION.—Lat 39°03'04", long 120°28'14", in SW 1/4 NE 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 21 ft below diversion dam, 3.3 mi upstream from confluence of North and South Forks Long Canyon Creek, and 17.2 mi east of Volcanoville.

PERIOD OF RECORD.—October 1988 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 4,630 ft above sea level, from topographic map.

REMARKS.—Discharge is computed only during periods of operation of South Fork Long Canyon Creek Diversion Tunnel (station 11433060). See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	6.3	6.2	6.2	6.3	6.3	6.3	---	---
2	---	---	---	---	6.8	6.0	6.0	6.5	6.4	6.2	---	---
3	---	---	---	---	7.4	6.2	6.0	6.4	6.4	7.2	---	---
4	---	---	---	---	6.9	6.3	6.0	6.3	6.4	---	---	---
5	---	---	---	---	6.5	6.3	6.0	6.3	6.4	---	---	---
6	---	---	---	---	6.6	6.3	6.0	6.3	6.5	---	---	---
7	---	---	---	---	6.5	6.2	6.0	6.3	6.6	---	---	---
8	---	---	---	---	6.5	6.2	6.0	6.3	6.6	---	---	---
9	---	---	---	---	6.4	6.2	6.0	6.3	6.5	---	---	---
10	---	---	---	---	6.3	6.2	6.0	6.2	6.6	---	---	---
11	---	---	---	5.4	6.3	6.3	6.2	6.2	6.6	---	---	---
12	---	---	---	6.6	6.3	6.3	6.2	6.0	6.5	---	---	---
13	---	---	---	6.2	6.5	6.3	6.2	6.0	6.5	---	---	---
14	---	---	---	6.5	6.5	6.3	6.2	6.0	6.5	---	---	---
15	---	---	---	7.6	6.4	6.3	6.0	6.0	6.4	---	---	---
16	---	---	---	7.8	6.4	6.5	6.0	6.0	6.3	---	---	---
17	---	---	---	8.1	6.4	6.5	6.0	6.0	6.3	---	---	---
18	---	---	---	7.3	6.3	6.5	6.2	6.2	6.3	---	---	---
19	---	---	---	6.9	6.3	6.5	6.3	6.3	6.3	---	---	---
20	---	---	---	6.6	6.3	6.6	6.3	6.3	6.3	---	---	---
21	---	---	---	6.5	6.3	6.6	6.3	6.3	6.2	---	---	---
22	---	---	---	6.5	6.3	7.0	6.3	6.2	6.2	---	---	---
23	---	---	---	6.5	6.3	7.5	6.3	6.2	6.2	---	---	---
24	---	---	---	6.5	6.3	17	6.3	6.2	6.0	---	---	---
25	---	---	---	6.4	6.3	7.6	6.3	6.5	6.2	---	---	---
26	---	---	---	6.4	6.3	6.8	6.2	6.3	6.3	---	---	---
27	---	---	---	6.3	6.3	6.4	6.3	6.3	6.3	---	---	---
28	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	---	---	---
29	---	---	---	6.4	---	6.3	6.3	6.3	6.3	---	---	---
30	---	---	---	6.3	---	6.2	6.3	6.2	6.3	---	---	---
31	---	---	---	6.3	---	6.2	---	6.3	---	---	---	---
TOTAL	---	---	---	---	180.3	210.1	184.7	193.3	191.0	---	---	---
MEAN	---	---	---	---	6.44	6.78	6.16	6.24	6.37	---	---	---
MAX	---	---	---	---	7.4	17	6.3	6.5	6.6	---	---	---
MIN	---	---	---	---	6.3	6.0	6.0	6.0	6.0	---	---	---
AC-FT	---	---	---	---	358	417	366	383	379	---	---	---

## 11433080 NORTH FORK LONG CANYON CREEK DIVERSION TUNNEL NEAR VOLCANOVILLE, CA

LOCATION.—Lat 39°02'57", long 120°28'56", in SW 1/4 NW 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on left bank at diversion dam, 3.2 mi upstream from confluence of North and South Forks Long Canyon Creek, and 16.9 mi east of Volcanoville.

PERIOD OF RECORD.—October 1965 to current year.

GAGE.—Water-stage recorder and Parshall flume. Elevation of gage is 4,700 ft above sea level, from topographic map.

REMARKS.—Tunnel completed in September 1965 and diversions began in February 1966. Flow is diverted from North Fork Long Canyon Creek to a tunnel from Hell Hole Reservoir to Middle Fork Powerplant (stations 11428700 and 11428600) on the Middle Fork American River. See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 100 ft<sup>3</sup>/s, Jan. 15, 1998; no flow for part of each year.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	9.2	5.9	20	61	41	.00	.00	.00
2	.00	.00	.00	.00	32	7.3	18	86	38	.00	.00	.00
3	.00	.00	.00	.00	67	14	17	66	33	.00	.00	.00
4	.00	.00	.00	.00	33	12	15	58	31	.00	.00	.00
5	.00	.00	.00	.00	22	10	14	55	32	.00	.00	.00
6	.00	.00	.00	.00	24	8.6	13	56	37	.00	.00	.00
7	.00	.00	.00	.00	21	7.5	12	55	43	.00	.00	.00
8	.00	.00	.00	.00	16	7.1	11	56	35	.00	.00	.00
9	.00	.00	.00	.00	14	6.9	12	58	33	.00	.00	.00
10	.00	.00	.00	.00	12	7.9	14	42	37	.00	.00	.00
11	.00	.00	.00	.00	11	11	14	35	41	.00	.00	.00
12	.00	.00	.00	21	10	13	12	32	34	.00	.00	.00
13	.00	.00	.00	20	17	13	11	30	33	.00	.00	.00
14	.00	.00	.00	20	17	15	10	29	30	.00	.00	.00
15	.00	.00	.00	e100	14	24	8.8	31	27	.00	.00	.00
16	.00	.00	.00	88	12	31	8.6	30	24	.00	.00	.00
17	.00	.00	.00	92	10	33	11	25	20	.00	.00	.00
18	.00	.00	.00	48	9.2	32	17	27	18	.00	.00	.00
19	.00	.00	.00	32	9.5	33	23	32	16	.00	.00	.00
20	.00	.00	.00	22	8.6	38	32	32	14	.00	.00	.00
21	.00	.00	.00	18	8.1	39	47	28	13	.00	.00	.00
22	.00	.00	.00	15	7.1	73	54	27	11	.00	.00	.00
23	.00	.00	.00	14	7.1	80	54	27	9.5	.00	.00	.00
24	.00	.00	.00	13	6.3	74	53	30	8.3	.00	.00	.00
25	.00	.00	.00	11	5.7	83	45	49	7.3	.00	.00	.00
26	.00	.00	.00	9.7	5.1	61	44	33	5.7	.00	.00	.00
27	.00	.00	.00	10	5.0	50	50	28	2.4	.00	.00	.00
28	.00	.00	.00	10	5.1	38	55	28	.00	.00	.00	.00
29	.00	.00	.00	12	---	31	61	28	.00	.00	.00	.00
30	.00	.00	.00	10	---	26	63	28	.00	.00	.00	.00
31	.00	---	.00	9.0	---	24	---	34	---	.00	.00	---
TOTAL	0.00	0.00	0.00	574.70	418.0	909.2	819.4	1236	674.20	0.00	0.00	0.00
MEAN	.000	.000	.000	18.5	14.9	29.3	27.3	39.9	22.5	.000	.000	.000
MAX	.00	.00	.00	100	67	83	63	86	43	.00	.00	.00
MIN	.00	.00	.00	.00	5.0	5.9	8.6	25	.00	.00	.00	.00
AC-FT	.00	.00	.00	1140	829	1800	1630	2450	1340	.00	.00	.00

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

MEAN	.047	.83	1.94	3.68	5.78	10.5	12.8	10.7	2.71	.018	.003	.004
MAX	.74	13.2	12.7	18.5	35.6	35.5	33.0	39.9	22.5	.20	.093	.077
(WY)	1980	1982	1997	1998	1996	1993	1993	1998	1998	1973	1973	1973
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1966	1966	1966	1966	1974	1974	1974	1974	1966	1966	1966	1966

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1966 - 1998
ANNUAL TOTAL	.00	4631.50	
ANNUAL MEAN	.00	12.7	4.07
HIGHEST ANNUAL MEAN			12.7
LOWEST ANNUAL MEAN			.007
HIGHEST DAILY MEAN		100	100
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)		9190	2950
10 PERCENT EXCEEDS	.00	38	14
50 PERCENT EXCEEDS	.00	.00	.00
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated.

## 11433085 NORTH FORK LONG CANYON CREEK BELOW DIVERSION DAM, NEAR VOLCANOVILLE, CA

LOCATION.—Lat 39°02'57", long 120°28'56", in SW 1/4 NW 1/4 sec.24, T.14 N., R.13 E., Placer County, Hydrologic Unit 18020128, Eldorado National Forest, on right bank 26 ft below diversion dam, 3.2 mi upstream from confluence of North and South Forks Long Canyon Creek, and 16.9 mi east of Volcanoville.

PERIOD OF RECORD.—October 1988 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 4,700 ft above sea level, from topographic map.

REMARKS.—Discharge is computed only during periods of operation of North Fork Long Canyon Creek Diversion Tunnel (station 11433080). See schematic diagram of Middle Fork American and Rubicon River Basins.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	3.1	2.9	3.3	4.7	4.2	---	---	---
2	---	---	---	---	3.6	2.9	3.3	5.1	4.4	---	---	---
3	---	---	---	---	4.4	3.2	3.2	4.7	4.2	---	---	---
4	---	---	---	---	3.7	3.1	3.2	4.6	4.2	---	---	---
5	---	---	---	---	3.5	3.1	3.2	4.6	4.2	---	---	---
6	---	---	---	---	3.5	3.0	3.2	4.7	4.5	---	---	---
7	---	---	---	---	3.5	2.9	3.1	4.7	4.5	---	---	---
8	---	---	---	---	3.3	2.9	3.3	4.8	4.2	---	---	---
9	---	---	---	---	3.2	2.9	3.5	4.8	4.2	---	---	---
10	---	---	---	---	3.2	3.0	3.6	4.5	4.4	---	---	---
11	---	---	---	---	3.2	3.1	3.6	4.4	4.5	---	---	---
12	---	---	---	3.3	3.1	3.2	3.6	4.2	4.2	---	---	---
13	---	---	---	2.9	3.3	3.2	3.6	4.2	4.2	---	---	---
14	---	---	---	3.3	3.4	3.2	3.5	4.2	4.1	---	---	---
15	---	---	---	6.4	3.3	3.4	3.5	4.2	4.0	---	---	---
16	---	---	---	5.2	3.2	3.6	3.5	4.2	3.9	---	---	---
17	---	---	---	5.5	3.2	3.7	3.6	4.1	3.8	---	---	---
18	---	---	---	4.2	3.1	3.6	3.7	4.1	3.8	---	---	---
19	---	---	---	3.8	3.1	3.6	3.8	4.2	3.7	---	---	---
20	---	---	---	3.5	3.1	3.7	4.1	4.2	3.6	---	---	---
21	---	---	---	3.4	3.1	3.7	4.4	4.1	3.6	---	---	---
22	---	---	---	3.3	3.0	4.1	4.6	4.1	3.5	---	---	---
23	---	---	---	3.3	3.0	e4.8	4.7	4.1	3.4	---	---	---
24	---	---	---	3.2	3.0	e8.1	4.6	4.2	3.4	---	---	---
25	---	---	---	3.2	2.9	5.6	4.4	4.7	3.3	---	---	---
26	---	---	---	3.2	2.8	5.0	4.4	4.2	3.5	---	---	---
27	---	---	---	3.2	2.8	4.7	4.5	4.1	4.6	---	---	---
28	---	---	---	3.2	2.8	3.9	4.6	4.1	---	---	---	---
29	---	---	---	3.2	---	3.6	4.7	4.1	---	---	---	---
30	---	---	---	3.2	---	3.5	4.7	4.1	---	---	---	---
31	---	---	---	3.1	---	3.4	---	4.2	---	---	---	---
TOTAL	---	---	---	---	90.4	114.6	115.0	135.2	---	---	---	---
MEAN	---	---	---	---	3.23	3.70	3.83	4.36	---	---	---	---
MAX	---	---	---	---	4.4	8.1	4.7	5.1	---	---	---	---
MIN	---	---	---	---	2.8	2.9	3.1	4.1	---	---	---	---
AC-FT	---	---	---	---	179	227	228	268	---	---	---	---

e Estimated.

## 11433300 MIDDLE FORK AMERICAN RIVER NEAR FORESTHILL, CA

LOCATION.—Lat 39°00'22", long 120°45'35", in NW 1/4 NW 1/4 sec.4, T.13 N., R.11 E., Placer County, Hydrologic Unit 18020128, Tahoe National Forest, on right bank 1.6 mi downstream from Oxbow Powerplant and 3.3 mi east of Foresthill.

DRAINAGE AREA.—524 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1958 to current year.

CHEMICAL DATA: Water year 1979.

BIOLOGICAL DATA: Water year 1979.

GAGE.—Water-stage recorder. Elevation of gage is 1,070 ft above sea level, from topographic map. Prior to Oct. 22, 1965, at site 3.2 mi downstream at different datum. Oct. 22, 1965, to Aug. 28, 1985, at site 400 ft downstream at different datum.

REMARKS.—Flow regulated by French Meadows Reservoir, Hell Hole Reservoir, Loon Lake (stations 11427400, 11428700, and 11429350), Stumpy Meadows Lake, usable capacity, 17,500 acre-ft, and several smaller reservoirs. Robbs Peak Powerplant (station 11429300) and Georgetown Divide Ditch, capacity about 60 ft<sup>3</sup>/s, divert water out of basin upstream from station. See schematic diagrams of Middle Fork American and Rubicon River basins and lower Sacramento River Basin.

COOPERATION.—Records provided by Placer County Water Agency, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 310,000 ft<sup>3</sup>/s, Dec. 23, 1964, gage height, 69.0 ft from floodmarks, site and datum then in use, caused by overtopping of the partly constructed Hell Hole Dam on the Rubicon River, from rating curve extended above 28,000 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 38.0 ft and slope-conveyance study at gage height 69.0 ft, at site and datum then in use; next highest peak, 123,000 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 29.56 ft, from rating curve extended above 37,000 ft<sup>3</sup>/s; minimum, 35 ft<sup>3</sup>/s, Oct. 10–20, 1961.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	628	657	188	950	1550	2600	2740	2260	2170	1140	1140
2	101	630	939	231	1980	1720	2470	3210	2260	2110	1130	1140
3	121	820	857	386	5510	1830	2540	3330	2260	1960	1040	1090
4	109	895	670	526	3750	1940	2520	2920	2090	1810	892	1140
5	112	483	460	423	3050	1870	2560	2930	2110	1720	1170	1150
6	110	963	214	331	3560	1850	2540	2940	2160	1660	1160	1180
7	107	996	949	302	3740	1730	2470	2830	2320	1640	1160	1160
8	101	424	1250	321	4160	1660	2380	2660	2220	1570	491	1160
9	121	235	966	308	3270	1610	2310	2740	2180	1500	885	1150
10	129	501	790	445	2700	1590	2170	2620	2620	1440	1160	1150
11	308	726	689	1660	2730	1600	2200	2460	2790	1390	1160	1150
12	1030	764	605	4040	2590	1640	2260	2430	2550	1340	1170	1150
13	912	748	516	2580	2720	1690	2390	2420	2770	1340	1180	868
14	1070	840	401	1420	3270	1720	2360	2410	2910	1310	1170	704
15	1040	854	688	5340	3310	1800	2260	2260	2700	1310	1170	582
16	1050	632	906	4290	2840	1950	2300	2280	2290	1290	1170	710
17	1040	852	940	4910	2280	2120	2310	2210	2150	1290	1170	592
18	1040	751	845	3120	2320	2170	2350	2150	2050	1280	1140	586
19	875	968	967	2750	2270	2020	2450	2020	1980	1250	1150	558
20	694	1070	946	1910	2220	2170	2550	2250	1890	1210	1160	556
21	241	263	828	1460	2430	2210	2710	2250	1840	1130	1160	554
22	858	115	873	1190	2530	2570	2890	2190	2260	1160	1150	708
23	1040	112	814	1060	2450	3000	3050	2120	2640	1170	1150	687
24	1040	795	850	950	2380	9790	3230	1990	2440	1160	1150	546
25	1040	625	868	872	2130	5900	2880	2450	2360	1170	1150	649
26	1040	884	773	787	2010	4280	2670	2390	2420	1110	1140	565
27	1050	539	509	779	1900	3710	2690	2160	2190	1120	1140	527
28	1050	495	158	775	1490	3410	2700	2280	2210	1100	1140	498
29	1030	376	111	1000	---	2980	2780	2430	2100	1130	1160	224
30	1040	595	242	1010	---	2810	2670	2260	2130	1120	1170	194
31	1040	---	336	938	---	2730	---	2280	---	1130	1140	---
TOTAL	20636	19579	21617	46302	76540	79620	76260	76610	69150	43090	34518	24068
MEAN	666	653	697	1494	2734	2568	2542	2471	2305	1390	1113	802
MAX	1070	1070	1250	5340	5510	9790	3230	3330	2910	2170	1180	1180
MIN	97	112	111	188	950	1550	2170	1990	1840	1100	491	194
AC-FT	40930	38830	42880	91840	151800	157900	151300	152000	137200	85470	68470	47740

## 11433300 MIDDLE FORK AMERICAN RIVER NEAR FORESTHILL, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	456	654	1178	1682	1854	1855	1779	1575	1033	665	619	522
MAX	1634	2952	7172	8778	8815	5076	5572	4642	3300	1836	1142	1084
(WY)	1963	1984	1965	1997	1986	1983	1982	1963	1983	1983	1983	1983
MIN	54.3	47.1	64.8	85.2	111	240	110	120	124	99.2	47.2	42.8
(WY)	1961	1960	1960	1991	1991	1977	1977	1977	1977	1966	1959	1962

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1959 - 1998			
ANNUAL TOTAL	609048				587990							
ANNUAL MEAN	1669				1611				1152			
HIGHEST ANNUAL MEAN									2723			
LOWEST ANNUAL MEAN									179			
HIGHEST DAILY MEAN	64500				9790				65000			
LOWEST DAILY MEAN	97				97				35			
ANNUAL SEVEN-DAY MINIMUM	102				108				38			
INSTANTANEOUS PEAK FLOW					14200				310000			
INSTANTANEOUS PEAK STAGE					19.70				69.00			
ANNUAL RUNOFF (AC-FT)	1208000				1166000				834900			
10 PERCENT EXCEEDS	2210				2770				2430			
50 PERCENT EXCEEDS	986				1180				754			
90 PERCENT EXCEEDS	452				474				96			



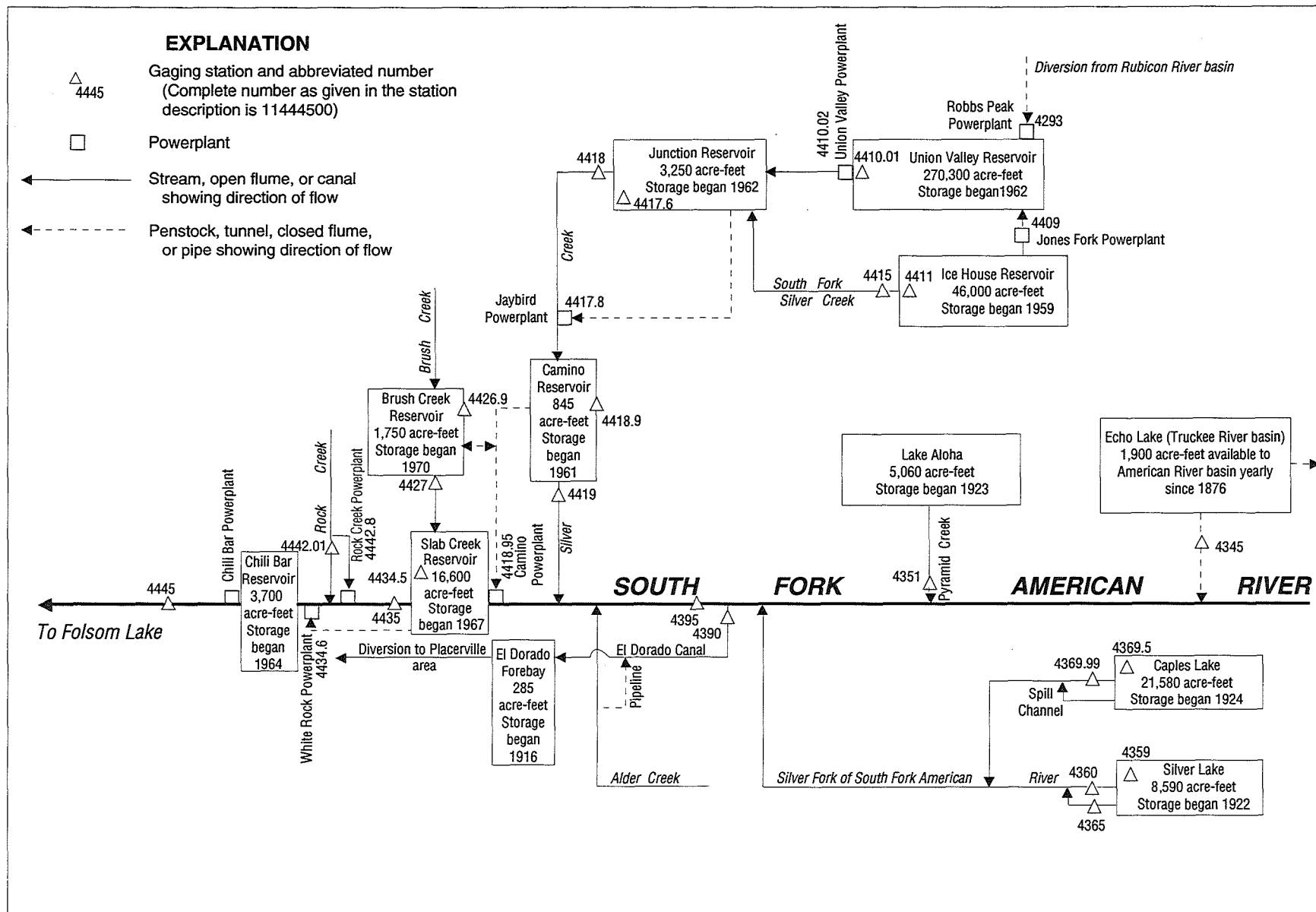


Figure 34. Diversions and storage in South Fork American River Basin.

## 11435100 PYRAMID CREEK AT TWIN BRIDGES, CA

LOCATION.—Lat 38°48'57", long 120°06'58", in NW 1/4 SW 1/4 sec.9, T.11 N., R.17 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 0.5 mi northeast of Twin Bridges, 2.2 mi west of Phillips, and 3.6 mi downstream from Lake Aloha.

DRAINAGE AREA.—8.76 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1970 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 6,320 ft above sea level, from topographic map. Prior to October 1987, at datum 1.00 ft higher.

REMARKS.—Flow regulated by Lake Aloha, capacity, 5,060 acre-ft. Lake of the Woods, Ropi Lake, and Toem Lake (unknown capacities) also regulate at times. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by the Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 2,920 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 7.22 ft, from rating curve extended above 300 ft<sup>3</sup>/s; minimum daily, 0.03 ft<sup>3</sup>/s, Oct. 26–28, 1992.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAILY MEAN VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	8.6	13	12	16	16	21	115	116	276	34	64
2	14	8.5	13	13	22	16	20	110	133	259	32	63
3	14	8.5	12	13	27	16	20	83	113	204	32	62
4	13	8.3	12	14	21	16	20	80	117	202	31	63
5	13	8.1	12	15	19	15	19	67	142	203	29	64
6	13	8.1	13	15	19	17	19	59	219	203	29	66
7	12	8.0	16	16	20	19	19	51	251	200	29	63
8	12	7.9	17	15	24	16	18	76	195	194	28	61
9	18	7.7	14	14	20	15	18	101	187	197	25	88
10	20	7.7	13	14	18	15	18	64	210	197	22	67
11	19	8.0	13	17	20	17	18	48	200	175	22	62
12	18	8.0	13	24	18	19	18	45	204	162	22	61
13	17	8.1	12	23	20	17	18	39	245	161	22	60
14	19	8.7	13	18	18	18	18	34	240	154	44	59
15	20	8.2	13	45	20	23	19	35	239	142	58	58
16	20	8.1	13	83	20	29	17	41	272	138	40	57
17	19	8.1	13	134	19	30	18	35	295	144	38	56
18	17	8.2	12	64	17	30	24	39	328	144	76	55
19	16	12	14	42	17	32	34	57	338	135	74	54
20	15	12	12	28	19	40	51	61	313	126	73	53
21	12	11	13	22	18	43	81	53	318	118	72	52
22	10	11	13	20	23	75	104	48	306	91	70	52
23	9.9	13	13	19	20	119	101	60	287	77	70	51
24	9.5	12	12	18	21	132	54	81	290	71	69	51
25	8.8	15	13	17	20	64	40	106	350	65	68	50
26	8.6	26	12	16	20	41	43	57	331	61	68	50
27	8.7	20	11	19	19	35	61	42	296	57	67	51
28	8.6	16	11	19	18	30	80	42	309	48	66	50
29	8.9	15	12	19	---	26	98	48	323	42	66	49
30	8.9	14	13	19	---	23	115	45	302	41	65	51
31	8.6	---	13	17	---	22	---	77	---	38	65	---
TOTAL	423.5	323.8	399	824	553	1026	1204	1899	7469	4325	1506	1743
MEAN	13.7	10.8	12.9	26.6	19.8	33.1	40.1	61.3	249	140	48.6	58.1
MAX	20	26	17	134	27	132	115	115	350	276	76	88
MIN	8.6	7.7	11	12	16	15	17	34	113	38	22	49
AC-FT	840	642	791	1630	1100	2040	2390	3770	14810	8580	2990	3460

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1998, BY WATER YEAR (WY)

	MEAN	12.0	18.4	16.5	20.7	18.2	25.0	40.7	95.2	103	71.6	45.0	17.9
MAX	35.8	57.1	53.2	133	55.6	63.2	70.2	160	249	198	90.2	77.4	
(WY)	1996	1997	1997	1997	1982	1982	1997	1974	1998	1995	1974	1983	
MIN	.18	.74	1.93	2.25	3.54	7.13	14.7	29.5	18.4	32.3	2.52	.28	
(WY)	1991	1991	1991	1991	1991	1977	1975	1977	1987	1991	1981	1981	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1971 - 1998	
ANNUAL TOTAL	19893.3		21695.3			
ANNUAL MEAN	54.5		59.4		40.4	
HIGHEST ANNUAL MEAN					65.1	
LOWEST ANNUAL MEAN					15.3	
HIGHEST DAILY MEAN	1570	Jan 2	350	Jun 25	1570	Jan 2 1997
LOWEST DAILY MEAN	7.7	Nov 9	7.7	Nov 9	.03	Oct 26 1992
ANNUAL SEVEN-DAY MINIMUM	7.9	Nov 6	7.9	Nov 6	.04	Oct 22 1992
INSTANTANEOUS PEAK FLOW			445	Jun 18	2920	Jan 2 1997
INSTANTANEOUS PEAK STAGE			4.53	Jun 18	7.22	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	39460		43030		29290	
10 PERCENT' EXCEEDS	114		167		99	
50 PERCENT' EXCEEDS	37		25		21	
90 PERCENT' EXCEEDS	12		12		3.2	

## 11435900 SILVER LAKE NEAR KIRKWOOD, CA

LOCATION.—Lat 38°40'07", long 120°07'14", in NW 1/4 SE 1/4 sec.32, T.10 N., R.17 E., Amador County, Hydrologic Unit 18020129, Eldorado National Forest, on outlet structure, 3.5 mi southwest of Kirkwood.

DRAINAGE AREA.—15.2 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to current year. Unpublished records for water years 1981–85 available in files of U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is 7,184.3 ft above sea level (levels by Pacific Gas & Electric Co.). October 1985 to Mar. 5, 1991, nonrecording gage at same site and datum.

REMARKS.—Lake is formed by earthfill and rock masonry dam initially constructed in 1876 and enlarged in 1929. Capacity, 8,590 acre-ft between gage heights 0.0 ft, invert of outlet, and 22.7 ft, top of radial gates and flashboards. Released water is used for power development on South Fork American River. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 8,791 acre-ft, June 3, 1996, gage height, 23.10 ft; minimum, 0 acre-ft, Feb. 13, 15, 20, 22, 27, 1991, gage height, 0 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 8,625 acre-ft, July 19, gage height, 22.77 ft; minimum, 1,465 acre-ft, Jan. 28, gage height, 5.15 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on table provided by Pacific Gas & Electric Co., recomputed Oct. 1, 1989)

0.0	0	12.0	3,840
2.0	540	15.0	5,010
4.0	1,120	18.0	6,350
6.0	1,720	21.0	7,740
9.0	2,730	24.0	9,241

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4650	2978	2456	1764	1546	1950	e3934	4492	4457	8039	8405	7224
2	4606	2956	2429	1764	1621	1950	3897	4496	4528	8200	8400	7187
3	4547	2924	2404	1726	1663	1947	3866	4442	4453	8255	8370	7145
4	4496	2898	2383	1730	1678	1950	3829	4360	4418	8305	8355	7108
5	4434	2873	2380	1690	1696	1966	3806	4282	4492	8345	8330	7154
6	4371	2841	2373	1657	1742	1976	3779	4209	4765	8395	8300	7131
7	4317	2819	2418	1627	1774	1969	3752	4140	4877	8435	8260	7099
8	4278	2794	2415	1591	1800	1969	3714	4186	4825	8435	8220	7025
9	4251	2766	2390	1567	1806	1963	3672	4239	4777	8440	8180	6993
10	4212	2741	2377	1543	1825	1960	3638	4197	4757	8405	8144	6888
11	4147	2719	2353	1534	1828	1956	3626	4136	4705	8295	8109	6782
12	4102	2691	2335	1534	1835	1969	3588	4083	4797	8210	8069	6676
13	4056	2670	2332	1501	1838	1982	3577	4026	4913	8215	8034	6570
14	4003	2645	2322	1504	1883	1985	3547	3969	4958	8240	8004	6469
15	3950	2628	2301	1522	1883	1998	3505	3950	4958	8280	7964	6364
16	3893	2600	2284	1522	1892	2030	3468	3972	4926	8395	7919	6257
17	3829	2579	2267	1540	1895	2070	3434	3938	4809	8525	7874	6151
18	3760	2593	2253	1612	1889	2118	3419	3934	4881	8595	7824	6059
19	3687	2572	2219	1618	1924	2179	3453	4022	4893	8625	7785	5981
20	3607	2547	2202	1609	1921	2274	3551	4086	4877	8590	7735	5904
21	3554	2526	2165	1597	1966	2380	3771	4102	4845	8525	7693	5822
22	3490	2502	2162	1576	1976	2575	4052	4079	4942	8435	7650	5745
23	3423	2481	2141	1555	1988	3017	4163	4098	5074	8360	7608	5668
24	3348	2460	2114	1534	1982	e3687	4094	4216	5293	8370	7565	5606
25	3282	2491	2060	1513	1979	e3916	4045	4309	5813	8340	7504	5534
26	3219	2540	2008	1498	1969	e3934	4041	4209	6257	8330	7467	5485
27	3156	2526	1972	1477	1963	e3991	4090	4113	6671	8340	7424	5427
28	3119	2509	1927	1465	1956	e3991	4201	4113	7127	8370	7387	5405
29	3068	2481	1879	1513	---	e3980	4325	4067	7575	8400	7349	5418
30	3025	2463	1841	1516	---	e3970	4453	4067	7859	8410	7307	5358
31	2999	---	1800	1513	---	e3965	---	4235	---	8410	7265	---
MAX	4650	2978	2456	1764	1988	3991	4453	4496	7859	8625	8405	7224
MIN	2999	2460	1800	1465	1546	1947	3419	3934	4418	8039	7265	5358
a	9.75	8.24	6.25	5.31	6.74	---	13.60	13.04	21.24	22.34	19.99	15.81
b	-1718	-536	-663	-287	+443	+2009	+488	-218	+3624	+551	-1145	-1907

CAL YR 1997 MAX 8716 MIN 1800 b -2866

WTR YR 1998 MAX 8625 MIN 1465 b +641

e Estimated.

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## 11436000 SILVER LAKE OUTLET NEAR KIRKWOOD, CA

LOCATION.—Lat 38°40'18", long 120°07'19", in NE 1/4 SW 1/4 sec.32, T.10 N., R.17 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 1,000 ft downstream from Silver Lake Dam and 3.5 mi southwest of Kirkwood.

DRAINAGE AREA.—15.2 mi<sup>2</sup>.

PERIOD OF RECORD.—September 1922 to current year. Records for water year 1923 incomplete, yearly estimate published in WSP 1315-A.

REVISED RECORDS.—WDR CA-75-4: 1927(M), 1929(M), 1932(M), 1937–38(M), 1940–45(M), 1950–53(M), 1955–58(M), 1963(M), 1965(M), 1967(M), 1969–70(M), 1973(M).

GAGE.—Water-stage recorder. Concrete control since Sept. 8, 1986. Datum of gage is 7,198.0 ft above sea level (levels by Pacific Gas & Electric Co.).

REMARKS.—Low and medium flow regulated by Silver Lake (station 11435900) 1,000 ft upstream. Some water, in addition to that released through dam and over spillway, escapes from Silver Lake through porous rock formation and is measured at staff gage (station 11436500) 0.25 mi east of station. For leakage from Silver Lake, refer to monthly figures below. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 2,170 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 7.79 ft, from rating curve extended above 430 ft<sup>3</sup>/s; no flow many days in February and March 1948, Jan. 13, 14, 1954, Nov. 3, 1959, to Feb. 5, 1960.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	11	10	21	8.7	9.3	57	201	156	146	5.2	6.0
2	25	11	10	21	8.8	9.3	45	213	213	165	5.2	6.0
3	24	11	9.9	21	9.1	9.3	39	201	216	180	5.2	6.0
4	24	11	9.8	21	9.1	9.3	37	184	189	184	5.8	5.8
5	24	11	9.8	20	9.1	9.3	34	159	193	190	6.4	6.0
6	24	11	9.8	20	9.2	9.3	34	139	238	197	6.3	5.8
7	24	11	9.9	20	9.3	9.3	33	117	354	202	6.3	5.8
8	24	10	10	20	9.3	9.3	33	116	352	203	6.3	32
9	24	10	10	20	9.3	9.3	32	129	327	202	6.2	51
10	24	10	9.8	19	9.3	9.4	32	132	317	202	6.1	51
11	24	10	9.8	19	9.2	9.6	32	117	305	195	6.1	50
12	23	10	9.8	19	9.0	9.5	32	106	297	181	5.9	50
13	23	10	9.8	19	9.0	9.6	33	95	347	137	5.9	49
14	23	10	9.8	19	9.1	9.5	32	85	381	106	6.2	48
15	23	10	9.7	19	9.1	9.6	32	77	385	94	6.1	48
16	26	10	9.6	19	9.1	9.6	31	79	386	70	6.1	47
17	31	10	9.6	19	9.1	9.8	31	78	351	67	6.3	47
18	31	10	9.6	19	9.1	9.8	31	74	334	80	6.2	36
19	31	10	9.5	20	9.1	9.9	31	79	358	89	6.2	29
20	30	10	9.3	20	9.1	10	31	95	356	105	6.6	29
21	30	10	9.3	20	9.3	10	32	103	351	112	6.7	29
22	30	10	9.3	20	9.3	11	57	99	263	117	6.4	29
23	30	10	9.3	19	9.3	12	107	102	192	102	6.0	29
24	29	10	18	19	9.3	24	107	106	171	83	5.9	29
25	29	10	22	19	9.3	33	94	148	119	76	5.9	29
26	29	10	22	19	9.3	33	87	142	94	50	6.0	28
27	29	10	22	19	9.3	35	91	117	82	22	6.0	28
28	28	10	22	13	9.3	43	107	104	78	9.2	6.1	28
29	28	10	22	8.7	---	60	136	102	90	5.6	6.0	28
30	18	10	21	8.7	---	64	171	94	121	5.4	6.0	46
31	11	---	21	8.7	---	65	---	104	---	5.3	6.0	---
TOTAL	798	307	393.4	569.1	256.5	580.0	1681	3697	7616	3582.5	187.6	911.4
MEAN	25.7	10.2	12.7	18.4	9.16	18.7	56.0	119	254	116	6.05	30.4
MAX	31	11	22	21	9.3	65	171	213	386	203	6.7	51
MIN	11	10	9.3	8.7	8.7	9.3	31	74	78	5.3	5.2	5.8
AC-FT	1580	609	780	1130	509	1150	3330	7330	15110	7110	372	1810
a	4.7	0	0	0	0	0	0	0.9	99	779	653	275

a Leakage, in acre-feet, from Silver Lake, provided by Pacific Gas & Electric Co.

## 11436000 SILVER LAKE OUTLET NEAR KIRKWOOD, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1998, BY WATER YEAR (WY)

MEAN	24.9	18.5	16.1	15.3	13.8	15.6	43.4	126	88.9	20.1	8.49	37.6
MAX	54.3	110	116	188	93.3	98.2	133	306	353	186	50.5	74.6
(WY)	1953	1951	1951	1997	1963	1986	1943	1969	1983	1983	1987	1983
MIN	.11	.15	.000	.000	.093	.013	.20	1.37	1.43	.91	.44	.16
(WY)	1930	1929	1960	1960	1948	1948	1924	1977	1977	1959	1925	1923

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1923 - 1998	
ANNUAL TOTAL	19483.3		20579.5			
ANNUAL MEAN	53.4		56.4		35.8	
HIGHEST ANNUAL MEAN					85.4	
LOWEST ANNUAL MEAN					8.76	
HIGHEST DAILY MEAN	1940	Jan 2	386	Jun 16	1940	Jan 2 1997
LOWEST DAILY MEAN	2.6	Jul 15	5.2	Aug 1	.00	Feb 24 1948
ANNUAL SEVEN-DAY MINIMUM	2.9	Jul 9	5.4	Jul 29	.00	Feb 28 1948
INSTANTANEOUS PEAK FLOW			412	Jun 16	2170	Jan 2 1997
INSTANTANEOUS PEAK STAGE			5.08	Jun 16	7.79	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	38650		40820		25930	
ANNUAL LEAKAGE (AC-FT) a	2480		1810			
10 PERCENT EXCEEDS	128		175		96	
50 PERCENT EXCEEDS	23		22		12	
90 PERCENT EXCEEDS	4.2		6.3		.71	

a Leakage, in acre-feet, from Silver Lake, provided by Pacific Gas & Electric Co.

## 11436950 CAPLES LAKE NEAR KIRKWOOD, CA

LOCATION.—Lat 38°42'27", long 120°02'55", in SW 1/4 SW 1/4 sec.18, T.10 N., R.18 E., Alpine County, Hydrologic Unit 18020129, Eldorado National Forest, on Caples Lake Dam near the center of the earthfill portion and 1.3 mi east of Kirkwood.

DRAINAGE AREA.—13.5 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1985 to current year. Unpublished records for water years 1981–85 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder since Oct. 1, 1991. Datum of gage is 7,894.0 ft above sea level (levels by Pacific Gas & Electric Co.). Prior to Oct. 1, 1991, nonrecording gage read periodically except for the periods Oct. 16, 1986, to Sept. 30, 1987, Dec. 18, 1990, to May 26, 1991, and July 30 to Sept. 16, 1991, when there was a water-stage recorder at same site and datum.

REMARKS.—Lake is formed by one earthfill and one concrete dam at spillway; dam was completed and storage began in 1924. Capacity, 21,581 acre-ft, between gage heights 6.0 and 62.0 ft, top of 3 ft of flashboards; capacity, 19,751 acre-ft at spillway level. Released water is measured at Caples Creek Release (station 11436999). When gage height is above spillway crest of 59.0 ft, there is leakage or spill which is not measured. Released water is used for power development on South Fork American River. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 21,696 acre-ft, July 9, 10, 1997, gage height, 62.19 ft; minimum, 2,427 acre-ft, Mar. 30, 31, 1987, gage height, 20.7 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 21,494 acre-ft, July 19, gage height, 61.86 ft; minimum, 15,520 acre-ft, Apr. 20, gage height 51.68 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)  
(Based on survey by Pacific Gas & Electric Co., dated Mar. 24, 1934)

15.0	1,061	45.0	12,037
20.0	2,238	50.0	14,609
25.0	3,703	55.0	17,390
30.0	5,442	60.0	20,356
35.0	7,432	63.0	22,201
40.0	9,648		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18943	18434	18157	17923	17332	16988	16437	16652	17171	20776	21359	21328
2	18925	18434	18122	17982	17442	16914	16370	16857	17378	20874	21334	21309
3	18896	18404	18122	17988	17465	16845	16325	17005	17523	20874	21322	21309
4	18896	18404	18099	18046	17465	16811	16291	17131	17662	20892	21334	21273
5	18866	18369	18099	18046	17448	16749	16252	17234	17847	20892	21334	21242
6	18848	18339	18099	18028	17505	16732	16174	17338	18204	20899	21353	21242
7	18812	18322	18175	18052	17552	16692	16140	17407	18652	20923	21340	21217
8	18806	18304	18187	18052	17580	16618	16073	17453	19027	20935	21340	21174
9	18818	18292	18187	18052	17557	16590	16001	17482	19277	20941	21309	21187
10	18830	18263	18187	18052	17575	16511	15951	17482	19486	20923	21309	21174
11	18830	18263	18175	18081	17540	16449	15912	17471	19643	20880	21309	21101
12	18806	18239	18175	18146	17511	16398	15856	17436	19829	20813	21303	21021
13	18771	18239	18140	18146	17459	16353	15845	17402	20010	20825	21316	20990
14	18771	18210	18157	18198	17505	16302	15812	17361	20095	20837	21377	20911
15	18771	18187	18157	18269	17482	16269	15746	17257	20119	20862	21420	20837
16	18741	18169	18151	18328	17436	16235	15679	17217	20143	21009	21439	20764
17	18741	18169	18140	18345	17396	16162	15608	17171	20004	21260	21457	20678
18	18700	18116	18110	18322	17361	16129	15575	17102	19962	21451	21457	20581
19	18700	18157	18110	18263	17344	16107	15542	17045	19980	21494	21457	20483
20	18664	18157	18104	18146	17292	16084	15520	17022	19968	21470	21457	20332
21	18652	18134	18087	18052	17332	16045	15564	16999	19998	21402	21420	20210
22	18623	18122	18064	17976	17303	16112	15702	16971	19956	21365	21420	20089
23	18623	18104	18052	17853	17280	16314	15806	16937	19908	21334	21390	19974
24	18570	18099	18052	17754	17246	16562	15834	16942	19865	21334	21390	19877
25	18534	18046	18034	17621	17183	16618	15834	17039	20113	21328	21353	19727
26	18534	18204	18034	17528	17148	16624	15862	17039	20192	21291	21340	19649
27	18534	18204	18017	17436	17080	16613	15906	17022	20240	21291	21340	19576
28	18499	18204	18005	17355	17045	16613	16006	17011	20386	21303	21340	19468
29	18475	18175	17999	17396	---	16590	16179	16988	20611	21328	21340	19403
30	18463	18163	17976	17361	---	16516	16409	16925	20715	21359	21328	19325
31	18452	---	17976	17344	---	16471	---	16965	---	21359	21328	---
MAX	18943	18434	18187	18345	17580	16988	16437	17482	20715	21494	21457	21328
MIN	18452	18046	17976	17344	17045	16045	15520	16652	17171	20776	21303	19325
a	56.82	56.33	56.01	54.92	54.40	53.39	53.28	54.26	60.59	61.64	61.59	58.29
b	-509	-289	-187	-632	-299	-574	-62	+556	+3750	+644	-31	-2003

CAL YR 1997 MAX 21696 MIN 9282 b +3356

WTR YR 1998 MAX 21494 MIN 15520 b +364

a Gage height, in feet, at end of month.

b Change in contents, in acre-feet.

## 11436999 CAPLES CREEK RELEASE BELOW CAPLES DAM, NEAR KIRKWOOD, CA

LOCATION.—Lat 38°42'31", long 120°03'02", in NW 1/4 SW 1/4 sec.18, T.10 N., R.18 E., Alpine County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 500 ft downstream from main dam and outlet gate of Caples Lake and 1.3 mi east of Kirkwood.

DRAINAGE AREA.—13.5 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1992 to current year. Records for September 1922 to September 1992 were published as station 11437000, Caples Lake Outlet. This record combined the spillway discharge. Records for water year 1945 incomplete, yearly estimate published in WSP 1315-A. Prior to October 1969, published as Twin Lakes Outlet near Kirkwood.

REVISED RECORDS.—WSP 1931; Drainage area.

GAGE.—Water-stage recorder and concrete control. Elevation of gage is 7,730 ft above sea level, from topographic map.

REMARKS.—Flow regulated by Caples Lake (station 11436950) 500 ft upstream. Flow over Caples Lake Spillway bypasses this gage. No diversion upstream from station. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 264 ft<sup>3</sup>/s, June 25, 26, 28, 1998, gage height, 3.12 ft; minimum daily, 5.5 ft<sup>3</sup>/s, Sept. 10, 1996.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	7.0	6.6	6.4	18	30	40	42	80	212	64	7.2
2	6.9	6.9	6.6	6.5	18	30	40	42	80	213	64	7.2
3	6.8	6.8	6.6	6.5	18	30	40	42	80	213	52	20
4	6.8	6.8	6.5	6.5	18	30	40	41	79	214	43	29
5	6.6	6.8	6.5	6.5	18	30	40	41	80	213	43	29
6	6.4	6.8	6.5	6.5	18	30	40	41	80	213	43	29
7	6.3	6.8	6.6	6.6	18	30	40	41	81	214	43	29
8	6.2	6.8	6.6	6.6	18	30	40	64	82	213	43	36
9	6.4	6.8	6.6	6.6	18	30	40	79	123	213	43	41
10	6.6	6.9	6.6	6.6	18	30	40	79	154	214	32	41
11	6.6	7.0	6.7	6.6	23	30	40	78	154	214	22	41
12	6.6	7.0	6.8	6.7	30	30	40	78	154	214	14	41
13	6.7	7.0	6.8	6.6	30	30	40	78	154	182	9.2	41
14	6.8	6.9	6.8	6.6	30	30	40	78	153	147	9.2	41
15	6.6	7.0	6.8	6.7	30	30	40	78	154	130	9.2	41
16	6.7	6.8	6.8	6.6	30	30	40	78	153	88	9.2	41
17	6.8	6.6	6.8	31	30	30	40	78	209	55	9.2	41
18	6.8	6.6	6.6	52	30	30	40	78	253	55	11	48
19	6.8	6.7	6.6	52	30	30	41	78	254	55	15	62
20	6.8	6.6	6.6	52	30	30	41	78	254	70	15	63
21	6.8	6.6	6.6	52	30	30	41	78	255	81	15	64
22	6.8	6.6	6.5	52	30	30	42	78	255	81	15	64
23	6.8	6.5	6.5	52	30	31	42	78	255	81	15	64
24	6.7	6.6	6.5	52	30	37	41	79	257	81	12	64
25	6.7	6.6	6.5	52	30	40	42	79	258	81	7.6	64
26	6.7	6.7	6.5	52	30	40	42	79	259	81	7.6	64
27	6.8	6.6	6.5	52	30	40	42	79	260	76	7.6	64
28	7.0	6.6	6.5	34	30	40	41	79	232	67	7.6	64
29	6.8	6.6	6.5	18	---	40	41	79	211	64	7.5	64
30	7.0	6.6	6.5	18	---	40	42	79	211	64	7.4	43
31	7.0	---	6.4	18	---	40	---	80	---	64	7.3	---
TOTAL	208.2	202.6	204.5	744.1	713	1008	1218	2159	5264	4163	702.6	1347.4
MEAN	6.72	6.75	6.60	24.0	25.5	32.5	40.6	69.6	175	134	22.7	44.9
MAX	7.0	7.0	6.8	52	30	40	42	80	260	214	64	64
MIN	6.2	6.5	6.4	6.4	18	30	40	41	79	55	7.3	7.2
AC-FT	413	402	406	1480	1410	2000	2420	4280	10440	8260	1390	2670

## 11436999 CAPLES CREEK RELEASE BELOW CAPLES DAM, NEAR KIRKWOOD, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1998, BY WATER YEAR (WY)

MEAN	26.1	18.2	17.6	38.2	34.0	24.3	34.1	54.5	115	77.8	30.5	31.9
MAX	54.5	33.1	29.8	116	92.4	40.0	83.5	106	203	183	64.5	55.3
(WY)	1996	1996	1996	1997	1997	1997	1995	1996	1995	1995	1995	1995
MIN	6.72	6.75	6.60	14.0	9.54	9.87	9.37	8.63	9.34	11.6	17.6	17.0
(WY)	1998	1998	1998	1993	1996	1996	1994	1994	1994	1994	1997	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1993 - 1998	
ANNUAL TOTAL	14692.2		17934.4			
ANNUAL MEAN	40.3		49.1		41.8	
HIGHEST ANNUAL MEAN					63.1	
LOWEST ANNUAL MEAN					20.8	
HIGHEST DAILY MEAN	161	Jan 17	260	Jun 27	260	Jun 27 1998
LOWEST DAILY MEAN	6.2	Oct 8	6.2	Oct 8	5.5	Sep 10 1996
ANNUAL SEVEN-DAY MINIMUM	6.4	Oct 5	6.4	Oct 5	6.4	Oct 5 1997
INSTANTANEOUS PEAK FLOW			264	Jun 25	264	Jun 25 1998
INSTANTANEOUS PEAK STAGE			3.12	Jun 25	3.12	Jun 25 1998
ANNUAL RUNOFF (AC-FT)	29140		35570		30310	
10 PERCENT EXCEEDS	132		126		98	
50 PERCENT EXCEEDS	24		30		25	
90 PERCENT EXCEEDS	6.6		6.6		8.2	



## 11439500 SOUTH FORK AMERICAN RIVER NEAR KYBURZ, CA

LOCATION.—Lat 38°45'49", long 120°19'39", in SW 1/4 SW 1/4 sec.29, T.11 N., R.15 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 0.8 mi downstream from Silver Fork American River, and 1.9 mi southwest of Kyburz.

DRAINAGE AREA.—193 mi<sup>2</sup>.

PERIOD OF RECORD.—August to December 1907, October 1922 to current year. Prior to October 1956, records for river and El Dorado Canal published separately; combined flow only, October 1956 to September 1960.

CHEMICAL DATA: Water years 1979, 1980.

BIOLOGICAL DATA: Water years 1979, 1980.

SUSPENDED SEDIMENT: Water year 1980.

WATER TEMPERATURE: Water years 1966–79.

REVISED RECORDS.—WSP 1445: 1923(M), 1925(M), 1927(M), 1928 (river only), 1935–37(M). WSP 1515: 1928 (combined). WSP 1931: Drainage area.

GAGE.—Water-stage recorder on river; water-stage recorder for canal diversion (station 11439000). Elevation of gage is 3,840 ft above sea level, from topographic map. Prior to Oct. 1, 1962, at datum 1.00 ft higher.

REMARKS.—Low and medium flows regulated by Echo Lake, Silver Lake, Caples Lake (stations 10336608, 11435900, and 11436950), and Lake Aloha, total capacity, 37,100 acre-ft. Some water is diverted out of river 0.6 mi upstream at diversion dam to El Dorado Canal (station 11439000). Part of this water is used for irrigation and domestic use and the remainder is returned to river at El Dorado Powerplant. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—River only: Maximum discharge, 25,000 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 14.26 ft (from floodmarks), from rating curve extended above 6,300 ft<sup>3</sup>/s on basis of contracted-opening measurement at gage height 10.40 ft; minimum daily, 0.13 ft<sup>3</sup>/s, Nov. 26, 1977.

Combined flow: Maximum discharge, 25,000 ft<sup>3</sup>/s, Jan. 2, 1997; minimum daily, 10 ft<sup>3</sup>/s, Oct. 17, 19, 1929.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	57	72	89	194	227	697	2130	1950	2070	305	96
2	87	56	68	107	288	236	636	2310	2220	2060	295	95
3	86	56	67	101	884	252	620	2190	2030	1990	281	92
4	83	55	67	97	512	246	579	2100	1840	1930	249	107
5	81	55	70	81	366	242	550	1910	2000	1930	240	123
6	79	55	80	91	371	245	533	1780	2640	1930	229	157
7	78	55	112	108	358	224	509	1570	3560	1900	222	129
8	76	54	96	98	324	224	485	1690	2800	1880	209	181
9	96	54	79	96	291	219	478	1810	2630	1690	199	252
10	106	54	77	103	268	229	489	1620	2890	1790	189	195
11	101	55	77	122	264	255	493	1390	2770	1650	158	191
12	90	56	61	193	269	292	468	1310	2910	1480	155	184
13	84	56	52	178	291	299	462	1180	3460	1370	124	180
14	84	59	53	150	325	297	445	1080	3380	1190	109	177
15	83	57	51	598	295	362	426	1050	3340	1050	159	178
16	83	56	64	708	263	455	420	1150	3320	1010	120	178
17	88	56	74	937	257	529	435	1030	3030	937	138	180
18	88	56	73	626	239	541	494	1020	3100	923	136	173
19	85	64	66	463	251	575	611	1210	3190	947	140	180
20	84	79	73	355	242	686	809	1350	3060	937	140	181
21	83	64	61	301	248	743	1140	1290	3020	951	137	180
22	79	61	65	283	247	1030	1450	1160	2850	871	131	177
23	78	63	67	275	244	1550	1600	1300	2510	788	130	176
24	76	64	69	262	228	3750	1260	1350	2380	708	125	179
25	74	75	71	246	219	2240	1130	1880	2480	659	117	180
26	73	171	77	237	214	1460	1140	1470	2390	570	112	180
27	73	109	83	237	214	1230	1330	1200	2220	481	109	196
28	73	88	84	236	217	1050	1560	1200	2210	405	106	192
29	73	82	86	220	---	911	1800	1300	2220	373	106	213
30	75	76	90	199	---	813	2030	1210	2190	362	102	214
31	60	---	90	194	---	760	---	1510	---	332	100	---
TOTAL	2542	1998	2275	7991	8383	22172	25079	45750	80590	37164	5072	5116
MEAN	82.0	66.6	73.4	258	299	715	836	1476	2686	1199	164	171
MAX	106	171	112	937	884	3750	2030	2310	3560	2070	305	252
MIN	60	54	51	81	194	219	420	1020	1840	332	100	92
AC-FT	5040	3960	4510	15850	16630	43980	49740	90750	159900	73710	10060	10150

## 11439500 SOUTH FORK AMERICAN RIVER NEAR KYBURZ, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1998, BY WATER YEAR (WY)

MEAN	34.8	77.8	130	155	173	274	634	1198	848	186	25.7	24.0
MAX	223	1283	1587	1964	1333	1252	1497	2765	3551	1628	343	417
(WY)	1984	1951	1951	1997	1986	1986	1982	1969	1983	1995	1983	1983
MIN	.77	.49	.69	.57	.76	2.42	38.9	56.8	.76	.62	.58	.54
(WY)	1929	1929	1931	1929	1931	1933	1977	1977	1924	1924	1926	1924

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1923 - 1998	
ANNUAL TOTAL	209977		244132			
ANNUAL MEAN	575		669		314	
HIGHEST ANNUAL MEAN					907	
LOWEST ANNUAL MEAN					19.4	
HIGHEST DAILY MEAN	18000	Jan 2	3750	Mar 24	18000	Jan 2 1997
LOWEST DAILY MEAN	51	Dec 15	51	Dec 15	.13	Nov 26 1977
ANNUAL SEVEN-DAY MINIMUM	55	Nov 4	55	Nov 4	.36	Nov 5 1928
INSTANTANEOUS PEAK FLOW			4970	Mar 24	25000	Jan 2 1997
INSTANTANEOUS PEAK STAGE			7.31	Mar 24	14.26	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	416500		484200		227100	
10 PERCENT EXCEEDS	1270		2010		1030	
50 PERCENT EXCEEDS	236		242		50	
90 PERCENT EXCEEDS	69		69		2.8	

11439501 SOUTH FORK AMERICAN RIVER NEAR KYBURZ, CA—Continued

## SOUTH FORK AMERICAN RIVER AND EL DORADO CANAL NEAR KYBURZ, CA

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	57	72	89	194	227	697	2130	1950	2070	305	135
2	87	56	68	107	288	236	636	2310	2220	2060	295	134
3	86	56	67	101	884	252	620	2190	2030	1990	281	131
4	83	55	67	97	512	246	579	2100	1840	1930	249	147
5	81	55	70	81	366	242	550	1910	2000	1930	240	162
6	79	55	80	91	371	245	533	1780	2640	1930	230	196
7	78	55	112	108	358	224	509	1570	3560	1900	222	167
8	76	54	96	98	324	224	485	1690	2800	1880	212	219
9	96	54	79	96	291	219	478	1810	2630	1690	199	290
10	106	54	77	103	268	229	489	1620	2890	1790	191	231
11	101	55	77	122	264	255	493	1390	2770	1650	170	227
12	90	56	61	193	269	292	468	1310	2910	1480	161	220
13	84	56	52	178	291	299	462	1180	3460	1370	146	216
14	84	59	53	150	325	297	445	1080	3380	1190	144	213
15	83	57	51	598	295	362	426	1050	3340	1050	198	214
16	83	56	64	708	263	455	420	1150	3320	1010	155	215
17	88	56	74	937	257	529	435	1030	3030	937	139	210
18	88	56	73	626	239	541	494	1020	3100	923	165	200
19	85	64	66	463	251	575	611	1210	3190	947	178	207
20	84	79	73	355	242	686	809	1350	3060	937	178	208
21	83	64	61	301	248	743	1140	1290	3020	951	175	207
22	79	61	65	283	247	1030	1450	1160	2850	871	169	204
23	78	63	67	275	244	1550	1600	1300	2510	788	168	203
24	76	64	69	262	228	3750	1260	1350	2380	708	163	206
25	74	75	71	246	219	2240	1130	1880	2480	659	154	207
26	73	171	77	237	214	1460	1140	1470	2390	570	151	207
27	73	109	83	237	214	1230	1330	1200	2220	481	149	223
28	73	88	84	236	217	1050	1560	1200	2210	405	146	216
29	73	82	86	220	---	911	1800	1300	2220	373	146	236
30	75	76	90	199	---	813	2030	1210	2190	362	141	233
31	60	---	90	194	---	760	---	1510	---	332	139	---
TOTAL	2542	1998	2275	7991	8383	22172	25079	45750	80590	37164	5759	6084
MEAN	82.0	66.6	73.4	258	299	715	836	1476	2686	1199	186	203
MAX	106	171	112	937	884	3750	2030	2310	3560	2070	305	290
MIN	60	54	51	81	194	219	420	1020	1840	332	139	131
AC-FT	5040	3960	4510	15850	16630	43980	49740	90750	159900	73710	11420	12070
a	0	0	0	0	0	0	0	0	0	0	1360	1920

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1998, BY WATER YEAR (WY)

MEAN	110	162	222	243	271	381	741	1321	980	313	149	134
MAX	365	1301	1698	1964	1412	1344	1533	2905	3561	1637	357	424
(WY)	1983	1951	1951	1997	1986	1986	1982	1969	1983	1995	1983	1983
MIN	20.8	25.2	44.2	36.5	38.4	53.7	178	207	99.7	75.0	73.0	46.4
(WY)	1978	1930	1960	1929	1977	1977	1977	1977	1924	1994	1994	1987

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1923 - 1998	
ANNUAL TOTAL	209977		245787			
ANNUAL MEAN	575		673		419	
HIGHEST ANNUAL MEAN					980	
LOWEST ANNUAL MEAN					104	
HIGHEST DAILY MEAN	18000	Jan 2	3750	Mar 24	18000	Jan 2 1997
LOWEST DAILY MEAN	51	Dec 15	51	Dec 15	10	Oct 17 1929
ANNUAL SEVEN-DAY MINIMUM	55	Nov 4	55	Nov 4	13	Oct 6 1929
INSTANTANEOUS PEAK FLOW			4970	Mar 24	25000	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	416500		487500		303500	
ANNUAL DIVERSION (AC-FT) a	101		3280			
10 PERCENT EXCEEDS	1270		2010		1150	
50 PERCENT EXCEEDS	236		242		167	
90 PERCENT EXCEEDS	69		69		74	

a Diversion, in acre-feet, to El Dorado Canal, provided by Pacific Gas &amp; Electric Co.

## 11441001 UNION VALLEY RESERVOIR NEAR RIVERTON, CA

LOCATION.—Lat 38°51'33", long 120°26'13", in NW 1/4 NW 1/4 sec.29, T.12 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, in valve control house near left bank at Union Valley Dam on Silver Creek, 0.7 mi upstream from Little Silver Creek, and 6.6 mi north of Riverton.

DRAINAGE AREA.—83.7 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1962 to current year.

CHEMICAL ANALYSES.—June to September 1996.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District).

REMARKS.—Reservoir is formed by earthfill dam completed in December 1962; storage began May 1962. Usable capacity, 269,514 acre-ft between elevations 4,645.0 ft, minimum operating level, and 4,870.0 ft, top of radial spillway gates. Dead storage, 7,921 acre-ft. Reservoir receives water from the South Fork Rubicon River via Robbs Peak Powerplant (station 11429300) and from South Fork Silver Creek, since April 1985, via Jones Fork Powerplant (station 11440900). Water is used for power development in the South Fork American River Basin. Discharge to Union Valley Powerplant (station 11441002) is shown as a line item below this table. Records, including extremes, represent total contents. See schematic diagrams of Middle Fork American and Rubicon River Basins and South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 279,100 acre-ft, July 9, 1974, elevation, 4,870.6 ft; minimum since reservoir first filled, 18,300 acre-ft, Jan. 13, 1977, elevation, 4,683.3 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 276,027 acre-ft, July 20, elevation, 4,869.53 ft; minimum, 131,720 acre-ft, Jan. 10, elevation, 4,807.67 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Sacramento Municipal Utility District, recomputed October 1991)

4,680	17,675	4,780	89,926
4,700	25,160	4,800	118,894
4,720	35,266	4,820	154,489
4,740	48,883	4,840	197,460
4,760	66,841	4,870	277,435

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182329	160224	152501	136565	162794	171531	192141	208833	252282	273850	260389	210745
2	180543	159481	152346	137083	164511	171045	192625	213985	253883	274118	258273	210352
3	178923	159622	151226	137460	168129	170961	193247	218673	256908	274266	257220	209126
4	177530	159722	151187	137137	170265	169824	193571	221643	258102	274207	256312	207784
5	176729	159141	150783	135124	172209	168630	194822	225185	259787	273999	255972	205626
6	175284	158661	150456	133906	173656	167775	194822	228245	262142	274296	255745	203507
7	174726	158043	151361	133239	174362	166509	194080	230233	266402	274832	253854	202287
8	173379	157864	150687	132766	174426	165333	192970	233555	268565	275041	252422	200337
9	172570	157884	150130	132242	173977	164818	192256	236243	270505	274952	250799	198305
10	171828	158761	150034	131720	173720	163712	191751	238253	271863	275190	249880	196056
11	171277	159261	149098	132347	173955	162815	190880	238710	273226	275340	247909	193247
12	170686	159301	148204	133994	174512	161880	190697	238926	273404	275638	246860	191178
13	170118	158003	147862	134700	175413	160809	189784	239007	274326	275698	245456	189033
14	168944	157387	147521	135089	176750	159843	189101	239061	274296	275788	244769	186771
15	168192	157307	146728	139553	177595	158881	187990	238818	274415	275369	243237	185177
16	167754	156515	145958	144071	177769	159001	187041	239384	273078	275310	241170	183660
17	166778	155923	145003	149289	177617	159141	186546	239816	271449	275429	239870	181798
18	166323	155332	144704	152191	177270	159081	185715	239924	271449	275907	238226	179951
19	165539	154567	143848	154254	176988	159461	185872	240384	272900	275459	236189	177682
20	165003	154176	143496	155195	176361	159943	186074	242039	273137	276027	233846	175801
21	164736	153590	142756	156495	176469	160607	187448	243074	272662	275638	231573	174298
22	164449	153746	141652	157109	175844	162570	189556	242883	272189	274743	229290	171679
23	164429	153337	140408	158043	175241	166406	192164	243401	271508	274237	227335	171341
24	163876	153065	139589	158841	175134	176707	194265	243838	271242	273256	225650	170539
25	163508	153240	139517	159642	174812	182727	195008	246970	272189	272840	223692	169446
26	162631	153512	138612	159602	174233	185648	195753	247578	272781	271981	220777	168338
27	161657	153785	138161	159762	173720	188239	197038	247522	273167	271272	218824	167276
28	161617	153590	138089	159943	172761	189921	198729	247412	273375	269592	216583	165662
29	162388	153649	137352	161334	---	191223	202431	248297	273701	268038	215431	165621
30	161637	152967	136779	161576	---	191751	205191	248574	273790	265267	213215	165003
31	160990	---	137227	162124	---	192027	---	250186	---	262718	211730	---
MAX	182329	160224	152501	162124	177769	192027	205191	250186	274415	276027	260389	210745
MIN	160990	152967	136779	131720	162794	158881	185715	208833	252282	262718	211730	165003
a	4823.27	4819.22	4810.79	4823.83	4828.95	4837.66	4843.25	4860.58	4868.78	4865.00	4845.93	4825.24
b	-23360	-8023	-15740	+24897	+10637	+19266	+13164	+44995	+23604	-11072	-50988	-46727
c	30940	16240	25550	19980	36640	53020	59420	53600	81600	80790	78390	57390

CAL YR 1997 MAX 276925 MIN 136779 b -93084 c 529700

WTR YR 1998 MAX 276027 MIN 131720 b -19347 c 593600

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Diversion, in acre-feet, to Union Valley Powerplant, provided by Sacramento Municipal Utility District.

## 11441100 ICE HOUSE RESERVOIR NEAR KYBURZ, CA

LOCATION.—Lat 38°49'51", long 120°21'35", in SE 1/4 NW 1/4 sec.1, T.11 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, in powerplant intake structure near right bank, 0.5 mi north of Ice House Dam on South Fork Silver Creek, and 5.2 mi northwest of Kyburz.

DRAINAGE AREA.—27.2 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1959 to current year.

CHEMICAL ANALYSES: June to September 1996.

REVISED RECORDS.—WSP 1931: 1960.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District). Prior to July 15, 1985, at site 0.5 mi downstream at Ice House Dam at same datum.

REMARKS.—Reservoir is formed by an earthfill dam; storage began Dec. 15, 1959. Usable capacity, 45,839 acre-ft between elevations 5,327.5 ft, centerline of fishwater outlet, and 5,450.0 ft, top of spillway gates. Dead storage, 160 acre-ft. Reservoir is used to store water for power development. Reservoir is also forebay for Jones Fork Powerplant (station 11440900), which diverts up to 350 ft<sup>3</sup>/s to powerplant completed in April 1985, then to Union Valley Reservoir (station 11441001). Records, including extremes, represent total contents. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 46,400 acre-ft, June 27, 1971, elevation, 5,450.6 ft; minimum since reservoir first filled, 1,450 acre-ft, Dec. 8, 1983, elevation, 5,347.9 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 45,942 acre-ft, July 9, 10, elevation, 5,449.92 ft; minimum, 13,854 acre-ft, Apr. 21, elevation, 5,391.03 ft.

Capacity table (elevation, in feet, and contents in acre-feet)  
(Based on table provided by Sacramento Municipal Utility District, recomputed in October 1991)

5,345	1,080	5,400	17,665
5,350	1,801	5,420	27,406
5,360	3,751	5,440	39,167
5,380	9,663	5,451	46,721

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28590	27667	27092	23903	21221	19543	17554	17157	28460	44965	44233	34650
2	28596	27646	27103	23644	21288	19469	17342	18160	28967	45071	44261	34169
3	28574	27337	27108	23529	21236	19313	17175	18997	29324	45213	43904	33734
4	28487	27050	27119	23435	21179	19065	17140	19658	29550	45363	43508	33408
5	28487	27029	27145	23251	21098	18956	16973	20225	30106	45470	43086	33249
6	28449	27018	27193	22906	21198	18874	16785	20521	31165	45612	42818	33096
7	28416	26997	27331	22558	21188	18674	16542	21007	32809	45748	42626	32885
8	28395	26970	27395	22305	21226	18525	16344	21585	33895	45863	42271	32891
9	28395	26955	27416	22052	21226	18290	16249	22266	34952	45942	42319	32949
10	28444	26933	27337	21845	21117	17972	16000	22798	36065	45942	42033	32979
11	28422	26923	27289	21633	21121	17776	15761	23246	37118	45805	41655	32985
12	28400	26907	27140	21441	20936	17474	15541	23619	38207	45555	41372	32973
13	28379	26907	27039	21093	20601	17197	15317	23918	39642	45455	41044	32850
14	28357	26896	26970	20860	20582	16938	15053	24124	41030	45420	40657	32785
15	28346	26744	26759	20955	20558	16881	14994	24285	42156	45284	40300	32768
16	28335	26733	26680	21164	20549	16690	14686	24553	42969	45164	40069	32651
17	28324	26633	26470	21614	20511	16525	14406	24533	43577	45057	39747	32634
18	28314	26623	26318	21907	20244	16309	14217	24736	44254	44944	39310	32605
19	28292	26670	26068	21912	20155	16150	14041	24929	44979	44866	38921	32575
20	28276	26691	25808	21830	20141	15996	13883	25108	45299	44725	38541	32546
21	28254	26701	25731	21700	20104	15889	13854	25277	44887	44647	38163	32517
22	28232	26722	25426	21671	20099	16013	14106	25437	44485	44492	37831	32482
23	28130	26728	25165	21633	20048	16206	14537	25633	44282	44317	37464	32447
24	28108	26754	24970	21633	19862	17408	14695	26099	44605	44205	37067	32430
25	28076	26802	24853	21618	19779	17825	14932	26691	45064	44128	36717	32407
26	28049	26944	24700	21566	19728	17838	14990	27029	45420	44044	36468	32401
27	28027	26997	24609	21556	19704	18079	15124	27166	45064	43904	36096	32384
28	28006	27039	24538	21408	19649	18048	15283	27337	44725	43904	35967	32354
29	27737	27066	24200	21231	---	17887	15591	27561	44732	43960	35678	32349
30	27705	27087	24069	21231	---	17754	16270	27705	44916	44100	35445	32349
31	27684	---	23969	21207	---	17616	---	27979	---	44205	35098	---
MAX	28596	27667	27416	23903	21288	19543	17554	27979	45420	45942	44261	34650
MIN	27684	26623	23969	20860	19649	15889	13854	17157	28460	43904	35098	32349
a	5420.55	5419.43	5413.38	5407.83	5404.40	5399.91	5396.91	5420.93	5448.29	5447.37	5433.48	5428.84
b	-944	-597	-3118	-2762	-1558	-2033	-1346	+11709	+16937	-711	-9107	-2749

CAL YR 1997 MAX 45935 MIN 19193

WTR YR 1998 MAX 45942 MIN 13854

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11441500 SOUTH FORK SILVER CREEK NEAR ICE HOUSE, CA

LOCATION.—Lat 38°49'08", long 120°21'51", in NW 1/4 NW 1/4 sec.12, T.11 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 300 ft upstream from Peavine Creek, 0.4 mi downstream from Ice House Dam, and 4.8 mi northwest of Kyburz.

DRAINAGE AREA.—27.5 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1924 to current year.

REVISED RECORDS.—WSP 1395: 1928, 1938. WSP 1635: Drainage area at former site.

GAGE.—Water-stage recorder and concrete control. Elevation of gage is 5,290 ft above sea level, from topographic map. Prior to Oct. 1, 1959, at site 0.3 mi upstream at different datum.

REMARKS.—Flow regulated by Ice House Reservoir (station 11441100) beginning in December 1959. Diversion to Jones Fork Powerplant (station 11440900) starting April 1985 bypasses station and returns to Silver Creek at Union Valley Reservoir (station 11441001). See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge prior to construction of Ice House Dam in 1959, 3,940 ft<sup>3</sup>/s, Dec. 23, 1955, gage height, 6.71 ft, site and datum then in use, from rating curve extended above 540 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 6.69 ft; no flow Oct. 31 to Nov. 9, 1958. Maximum discharge since construction of the dam, 7,530 ft<sup>3</sup>/s, May 16, 1996, gage height, 7.64 ft, from rating curve extended above 730 ft<sup>3</sup>/s on basis of computation of flow over dam at gage height 5.66 ft; minimum daily, 1.2 ft<sup>3</sup>/s, Mar. 17–19, 1960.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	13	4.7	5.9	4.5	5.9	5.4	9.6	10	82	16	16
2	15	12	4.9	6.3	6.3	5.4	5.4	11	10	50	15	16
3	14	12	5.2	6.2	6.7	5.5	5.6	11	9.8	16	15	16
4	14	12	5.2	6.3	5.0	5.1	5.6	11	9.7	16	15	16
5	14	12	5.8	5.6	4.7	5.0	5.8	11	10	16	16	17
6	14	12	5.9	4.0	5.2	5.0	5.7	10	11	16	16	16
7	14	12	6.8	4.3	4.9	4.9	5.4	9.5	11	16	16	16
8	14	12	6.3	4.2	4.6	5.0	5.0	9.5	11	16	16	17
9	14	12	5.8	4.2	4.6	4.8	5.3	9.6	10	16	17	17
10	15	12	6.5	4.5	4.7	4.8	5.3	9.5	11	45	17	17
11	15	11	5.5	6.2	4.8	4.9	5.4	9.5	11	72	17	18
12	14	11	5.5	7.8	4.7	5.0	5.2	9.8	11	72	16	17
13	14	12	5.5	5.4	5.3	5.0	5.4	10	11	49	16	18
14	14	12	6.0	6.1	5.3	5.2	5.6	9.9	11	16	16	18
15	14	12	5.8	12	5.2	5.5	5.2	10	10	15	16	17
16	14	12	5.9	8.3	4.8	6.0	5.3	10	10	15	16	18
17	14	8.2	5.9	7.1	4.5	6.2	5.1	11	10	15	15	19
18	14	4.5	6.0	6.2	4.2	6.3	5.4	10	11	15	17	19
19	14	5.0	6.2	5.9	4.3	6.3	5.7	9.4	11	16	16	19
20	14	4.9	5.9	5.3	4.3	6.4	6.0	9.4	168	16	16	16
21	14	5.1	6.2	4.7	4.2	5.9	6.4	9.5	457	16	16	17
22	14	5.5	6.0	4.6	4.1	6.6	6.1	9.7	423	16	16	18
23	14	4.9	5.8	4.6	4.0	7.0	5.7	10	267	17	16	18
24	14	4.7	6.5	4.6	4.3	13	5.8	10	10	17	16	17
25	14	4.8	6.5	4.6	5.0	8.3	5.5	11	11	18	16	18
26	15	5.6	6.5	4.4	5.1	7.2	5.5	10	92	18	16	19
27	15	5.0	6.5	4.5	5.2	7.3	5.7	10	339	16	16	17
28	15	5.2	6.5	4.4	5.9	6.9	5.7	10	339	16	16	16
29	15	5.1	6.5	4.6	---	6.3	6.8	10	187	16	16	16
30	15	5.0	6.2	4.4	---	5.9	9.0	10	82	17	16	16
31	15	---	5.9	4.4	---	5.5	---	10	---	18	16	---
TOTAL	444	264.5	184.4	171.6	136.4	188.1	171.0	310.9	2574.5	775	496	515
MEAN	14.3	8.82	5.95	5.54	4.87	6.07	5.70	10.0	85.8	25.0	16.0	17.2
MAX	15	13	6.8	12	6.7	13	9.0	11	457	82	17	19
MIN	14	4.5	4.7	4.0	4.0	4.8	5.0	9.4	9.7	15	15	16
AC-FT	881	525	366	340	271	373	339	617	5110	1540	984	1020
a	405	865	3950	7260	4870	9960	10120	4060	10650	12390	9660	2480

a Diversion, in acre-feet, to Jones Fork Powerplant, provided by Sacramento Municipal Utility District.

## 11441500 SOUTH FORK SILVER CREEK NEAR ICE HOUSE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1959, BY WATER YEAR (WY)

MEAN	4.98	24.1	36.6	31.3	35.8	61.6	155	296	197	42.7	5.82	2.03
MAX	28.0	326	305	163	91.7	191	280	531	418	132	22.8	7.62
(WY)	1948	1951	1951	1956	1925	1928	1943	1952	1952	1952	1952	1952
MIN	.65	.64	2.34	3.00	3.00	6.92	54.9	66.2	35.0	2.92	.22	.18
(WY)	1933	1930	1933	1933	1933	1933	1944	1934	1931	1934	1931	1931

## SUMMARY STATISTICS

## WATER YEARS 1925 - 1959

ANNUAL MEAN	74.5	
HIGHEST ANNUAL MEAN	123	1956
LOWEST ANNUAL MEAN	25.3	1931
HIGHEST DAILY MEAN	2780	Dec 23 1955
LOWEST DAILY MEAN	.00	Oct 31 1958
ANNUAL SEVEN-DAY MINIMUM	.00	Oct 31 1958
INSTANTANEOUS PEAK FLOW	3940	Dec 23 1955
INSTANTANEOUS PEAK STAGE	6.71	Dec 23 1955
ANNUAL RUNOFF (AC-FT)	53970	
10 PERCENT EXCEEDS	237	
50 PERCENT EXCEEDS	20	
90 PERCENT EXCEEDS	1.4	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1984, BY WATER YEAR (WY)

MEAN	112	87.6	49.4	57.1	71.2	43.6	56.0	125	157	78.1	80.9	90.1
MAX	330	332	171	216	316	199	348	449	382	363	378	360
(WY)	1970	1966	1980	1982	1971	1969	1983	1982	1983	1983	1983	1983
MIN	5.64	5.05	5.21	4.76	5.48	3.67	2.94	4.17	3.80	4.02	3.79	3.97
(WY)	1965	1963	1963	1967	1973	1984	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## WATER YEARS 1961 - 1984

ANNUAL MEAN	84.0	
HIGHEST ANNUAL MEAN	226	1983
LOWEST ANNUAL MEAN	24.8	1977
HIGHEST DAILY MEAN	1560	Jan 22 1970
LOWEST DAILY MEAN	1.3	Jan 26 1984
ANNUAL SEVEN-DAY MINIMUM	1.4	Jan 24 1984
INSTANTANEOUS PEAK FLOW	1930	May 26 1982
INSTANTANEOUS PEAK STAGE	5.74	May 26 1982
ANNUAL RUNOFF (AC-FT)	60830	
10 PERCENT EXCEEDS	256	
50 PERCENT EXCEEDS	12	
90 PERCENT EXCEEDS	5.3	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

MEAN	9.76	7.43	5.50	19.0	5.63	9.68	5.36	14.1	26.2	15.7	11.6	11.6
MAX	14.3	11.2	6.12	184	7.03	55.0	6.13	87.9	168	61.9	18.2	17.6
(WY)	1998	1997	1993	1997	1986	1986	1990	1996	1995	1995	1997	1996
MIN	5.32	5.65	4.78	3.65	3.97	4.13	4.01	5.49	5.54	5.46	5.21	5.29
(WY)	1989	1993	1990	1987	1987	1987	1986	1988	1988	1987	1992	1992

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1986 - 1998

ANNUAL TOTAL	9400.4		6231.4	
ANNUAL MEAN	25.8		17.1	
HIGHEST ANNUAL MEAN				11.8
LOWEST ANNUAL MEAN				26.2
HIGHEST DAILY MEAN	2840	Jan 2	457	Jun 21
LOWEST DAILY MEAN	4.5	Nov 18	4.0	Jan 6
ANNUAL SEVEN-DAY MINIMUM	4.6	Apr 2	4.2	Feb 18
INSTANTANEOUS PEAK FLOW			466	Jun 20
INSTANTANEOUS PEAK STAGE			4.43	Jun 20
ANNUAL RUNOFF (AC-FT)	18650		12360	
ANNUAL DIVERSION (AC-FT) a	67390		76670	
10 PERCENT EXCEEDS	18		17	
50 PERCENT EXCEEDS	9.0		10	
90 PERCENT EXCEEDS	4.9		4.8	

a Diversion, in acre-feet, to Jones Fork Powerplant, provided by Sacramento Municipal Utility District.

## 11441760 JUNCTION RESERVOIR NEAR POLLOCK PINES, CA

LOCATION.—Lat 38°51'07", long 120°27'22", in SW 1/4 SW 1/4 sec.30, T.12 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, in outlet structure to Jaybird Powerplant 100 ft upstream from left abutment of Junction Diversion Dam, 0.3 mi downstream from South Fork Silver Creek and 9.0 mi northeast of Pollock Pines.

DRAINAGE AREA.—147 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1991 to current year. Unpublished records for water years 1980–91 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District). Prior to Apr. 13, 1987, nonrecording gage at same site and datum.

REMARKS.—Reservoir is formed by concrete arch dam completed in 1962. Storage began in 1962. Usable capacity, 2,368 acre-ft, between elevations 4,397 ft, maximum drawdown level, and 4,450 ft, crest of spillway. Dead storage, 862 acre-ft. Most of the flow is diverted at this reservoir to Jaybird Powerplant (station 11441780). Records, including extremes, represent total contents at 2400 hours. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 3,737 acre-ft, Jan. 2, 1997, elevation, 4,459.10 ft; minimum, 875 acre-ft, Oct. 3, 1991, elevation, 4,397.47 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 3,412 acre-ft, June 16, elevation, 4,453.28 ft; minimum, 1,430 acre-ft, Nov. 10, elevation, 4,413.55 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Sacramento Municipal Utility District, recomputed October 1991)

4,390	692	4,420	1,703
4,400	949	4,440	2,687
4,410	1,290	4,460	3,788

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2991	3181	2893	2957	1942	2508	2426	2855	2762	3344	3025	3013
2	2998	3036	2609	2851	1663	2420	2641	2990	3345	3306	2930	2915
3	2858	2826	2985	2617	1838	2577	2772	2330	2905	3307	2823	3048
4	2895	3050	2945	2859	2055	2862	2840	3040	2471	3309	3024	3003
5	3054	2894	2892	2977	2092	2789	2592	2819	2379	3310	2900	3050
6	3072	2702	3038	2862	2703	2735	2436	3024	2462	3277	2916	3027
7	2802	2659	2655	2806	2741	2824	2604	2973	2764	3271	2783	2988
8	2936	2232	3051	2897	2619	2752	2678	2515	2575	3271	2959	2913
9	2978	1445	3024	2816	2701	2626	2754	2880	2564	3270	2974	2895
10	3117	1430	2921	2853	2820	2705	2750	2743	2679	3272	2841	2866
11	3031	1521	3038	2629	2831	2667	2638	2783	3117	3286	2975	2945
12	3030	1842	2942	2840	2762	2675	2747	2592	3358	3283	3065	3008
13	2891	2843	2862	2882	2716	2649	2797	2570	3357	3167	3155	2739
14	3124	2875	2870	2687	2561	2716	2887	2546	3357	3125	2962	3088
15	3147	2712	2822	3117	2688	2700	2773	2631	3379	3000	2849	2871
16	3004	2995	2860	2941	2473	2463	2840	2544	3412	3073	2819	3004
17	3200	3046	3123	2816	2465	2535	2606	2614	3410	3072	2917	3045
18	3020	2925	2803	2784	2567	2713	2673	2884	3340	3008	2754	2821
19	3045	3116	3090	2572	2534	2827	2548	2920	3339	3044	2785	2853
20	3050	3056	3003	2699	2668	2682	2594	2597	3410	2990	2954	2816
21	2917	3097	2946	2588	2602	2696	2716	2612	3410	3028	3150	2781
22	2799	2659	2881	2770	2561	2707	2935	2583	3409	2977	2828	3144
23	3080	2805	2922	2764	2509	2510	3015	2641	3381	3015	2717	2866
24	2990	2964	2992	2783	2477	3166	2445	2648	3336	2971	2806	3022
25	2895	2757	2797	2713	2468	2906	2465	2445	3336	2850	3012	3005
26	2964	3067	3059	2906	2643	2826	2665	2439	3360	2850	2979	2932
27	2922	2821	2972	2888	2512	2438	2587	2589	3365	2922	2932	2869
28	2794	2841	2849	2965	2378	2497	2722	2670	3365	3008	2986	3136
29	3006	2741	2946	2540	---	2476	2416	2609	3344	2721	3004	2814
30	3091	3068	3045	2732	---	2470	2427	2504	3343	2705	2895	3026
31	3146	---	2586	2495	---	2736	---	2431	---	2915	2894	---
MAX	3200	3181	3123	3117	2831	3166	3015	3040	3412	3344	3155	3144
MIN	2794	1430	2586	2495	1663	2420	2416	2330	2379	2705	2717	2739
a	4448.47	4447.06	4438.08	4436.34	4434.07	4440.92	4435.01	4435.10	4452.03	4444.25	4443.86	4446.28
b	+189	-78	-482	-91	-117	+358	-309	+4	+912	-428	-21	+132
CAL YR 1997	MAX 3737	MIN 891	b -809									
WTR YR 1998	MAX 3412	MIN 1430	b +69									

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.



## 11441800 SILVER CREEK BELOW JUNCTION DAM, NEAR POLLOCK PINES, CA

LOCATION.—Lat 38°51'08", long 120°27'22", in SW 1/4 SW 1/4 sec.30, T.12 N., R.14 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, at outlet structure on Junction Dam, and 9 mi northeast of Pollock Pines.

DRAINAGE AREA.—147 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year (low-flow records only). Unpublished records for water years 1965–87 available in files of the U.S. Geological Survey.

GAGE.—Differential-pressure gage and orifice control in outlet pipe. Auxiliary nonrecording gage 550 ft downstream at different datum. Elevation of gage is 4,280 ft above sea level, from topographic map. August 1964 to December 1986, nonrecording gage at site 500 ft downstream at different datum. December 1986 to September 1987, nonrecording gage at site 550 ft downstream.

REMARKS.—Records not computed above 30 ft<sup>3</sup>/s. Flow completely regulated by Junction Dam. Flow over the spillway bypasses this station. Diversion through Jaybird Powerplant (station 11441780) since 1962 bypasses this station. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	15	11	11	11	11	11	21	21	---	21	21
2	22	11	11	11	11	11	11	21	---	---	21	21
3	22	11	11	11	11	11	11	21	---	---	21	21
4	22	11	11	11	11	11	11	21	21	---	21	21
5	22	11	11	11	11	11	11	21	21	---	21	21
6	22	11	11	11	11	11	11	21	21	---	21	21
7	22	11	11	11	11	11	11	21	21	21	21	21
8	22	11	11	11	11	11	11	21	21	21	21	21
9	22	11	13	11	11	11	11	21	21	21	21	21
10	22	11	11	11	11	11	11	21	21	21	21	21
11	22	11	11	11	11	11	11	21	21	21	21	21
12	22	11	12	11	11	11	11	21	---	21	21	21
13	22	11	13	11	11	11	11	21	---	---	21	21
14	22	11	10	11	11	11	11	21	---	21	21	21
15	22	11	10	11	11	11	11	21	---	21	21	21
16	22	11	11	11	11	11	11	21	---	21	21	21
17	22	11	11	11	11	11	11	21	---	21	21	21
18	22	11	11	11	11	11	11	21	---	21	21	21
19	22	11	11	11	11	11	11	21	---	21	20	21
20	22	11	11	11	11	11	11	21	---	21	21	21
21	22	12	11	11	11	11	11	21	---	21	21	21
22	22	11	11	11	11	11	11	21	---	21	21	21
23	22	11	11	11	11	11	11	21	---	21	21	21
24	22	11	11	11	11	11	11	21	---	21	21	21
25	22	11	11	11	11	11	11	21	---	21	21	21
26	22	11	11	11	11	11	11	21	---	21	21	21
27	22	11	11	11	11	11	11	21	---	21	21	21
28	22	11	11	11	11	11	11	21	---	21	21	21
29	22	11	11	11	---	11	11	21	---	21	21	21
30	22	11	11	11	---	11	18	21	---	21	21	21
31	22	---	11	11	---	11	---	21	---	21	21	---
TOTAL	682	335	344	341	308	341	337	651	---	---	650	630
MEAN	22.0	11.2	11.1	11.0	11.0	11.0	11.2	21.0	---	---	21.0	21.0
MAX	22	15	13	11	11	11	18	21	---	---	21	21
MIN	22	11	10	11	11	11	11	21	---	---	20	21
AC-FT	1350	664	682	676	611	676	668	1290	---	---	1290	1250
a	31200	17300	27250	30970	45730	68910	73050	67100	79670	80750	80330	58660

CAL YR 1997 a 528100

WTR YR 1998 a 660900

a Diversion, in acre-feet, to Jaybird Powerplant, provided by Sacramento Municipal Utility District.

## 11441890 CAMINO RESERVOIR NEAR POLLOCK PINES, CA

LOCATION.—Lat 38°49'44", long 120°32'09", in NW 1/4 NW 1/4 sec.4, T.11 N., R.13 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, in outlet tower to Camino Powerplant 100 ft upstream from right abutment of Camino Diversion Dam, 0.3 mi upstream from Round Tent Canyon, and 5.3 mi northwest of Pollock Pines.

DRAINAGE AREA.—160 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1991 to current year. Unpublished records for water years 1980–91 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District). Prior to Apr. 8, 1987, nonrecording gage at same site and datum.

REMARKS.—Reservoir is formed by concrete-arch dam completed in 1961. Storage began in 1961. Usable capacity, 763 acre-ft, between elevations 2,840 ft, centerline of outlet valve, and 2,915 ft, maximum water surface level. Dead storage, 50 acre-ft. Most of the water is diverted at this reservoir to Camino Powerplant (station 11441895). Records, including extremes, represent total contents at 2400 hours. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 819 acre-ft, Jan. 21, 1993, elevation, 2,915.29 ft; minimum, 208 acre-ft, Oct. 28, 1997, elevation, 2,868.19 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 724 acre-ft, Sept. 22, elevation, 2,910.03 ft; minimum, 208 acre-ft, Oct. 28, elevation, 2,868.19 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Sacramento Municipal Utility District, recomputed October 1991)

2,860	149	2,900	564
2,870	223	2,910	724
2,880	315	2,920	910
2,890	428		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	609	681	624	586	563	596	601	559	595	675	633	578
2	661	692	645	622	590	556	656	591	495	676	628	612
3	662	563	637	584	649	601	695	538	598	648	596	518
4	720	706	595	630	663	529	634	636	613	705	591	556
5	721	673	642	600	620	537	603	604	572	628	579	623
6	647	664	623	586	647	558	662	566	617	621	569	579
7	656	694	585	639	643	633	613	549	542	636	553	633
8	586	664	633	636	593	608	665	550	569	650	579	620
9	665	454	611	640	548	627	593	586	508	618	622	628
10	704	222	625	642	511	643	579	543	582	631	595	654
11	644	214	639	599	539	599	635	644	639	619	704	572
12	641	481	653	601	561	613	553	632	645	607	658	601
13	612	552	603	550	582	606	699	631	634	716	560	569
14	654	652	619	636	630	552	591	569	631	684	686	570
15	627	679	619	663	585	613	672	643	672	678	643	634
16	647	599	613	691	640	626	701	653	669	670	618	684
17	660	668	634	567	614	590	614	634	641	554	566	647
18	629	617	644	577	595	594	703	604	616	631	596	654
19	685	663	695	573	568	645	605	629	671	632	603	622
20	625	599	648	632	651	620	685	642	666	594	622	642
21	668	670	664	603	583	618	710	635	636	622	639	641
22	321	562	644	640	563	649	653	562	604	610	592	724
23	639	602	651	638	589	630	540	637	634	589	517	646
24	621	689	626	649	568	648	621	567	632	632	663	644
25	701	630	651	597	599	627	713	501	652	646	635	653
26	643	623	617	608	603	632	699	564	642	624	585	660
27	434	688	636	614	549	699	630	647	686	547	605	631
28	208	659	632	624	601	663	648	632	685	606	582	649
29	542	606	640	557	---	624	568	576	625	557	645	666
30	710	636	649	656	---	670	504	647	674	596	616	619
31	719	---	650	646	---	633	---	523	---	555	581	---
MAX	721	706	695	691	663	699	713	653	686	716	704	724
MIN	208	214	585	550	511	529	504	501	495	547	517	518
a	2909.69	2904.69	2905.56	2905.32	2902.44	2904.52	2895.79	2897.16	2907.06	2899.41	2901.17	2903.59
b	+74	-83	+14	-4	-45	+32	-129	+19	+151	-119	+26	+38
CAL YR 1997	MAX 739	MIN 208	b +22									
WTR YR 1998	MAX 724	MIN 208	b -26									

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11441900 SILVER CREEK BELOW CAMINO DIVERSION DAM, CA

LOCATION.—Lat 38°49'26", long 120°32'18", on line between secs.4 and 5, T.11 N., R.13 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on right bank 300 ft downstream from Round Tent Canyon, 0.4 mi downstream from diversion dam, and 5 mi northeast of Pollock Pines.

DRAINAGE AREA.—171 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1960 to current year.

GAGE.—Water-stage recorder. Datum of gage is 2,754.06 ft above sea level (Sacramento Municipal Utility District benchmark).

REMARKS.—Flow is regulated by Ice House Reservoir (station 11441100) since 1959, Union Valley Reservoir (station 11441001) since 1962, and Junction and Camino Reservoirs (stations 11441760 and 11441890). Diversion to Camino Powerplant (station 11441895) since 1961 bypasses this station. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, about 47,700 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, 15.72 ft, backwater from log jam, from rating curve extended above 4,700 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 11.28 ft; minimum daily, 1.0 ft<sup>3</sup>/s, Nov. 1, 1980.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	18	12	11	17	19	30	23	23	966	26	28
2	22	12	12	11	43	19	26	24	23	872	26	29
3	22	15	12	11	118	23	26	23	23	575	26	29
4	22	e19	12	11	89	23	25	23	23	479	25	27
5	22	13	12	11	61	22	26	23	23	546	25	28
6	22	12	12	11	59	21	26	23	24	375	25	28
7	22	12	17	11	61	19	24	23	23	186	25	29
8	22	12	12	11	61	18	23	23	24	178	25	29
9	22	15	12	11	48	17	22	23	23	212	25	28
10	22	33	12	13	41	17	22	23	24	179	31	29
11	21	39	11	39	49	17	24	23	78	258	37	28
12	22	28	11	92	48	18	25	23	657	284	37	28
13	21	12	11	59	60	19	25	24	1310	216	35	29
14	22	12	11	43	75	20	23	23	1280	28	37	29
15	22	12	11	409	67	21	21	23	1680	25	36	29
16	22	11	11	116	53	24	21	23	2290	25	36	29
17	22	12	11	97	41	28	22	23	2380	26	34	29
18	22	12	11	70	31	28	22	23	1760	26	36	29
19	22	12	11	60	31	26	24	23	968	27	33	29
20	22	12	11	39	28	25	24	22	1290	28	36	29
21	22	12	11	28	30	25	24	23	2350	28	37	29
22	21	12	11	22	30	29	25	23	2270	27	36	30
23	30	12	11	19	28	38	25	23	2150	27	32	29
24	38	12	11	17	26	736	25	23	1470	26	39	29
25	32	12	11	15	23	348	23	23	898	26	42	29
26	21	12	11	14	21	108	20	23	894	25	36	29
27	26	12	11	13	19	83	19	23	1320	25	29	29
28	25	12	11	13	19	64	17	24	1360	26	27	29
29	35	12	11	18	---	49	16	23	1270	25	29	29
30	35	12	11	16	---	40	20	23	940	25	28	29
31	22	---	11	15	---	35	---	23	---	25	29	---
TOTAL	745	443	356	1326	1277	1979	695	715	28848	5796	980	863
MEAN	24.0	14.8	11.5	42.8	45.6	63.8	23.2	23.1	962	187	31.6	28.8
MAX	38	39	17	409	118	736	30	24	2380	966	42	30
MIN	21	11	11	11	17	17	16	22	23	25	25	27
AC-FT	1480	879	706	2630	2530	3930	1380	1420	57220	11500	1940	1710
a	32340	18760	29640	43270	60690	83130	85170	78170	86860	85270	83000	60650

e Estimated.

a Diversion, in acre-feet, to Camino Powerplant, provided by Sacramento Municipal Utility District.

## 11441900 SILVER CREEK BELOW CAMINO DIVERSION DAM, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1998, BY WATER YEAR (WY)

MEAN	28.1	45.6	74.5	210	122	112	120	195	151	67.7	32.8	26.4
MAX	138	1088	856	4122	1168	1207	956	1505	1019	503	364	188
(WY)	1995	1984	1965	1997	1986	1986	1962	1995	1995	1995	1962	1962
MIN	3.12	3.44	5.39	5.21	5.45	3.56	3.14	3.30	3.29	2.98	3.11	3.18
(WY)	1978	1978	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1961 - 1998	
ANNUAL TOTAL	154838		44023			
ANNUAL MEAN	424		121		98.7	
HIGHEST ANNUAL MEAN					461	1997
LOWEST ANNUAL MEAN					4.16	1977
HIGHEST DAILY MEAN	32900	Jan 2	2380	Jun 17	32900	Jan 2 1997
LOWEST DAILY MEAN	10	Mar 26	11	Nov 16	1.0	Nov 1 1980
ANNUAL SEVEN-DAY MINIMUM	11	Dec 11	11	Dec 11	2.7	Mar 2 1977
INSTANTANEOUS PEAK FLOW			3080	Jun 16	47700	Jan 2 1997
INSTANTANEOUS PEAK STAGE			7.40	Jun 16	15.72	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	307100		87320		71500	
ANNUAL DIVERSION (AC-FT) a	524500		746900			
10 PERCENT EXCEEDS	635		117		145	
50 PERCENT EXCEEDS	23		24		19	
90 PERCENT EXCEEDS	12		12		6.8	

a Diversion, in acre-feet, to Camino Powerplant, provided by Sacramento Municipal Utility District.

## 11442690 BRUSH CREEK RESERVOIR NEAR POLLOCK PINES, CA

LOCATION.—Lat 38°48'42", long 120°37'14", in NW 1/4 SE 1/4 sec.10, T.11 N., R.12 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, in outlet tower to Camino Powerplant 200 ft upstream from left abutment of Brush Creek Diversion Dam, and 4.0 mi northwest of Pollock Pines.

DRAINAGE AREA.—7.99 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1991 to current year. Unpublished records for water years 1980–91 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District). Prior to Apr. 7, 1987, nonrecording gage at same site and datum.

REMARKS.—Reservoir is formed by concrete-arch dam completed in 1970. Storage began in 1970. Usable capacity, 1,273 acre-ft, between elevations 2,825 ft, invert of tunnel, and 2,915 ft, crest of spillway. Dead storage, 259 acre-ft. Most of the water is diverted at this reservoir to Camino Powerplant (station 11441895). Records, including extremes, represent total contents at 2400 hours. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 1,546 acre-ft, Jan. 25, 1997, elevation, 2,915.72 ft; minimum, 541 acre-ft, June 29, 1995, elevation, 2,853.64 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 1,523 acre-ft, June 15, elevation, 2,914.58 ft; minimum, 854 acre-ft, Apr. 2, elevation, 2,877.01 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on table provided by Sacramento Municipal Utility District, recomputed October 1991)

2,820	220	2,870	753
2,830	300	2,880	900
2,840	393	2,890	1,062
2,850	499	2,900	1,239
2,860	619	2,915	1,532

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1131	1300	1227	1196	1272	1183	858	1456	1202	1522	1384	949
2	1131	1291	1224	1232	1318	1216	854	1256	1152	1454	1396	957
3	1101	1283	1219	1231	1468	1261	878	1189	1142	1375	1407	883
4	1223	1274	1215	1227	1276	1300	913	1214	1157	1310	1105	1059
5	1338	1265	1213	1220	1302	1338	958	1233	1187	1273	1083	1055
6	1323	1258	1213	1212	1355	1375	1013	1266	1221	1265	1124	1059
7	1301	1252	1242	1210	1274	1193	1067	1309	1259	1271	1127	1063
8	1295	1246	1254	1208	1267	981	1115	1197	1294	1287	1135	1138
9	1299	1238	1257	1206	1248	948	1164	1197	1328	1303	1080	1141
10	1300	1230	1258	1214	1229	913	1212	1213	1362	1319	1072	1133
11	1301	1224	1256	1288	1252	899	1260	1247	1396	1334	1168	1120
12	1300	1214	1254	1465	1284	902	1308	1285	1429	1316	1019	1122
13	1298	1210	1252	1251	1346	929	1359	1331	1461	1301	1005	1125
14	1295	1207	1250	1203	1353	959	1407	1302	1492	1182	1064	1128
15	1293	1256	1249	1379	1288	989	1453	1239	1523	1134	1054	1132
16	1292	1243	1247	1393	1254	1019	1373	1200	1418	1116	1055	1135
17	1290	1235	1245	1416	1231	975	1336	1174	1409	1166	1062	1210
18	1288	1224	1243	1300	1217	904	1329	1121	1433	1212	1114	1202
19	1287	1219	1240	1309	1228	881	1358	1087	1402	1211	1110	1204
20	1285	1214	1237	1309	1255	882	1407	1073	1389	1233	1114	1208
21	1284	1210	1234	1325	1310	901	1458	1089	1410	1245	1120	1211
22	1284	1205	1230	1339	1238	928	1451	1117	1433	1258	1126	1273
23	1283	1200	1226	1355	1185	964	1397	1146	1455	1270	1132	1264
24	1283	1198	1223	1369	1141	1098	1372	1173	1424	1283	1138	1267
25	1283	1198	1220	1380	1120	1238	1365	1214	1410	1295	1143	1271
26	1282	1226	1216	1389	1113	1323	1380	1248	1426	1308	1149	1276
27	1281	1234	1213	1397	1126	1392	1410	1280	1446	1320	1154	1281
28	1281	1235	1210	1293	1152	1096	1441	1322	1466	1332	1160	1286
29	1281	1234	1206	1252	---	966	1443	1372	1485	1346	1295	1291
30	1336	1232	1202	1253	---	906	1429	1413	1504	1359	1271	1295
31	1316	---	1199	1263	---	873	---	1449	---	1371	1266	---
MAX	1338	1300	1258	1465	1468	1392	1458	1456	1523	1522	1407	1295
MIN	1101	1198	1199	1196	1113	873	854	1073	1142	1116	1005	883
a	2904.16	2899.62	2897.83	2901.34	2895.18	2878.21	2909.95	2910.97	2913.65	2907.01	2901.46	2903.03
b	+178	-84	-33	+64	-111	-279	+556	+20	+55	-133	-105	+29

CAL YR 1997 MAX 1546 MIN 629 b -73

WTR YR 1998 MAX 1523 MIN 854 b +157

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

## 11442700 BRUSH CREEK BELOW BRUSH CREEK DAM, NEAR POLLOCK PINES, CA

LOCATION.—Lat 38°48'41", long 120°37'20", in NW 1/4 SE 1/4 sec.10, T.11 N., R.12 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, at outlet structure on Brush Creek Dam, and 4.0 mi northwest of Pollock Pines.

DRAINAGE AREA.—7.99 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1987 to current year. Unpublished records for water years 1971–87 available in files of the U.S. Geological Survey.

GAGE.—Differential-pressure gage and orifice control in outlet pipe. Auxiliary water-stage recorder 200 ft downstream at different datum. Elevation of gage is 2,700 ft above sea level, from topographic map. Prior to October 1987, nonrecording gage 400 ft downstream at different datum.

REMARKS.—Flow completely regulated by Brush Creek Reservoir (station 11442690). See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily discharge, 620 ft<sup>3</sup>/s, Jan. 2, 1997; minimum daily, 2.1 ft<sup>3</sup>/s, many days in 1988.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	7.5	7.1	6.9	6.9	7.0	6.9	7.0	4.7	3.7	3.7	3.5
2	3.5	7.5	7.1	6.9	7.0	7.0	6.9	6.8	3.7	3.7	3.7	3.5
3	3.5	7.5	7.1	6.9	7.2	7.0	6.9	6.8	3.6	3.6	3.7	3.5
4	3.5	7.5	7.1	6.9	7.0	6.9	7.0	6.8	3.6	3.6	3.7	3.6
5	3.7	7.5	7.1	6.9	7.0	7.0	7.0	6.8	3.6	3.6	3.5	3.6
6	3.6	7.5	7.1	6.9	7.1	7.0	7.0	6.8	3.7	3.6	3.6	3.6
7	3.6	7.5	7.1	6.9	7.0	7.0	7.0	6.8	3.7	3.6	3.6	3.6
8	3.6	7.5	7.2	6.9	7.1	6.9	7.0	6.7	3.7	3.6	3.6	3.6
9	3.6	7.6	7.3	6.9	6.9	7.0	7.0	6.7	3.7	3.6	3.6	3.6
10	3.6	6.8	7.3	6.9	6.9	6.9	7.0	6.7	3.7	3.7	3.6	3.6
11	3.7	7.0	7.1	7.0	6.9	6.9	6.9	6.7	3.7	3.7	3.6	3.6
12	3.7	7.9	6.9	7.1	7.0	7.0	7.0	6.8	3.7	3.7	3.5	3.6
13	3.7	7.2	6.9	6.9	7.0	7.0	7.1	6.8	3.7	3.7	3.4	3.6
14	3.7	7.0	6.9	6.9	7.1	6.9	7.2	6.7	3.7	3.6	3.5	3.6
15	3.7	7.0	6.9	7.1	7.0	7.0	7.2	6.7	3.7	3.5	3.5	3.6
16	3.7	7.1	6.9	7.0	6.9	7.0	7.2	6.7	5.3	3.6	3.5	3.6
17	3.7	7.0	6.9	7.0	6.9	6.9	7.1	6.7	3.6	3.7	3.5	3.6
18	3.7	7.0	6.9	7.0	6.9	6.9	7.0	6.7	3.7	3.6	3.4	3.6
19	3.7	7.0	6.9	7.0	6.9	7.0	7.0	6.8	3.7	3.6	3.4	3.6
20	3.7	7.0	6.9	7.0	6.9	7.0	7.1	6.7	3.6	3.6	3.4	3.6
21	3.7	7.0	6.9	7.0	7.0	7.0	e7.1	6.7	3.6	3.6	3.4	3.6
22	3.6	7.0	6.9	6.9	7.0	7.0	e7.1	6.7	3.6	3.6	3.4	3.6
23	3.6	7.0	6.9	6.9	6.9	7.0	7.1	6.8	3.7	3.6	3.4	3.6
24	3.6	7.0	6.9	6.9	6.9	7.1	7.0	6.8	3.7	3.6	3.4	3.6
25	3.6	7.0	6.9	6.9	6.9	7.0	6.9	6.8	3.6	3.6	3.5	3.6
26	3.6	7.1	6.9	6.9	6.9	7.0	6.9	6.7	3.6	3.6	3.5	3.6
27	3.6	7.1	6.9	6.9	6.9	7.0	7.0	6.8	3.6	3.6	3.5	3.6
28	3.6	7.1	6.9	6.9	6.9	7.0	7.0	6.9	3.6	3.6	3.5	3.6
29	3.6	7.1	6.9	6.9	---	6.9	6.9	6.7	3.6	3.6	3.5	3.6
30	3.6	7.1	6.9	6.9	---	6.9	7.0	6.8	3.7	3.7	3.6	3.6
31	5.3	---	6.9	6.9	---	7.0	---	6.8	---	3.7	3.6	---
TOTAL	114.1	216.1	216.6	215.0	195.0	216.2	210.5	209.7	112.4	112.4	109.3	107.7
MEAN	3.68	7.20	6.99	6.94	6.96	6.97	7.02	6.76	3.75	3.63	3.53	3.59
MAX	5.3	7.9	7.3	7.1	7.2	7.1	7.2	7.0	5.3	3.7	3.7	3.6
MIN	3.5	6.8	6.9	6.9	6.9	6.9	6.9	6.7	3.6	3.5	3.4	3.5
AC-FT	226	429	430	426	387	429	418	416	223	223	217	214

e Estimated.

## 11442700 BRUSH CREEK BELOW BRUSH CREEK DAM, NEAR POLLOCK PINES, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1998, BY WATER YEAR (WY)

MEAN	3.00	5.62	5.62	10.2	5.63	5.86	6.03	5.81	3.22	3.11	3.06	3.05
MAX	3.86	8.06	7.81	58.0	7.76	8.95	10.4	9.09	4.43	4.26	3.87	3.81
(WY)	1994	1990	1990	1997	1997	1997	1997	1997	1995	1995	1995	1993
MIN	2.44	4.16	4.09	4.10	4.12	4.39	4.23	4.28	2.24	2.18	2.14	2.14
(WY)	1993	1991	1988	1988	1988	1992	1988	1988	1988	1988	1988	1988

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1988 - 1998	
ANNUAL TOTAL	3875.6		2035.0			
ANNUAL MEAN	10.6		5.58		5.02	
HIGHEST ANNUAL MEAN					10.5	
LOWEST ANNUAL MEAN					3.39	
HIGHEST DAILY MEAN	620	Jan 2	7.9	Nov 12	620	Jan 2 1997
LOWEST DAILY MEAN	3.0	Jun 3	3.4	Aug 13	2.1	Jul 4 1988
ANNUAL SEVEN-DAY MINIMUM	3.1	Jun 3	3.4	Aug 18	2.1	Aug 15 1988
ANNUAL RUNOFF (AC-FT)	7690		4040		3630	
10 PERCENT EXCEEDS	9.5		7.1		6.9	
50 PERCENT EXCEEDS	7.0		6.8		4.4	
90 PERCENT EXCEEDS	3.6		3.6		2.5	

## 11443450 SLAB CREEK RESERVOIR NEAR CAMINO, CA

LOCATION.—Lat 38°46'21", long 120°41'58", in SW 1/4 NE 1/4 sec.25, T.11 N., R.11 E., El Dorado County, Hydrologic Unit 18020129, Eldorado National Forest, on left bank 100 ft upstream from dam on South Fork American River, 1,600 ft upstream from Iowa Canyon, and 2.7 mi northwest of Camino.

DRAINAGE AREA.—493 mi<sup>2</sup>.

PERIOD OF RECORD.—May 1987 to current year. Unpublished records for water years 1969–86 available in files of the U.S. Geological Survey.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by Sacramento Municipal Utility District). Prior to May 26, 1987, nonrecording gage at same site and datum. September 1980 to October 1993, supplementary water-stage recorder at left abutment of dam operated by U.S. Geological Survey during periods of spill.

REMARKS.—Reservoir is formed by concrete-arch dam completed in 1967. Storage began in October 1967. Usable capacity, 16,567 acre-ft, between elevations 1,670 ft, invert of tunnel, and 1,850 ft, crest of spillway. Dead storage, 600 acre-ft. Reservoir receives water from South Fork American River and Silver Creek via El Dorado and Camino Powerplants (station 11441895) 10 mi upstream. Nearly the entire flow is diverted at this reservoir to White Rock Powerplant (station 11443460). See South Fork American River near Camino (station 11443500) for additional information on diversions and releases from Slab Creek Reservoir. Records, including extremes, represent usable contents. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project. Contents not rounded to U.S. Geological Survey standards.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 18,637 acre-ft, Jan. 1, 1997, elevation, 1,859.70 ft; minimum, 3,917 acre-ft, Oct. 27, 1991, elevation, unknown.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 17,204 acre-ft, June 12, elevation, 1,853.06 ft, minimum, 9,576 acre-ft, Mar. 3, elevation, 1,810.31.

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Based on survey by Sacramento Municipal Utility District recomputed October 1991)

1,730	1,688	1,800	8,124
1,740	2,276	1,820	11,073
1,750	2,966	1,840	14,587
1,760	3,763	1,850	16,567
1,780	5,700	1,855	17,615

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15270	15423	14930	15380	10519	12339	11395	13002	12414	16792	13769	14690
2	15196	15494	14495	14822	10868	11149	11451	13933	12757	16699	14370	14387
3	15605	15987	15384	14314	14730	9576	11991	14928	13355	16641	14701	14119
4	15762	15278	15284	14583	16193	10573	11882	14760	13805	16551	12871	14316
5	15687	15266	15311	14370	16051	11733	14265	14401	14072	16676	13077	14851
6	15490	15514	15133	14524	16317	12613	13455	13551	15705	16590	13948	14484
7	15721	15611	14684	14722	16774	12750	13296	12601	16867	16598	13504	14655
8	15742	16124	14588	14982	16724	12269	13238	11749	16738	16590	13638	15492
9	14849	16415	14547	15504	16701	11131	12497	11744	16745	16374	15188	16013
10	15556	15707	14457	14949	16705	11352	11160	11487	17093	16199	15901	15601
11	15587	14990	14726	14528	16674	11671	11631	11469	16774	15469	14797	15554
12	15360	14288	14749	14548	16685	12309	12086	10890	17204	14757	14421	15095
13	14764	14889	15013	14408	16687	12753	10975	11142	17032	15315	13664	15923
14	15019	15251	14797	14556	16805	13406	11184	11443	17080	14465	14098	15492
15	15792	14590	15245	16281	16689	13469	10695	11071	17147	15124	14630	15542
16	15360	14653	15415	15955	16716	13413	11092	11031	17120	14600	15465	15368
17	15601	14246	14967	15323	16660	13222	11367	10872	17078	14980	15245	15651
18	16025	15007	15258	14625	16571	13274	12151	11100	16971	14547	15095	15967
19	16017	15102	15069	14121	16647	12085	12002	11128	16984	15100	15272	15623
20	15874	15408	15169	14369	13979	11446	11601	11248	17017	14463	15412	15204
21	15744	14951	14853	15120	12594	11663	12100	12139	17042	14259	15439	15792
22	15959	15309	14968	14705	11684	12228	13031	11021	17009	15225	15467	15667
23	14887	15062	15044	13438	10414	13057	14936	11243	16929	14437	15054	15778
24	15276	14974	15372	12129	10229	17170	14613	11743	16828	13703	15027	15139
25	15540	15048	15713	10647	10365	17032	13500	13813	16873	14147	14885	14728
26	15937	15301	15130	10564	12002	16778	12571	13505	16803	14543	14912	15231
27	16056	15262	15029	10703	10798	16329	12808	12582	16819	14280	15157	15711
28	15858	15054	15200	10845	12235	15625	12861	12235	16869	14562	16122	16019
29	15423	14887	15194	10481	---	14858	12741	12192	16809	14450	15681	15210
30	15019	14724	14999	10717	---	13736	13538	11062	16809	14533	16072	15575
31	14604	---	15091	10531	---	12007	---	11689	---	13970	14943	---
MAX	16056	16415	15713	16281	16805	17170	14936	14928	17204	16792	16122	16019
MIN	14604	14246	14457	10481	10229	9576	10695	10872	12414	13703	12871	14119
a	1840.09	1840.72	1842.62	1816.59	1826.99	1825.65	1834.37	1823.76	1851.17	1836.72	1841.86	1845.09
b	+339	+120	+367	-4560	+1704	-228	+1531	-1849	+5120	-2839	+973	+632
CAL YR 1997	MAX 18637	MIN 13666	b -2337									
WTR YR 1998	MAX 17204	MIN 9576	b +1310									

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.



## 11443500 SOUTH FORK AMERICAN RIVER NEAR CAMINO, CA

LOCATION.—Lat 38°46'23", long 120°42'02", in SW 1/4 NE 1/4 sec.25, T.11 N., R.11 E., El Dorado County, Hydrologic Unit 18020129, on right bank 500 ft upstream from Iowa Canyon Creek, and 2.8 mi northwest of Camino.

DRAINAGE AREA.—493 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1922 to current year. Monthly discharge only for October 1922, WSP 1315-A. Records for river and American River Flume, published separately October 1922 to September 1956, October 1962 to December 1964 when flume was destroyed. Records of river and flume combined October 1956 to September 1962.

REVISED RECORDS.—WSP 931: 1928, 1938, 1940(M). WSP 1931: Drainage area at former site.

GAGE.—Acoustic-velocity meter. Elevation of gage is 1,625 ft above sea level, from topographic map. Prior to May 26, 1987, water-stage recorder at different datum at site 1,000 ft downstream. Auxiliary water-stage recorder on Slab Creek Dam records spill discharges which are combined with release discharges. See WSP 2131 for history of changes prior to Oct. 12, 1966.

REMARKS.—Flow regulated by several reservoirs. Since 1967 diversion from Slab Creek Dam to White Rock Powerplant (station 11443460) bypasses this station. Echo Lake Conduit (station 11434500) imports up to 1,900 acre-ft each year from Truckee River Basin. Variable amounts of El Dorado Canal water, up to 40 ft<sup>3</sup>/s May to October, and about 7 ft<sup>3</sup>/s remainder of the year, diverted for irrigation and domestic use between Pollock Pines and Placerville. Water from Jenkinson Lake in North Fork Cosumnes River Basin diverted to Camino and substituted for flow from El Dorado Canal in some years. Since October 1962, water is imported from the Upper Rubicon River Basin by way of Robbs Peak Powerplant (station 11429300). See schematic diagram of South Fork American River Basin.

COOPERATION.—Records were collected by Sacramento Municipal Utility District, under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 62,300 ft<sup>3</sup>/s, Jan. 2, 1997, from rating curve extended above 24,000 ft<sup>3</sup>/s on basis of computation of peak flow over dam; minimum daily, 1.3 ft<sup>3</sup>/s, Aug. 24, 1931.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e37	e37	e37	39	37	38	37	40	38	924	39	40
2	e37	e38	e37	39	37	38	37	40	38	803	40	40
3	e38	e38	e37	39	38	36	38	40	39	514	40	40
4	e38	e38	e37	38	40	36	38	40	39	212	39	40
5	e38	e37	e37	39	41	37	38	40	39	277	38	40
6	e38	e37	e37	39	40	38	39	39	40	336	39	40
7	e38	e38	e37	39	637	38	39	38	1670	145	39	40
8	e38	e38	e37	39	962	38	39	38	1360	179	39	41
9	e38	e38	e37	39	565	38	39	38	637	66	40	41
10	e37	e38	e37	39	463	37	38	38	996	73	41	41
11	e38	e37	e37	39	344	38	37	38	1230	40	40	41
12	e37	e37	e37	39	312	38	38	38	1830	40	40	41
13	e37	e37	e37	39	436	38	38	38	3370	40	40	41
14	e37	e37	e37	39	531	39	37	38	3010	40	39	41
15	e37	e37	e37	39	457	39	37	38	3030	40	40	41
16	e38	e37	e38	40	542	39	37	38	e3740	40	40	41
17	e38	e37	e39	39	408	39	38	38	e3640	40	40	40
18	e38	e37	39	39	247	39	38	38	2950	40	40	41
19	e38	e37	39	39	57	38	38	38	2460	40	40	41
20	e38	e37	39	38	40	38	38	38	2410	40	40	40
21	e38	e37	39	39	38	38	38	38	3240	40	40	41
22	e38	e37	39	39	38	38	38	38	3090	40	40	41
23	e37	e37	39	38	37	38	39	38	2560	40	40	41
24	e37	e37	39	38	37	3010	40	38	1890	40	40	41
25	e38	e37	39	36	36	4260	39	38	1430	39	40	40
26	e38	e37	39	36	37	2150	39	39	1460	40	40	40
27	e38	e37	39	37	38	120	38	38	1390	40	40	41
28	e38	e37	39	37	38	40	38	38	1830	39	41	41
29	e38	e37	39	37	---	40	38	38	1340	40	41	40
30	e37	e37	39	37	---	39	39	38	1130	40	41	40
31	e37	---	39	37	---	38	---	39	---	40	41	---
TOTAL	1167	1117	1178	1190	6533	10570	1144	1191	51926	4367	1237	1217
MEAN	37.6	37.2	38.0	38.4	233	341	38.1	38.4	1731	141	39.9	40.6
MAX	38	38	39	40	962	4260	40	40	3740	924	41	41
MIN	37	37	37	36	36	36	37	38	38	39	38	40
AC-FT	2310	2220	2340	2360	12960	20970	2270	2360	103000	8660	2450	2410
a	37890	24050	36600	89990	110400	157700	163800	200800	216600	170200	94660	71980

e Estimated.

a Diversion, in acre-feet, to White Rock Powerplant, provided by Sacramento Municipal Utility District.

## 11443500 SOUTH FORK AMERICAN RIVER NEAR CAMINO, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1957, BY WATER YEAR (WY)

MEAN	54.8	254	569	601	855	1171	2069	2681	1557	285	39.7	31.1
MAX	221	3951	4780	3422	2125	3367	4015	6382	4031	1310	168	150
(WY)	1952	1951	1951	1956	1927	1943	1952	1952	1952	1952	1951	1951
MIN	4.43	5.46	12.9	43.0	116	146	620	418	13.8	1.97	2.01	6.97
(WY)	1930	1930	1950	1929	1929	1924	1924	1934	1924	1931	1931	1955

## SUMMARY STATISTICS

## WATER YEARS 1923 - 1957

ANNUAL MEAN	846	
HIGHEST ANNUAL MEAN	1760	1951
LOWEST ANNUAL MEAN	161	1924
HIGHEST DAILY MEAN	40000	Dec 23 1955
LOWEST DAILY MEAN	1.3	Aug 24 1931
ANNUAL SEVEN-DAY MINIMUM	1.5	Jul 29 1931
INSTANTANEOUS PEAK FLOW	49800	Dec 23 1955
INSTANTANEOUS PEAK STAGE	32.6	Dec 23 1955
ANNUAL RUNOFF (AC-FT)	612700	
10 PERCENT EXCEEDS	2520	
50 PERCENT EXCEEDS	230	
90 PERCENT EXCEEDS	13	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1957, COMBINED RIVER PLUS FLUME, BY WATER YEAR (WY)

MEAN	167	364	684	713	959	1259	2176	2815	1695	413	154	142
MAX	288	4051	4780	3422	2229	3490	4181	6552	4201	1474	324	227
(WY)	1948	1951	1951	1956	1927	1943	1952	1952	1952	1952	1952	1952
MIN	44.1	49.8	134	141	212	252	727	533	97.3	50.2	35.5	53.4
(WY)	1930	1930	1924	1929	1933	1924	1924	1934	1924	1931	1931	1924

## SUMMARY STATISTICS

## WATER YEARS 1923 - 1957

ANNUAL MEAN	960	
HIGHEST ANNUAL MEAN	1860	1952
LOWEST ANNUAL MEAN	249	1924
HIGHEST DAILY MEAN	40000	Dec 23 1955
LOWEST DAILY MEAN	20	Aug 24 1931
ANNUAL SEVEN-DAY MINIMUM	30	Aug 19 1931
ANNUAL RUNOFF (AC-FT)	695700	
10 PERCENT EXCEEDS	2660	
50 PERCENT EXCEEDS	350	
90 PERCENT EXCEEDS	120	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

MEAN	48.0	89.3	138	355	213	123	132	335	313	84.9	34.6	34.6
MAX	453	1093	1112	4836	2709	1090	1402	2434	2619	936	45.1	48.2
(WY)	1968	1968	1984	1997	1986	1986	1971	1995	1995	1995	1980	1980
MIN	9.97	10.2	10.0	10.0	5.63	10.9	10.0	9.73	9.98	9.93	10.4	10.1
(WY)	1978	1978	1988	1988	1970	1992	1988	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1968 - 1998

ANNUAL TOTAL	178688		82837	
ANNUAL MEAN	490		227	158
HIGHEST ANNUAL MEAN				608
LOWEST ANNUAL MEAN				13.3
HIGHEST DAILY MEAN	48900	Jan 2	4260	Mar 25
LOWEST DAILY MEAN	29	Aug 4	36	Jan 25
ANNUAL SEVEN-DAY MINIMUM	29	Aug 4	37	Jan 25
INSTANTANEOUS PEAK FLOW			6420	Mar 24
ANNUAL RUNOFF (AC-FT)	354400		164300	62300
ANNUAL RUNOFF (AC-FT) a	1014000		1375000	114600
10 PERCENT EXCEEDS	90		459	74
50 PERCENT EXCEEDS	38		39	36
90 PERCENT EXCEEDS	37		37	11

a Diversion, in acre-feet, to White Rock Powerplant, provided by Sacramento Municipal Utility District.

## 11444201 ROCK CREEK NEAR PLACERVILLE, CA

LOCATION.—Lat 38°47'39", long 120°46'28", in NE 1/4 NW 1/4 sec.20, T.11 N., R.11 E., El Dorado County, Hydrologic Unit 18020129, on left bank 500 ft downstream from Rock Creek Road and 4.0 mi north of Placerville.

DRAINAGE AREA.—73.0 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1986 to current year.

GAGE.—Water-stage recorder and broad-crested weir; water-stage recorder and sharp-crested weir. Elevation of gages is 1,305 ft above sea level, from topographic map.

REMARKS.—Records good. Flow at this station has two components which are combined for publication: flow over a broad-crested weir (station 11444200) and flow over a sharp-crested weir (station 11444260). Water is diverted upstream of weirs through a tunnel to Rock Creek Powerplant (station 11444280), returning to Rock Creek at its confluence with the South Fork American River. Extremes also represent combined flows. See schematic diagram of South Fork American River Basin.

COOPERATION.—Records provided by Sithe Energies, Inc., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 6,690 ft<sup>3</sup>/s, Jan. 2, 1997; no flow Sept. 29 to Oct. 3, 1987.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	14	20	16	46	25	28	22	22	22	46	27
2	16	14	19	25	162	24	22	52	22	21	45	26
3	13	13	18	33	1430	25	183	124	21	22	43	26
4	12	13	18	86	563	24	148	50	21	21	33	26
5	11	13	20	68	219	24	128	36	21	21	40	27
6	11	13	24	45	531	28	101	48	38	22	38	33
7	12	15	197	40	895	25	126	22	55	21	35	27
8	12	16	101	40	1090	23	91	21	21	21	35	26
9	36	15	31	39	452	23	113	21	21	22	34	27
10	23	17	36	52	220	23	52	22	21	23	33	27
11	23	20	27	484	216	48	50	22	21	21	32	26
12	16	18	24	1020	139	23	86	49	21	21	31	25
13	14	15	23	438	207	23	281	187	21	21	30	24
14	14	20	23	126	402	23	340	123	21	21	30	24
15	13	19	31	1210	462	23	207	24	21	21	30	23
16	13	19	24	599	234	23	170	21	31	21	30	23
17	13	14	21	557	136	34	134	21	21	21	29	23
18	13	13	22	392	102	22	101	21	21	28	30	23
19	13	19	21	555	101	21	80	22	22	26	31	24
20	13	20	20	238	164	21	64	22	21	21	29	25
21	13	16	19	82	207	21	48	22	21	21	29	24
22	13	15	19	32	339	21	35	21	21	21	29	24
23	13	16	19	28	281	22	32	22	21	21	30	24
24	13	15	18	46	212	351	120	20	21	21	31	25
25	14	27	17	27	118	464	52	52	21	21	30	26
26	14	134	17	22	122	195	22	23	21	38	30	26
27	14	78	17	24	42	43	22	22	22	49	29	29
28	14	32	17	25	32	33	22	108	22	47	28	28
29	14	23	17	118	---	23	21	166	22	46	27	27
30	14	22	16	41	---	22	22	22	22	47	27	26
31	14	---	16	26	---	26	---	22	---	47	27	---
TOTAL	451	698	912	6534	9124	1726	2901	1430	698	817	1001	771
MEAN	14.5	23.3	29.4	211	326	55.7	96.7	46.1	23.3	26.4	32.3	25.7
MAX	36	134	197	1210	1430	464	340	187	55	49	46	33
MIN	10	13	16	16	32	21	21	20	21	21	27	23
AC-FT	895	1380	1810	12960	18100	3420	5750	2840	1380	1620	1990	1530
a	.00	.00	76	1930	5840	6900	8610	7870	5080	2370	17	.00

a Discharge, in acre-feet, through Rock Creek Powerplant near Placerville, provided by Sithe Energies U.S.A., Inc.

## 11444201 ROCK CREEK NEAR PLACERVILLE, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	11.4	19.3	61.6	157	92.7	104	42.6	33.4	18.2	12.3	9.93	9.28
MAX	23.2	36.0	403	737	326	454	99.6	127	31.5	30.2	32.3	25.7
(WY)	1996	1997	1997	1997	1998	1995	1995	1995	1995	1996	1998	1998
MIN	4.60	6.15	9.97	11.4	12.5	16.4	16.6	11.3	6.35	3.18	1.97	1.86
(WY)	1993	1993	1990	1991	1991	1988	1994	1992	1992	1988	1994	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1987 - 1998			
ANNUAL TOTAL	30908.5				27063							
ANNUAL MEAN	84.7				74.1				47.6			
ANNUAL MEAN a	109				128				60.3			
HIGHEST ANNUAL MEAN									118			
LOWEST ANNUAL MEAN									14.3			
HIGHEST DAILY MEAN	4660				1430				4660			
LOWEST DAILY MEAN	9.1				10				.00			
ANNUAL SEVEN-DAY MINIMUM	9.6				12				.35			
INSTANTANEOUS PEAK FLOW					2690				6690			
ANNUAL RUNOFF (AC-FT)	61310				53680				34510			
ANNUAL RUNOFF (AC-FT) a	79210				92380				43690			
10 PERCENT EXCEEDS	82				168				76			
50 PERCENT EXCEEDS	19				24				18			
90 PERCENT EXCEEDS	11				15				4.5			

a Discharge, in acre-feet, through Rock Creek Powerplant near Placerville, provided by Sithe Energies U.S.A., Inc.

## 11444500 SOUTH FORK AMERICAN RIVER NEAR PLACERVILLE, CA

LOCATION.—Lat 38°46'16", long 120°48'55", in NE 1/4 SW 1/4 sec.25, T.11 N., R.10 E., El Dorado County, Hydrologic Unit 18020129, on right bank 700 ft downstream from Chili Bar Dam, 0.5 mi upstream from Big Canyon, and 2.5 mi north of Placerville.

DRAINAGE AREA.—598 mi<sup>2</sup>.

PERIOD OF RECORD.—August 1911 to July 1920 (monthly discharge only for some periods, published in WSP 1315-A), July 1964 to current year.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Elevation of gage is 925 ft above sea level, from topographic map. Aug. 11, 1911, to July 31, 1920, nonrecording gage 0.6 mi downstream at different datum.

REMARKS.—Flow regulated by Chili Bar Reservoir, capacity, 3,700 acre-ft, Chili Bar Powerplant, and other storage and powerplants (see station 11443500). See schematic diagrams of South Fork American River and lower Sacramento River Basins.

COOPERATION.—Records provided by Pacific Gas & Electric Co., under general supervision of the U.S. Geological Survey, in connection with a Federal Energy Regulatory Commission project.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 71,000 ft<sup>3</sup>/s, Jan. 2, 1997, gage height, unknown, on basis of computations of flow over dam, maximum gage height, 17.4 ft, from floodmarks, datum then in use, Dec. 23, 1964; minimum daily, 0.2 ft<sup>3</sup>/s, Nov. 12, 1964.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	926	330	e608	242	870	2410	3540	4170	3740	e5770	2070	1940
2	926	435	e634	991	2020	2970	3270	4220	4150	e5630	1690	1500
3	947	358	e206	591	4460	2980	2970	4080	4000	4450	1720	1820
4	690	666	e165	924	3020	2180	3460	4270	3700	4330	2760	1270
5	656	683	e162	1290	2530	1850	2130	4370	4010	4180	1980	1490
6	858	428	e656	1450	2950	1940	3390	4420	3740	4250	1320	1810
7	808	483	e1330	1320	4060	2310	3310	4240	5420	3920	1890	1720
8	599	431	e1050	1140	4900	2690	2920	4050	5420	3840	1830	933
9	1250	304	e994	994	3450	2650	3220	3590	4910	3900	899	1480
10	500	607	e839	1350	2990	1950	3610	3640	5130	3830	1430	1840
11	470	489	e196	2190	2870	2110	2880	3510	5320	4040	2080	1590
12	512	635	e778	4020	2730	2050	2520	4020	4990	3920	2020	1910
13	911	394	647	2890	2890	2100	3960	3640	6710	3170	2200	1680
14	680	303	737	1970	3290	1890	3380	3400	6430	3410	1500	1490
15	420	627	638	4510	3480	2260	3420	3520	6500	2470	1490	1490
16	612	210	617	4710	3070	2570	2920	3470	6820	3030	1350	1460
17	504	848	973	4330	2940	2620	2830	3420	6750	2470	1570	1290
18	500	258	504	3760	2720	2710	2650	3160	6480	2520	1680	1240
19	482	145	744	3750	3050	3110	3090	3370	6030	2320	1550	1500
20	565	487	769	2200	3770	3210	3340	3480	6030	2650	1640	1570
21	863	986	731	1130	3780	2810	3220	3040	6530	2520	1610	1260
22	1120	208	1090	1710	3860	2880	3330	3880	6480	2040	1910	1230
23	640	407	819	1610	3790	3530	3220	3330	6210	2610	1820	961
24	522	417	821	1640	3240	6330	3850	3160	5670	2760	1750	1100
25	468	502	167	1910	2810	7260	4190	3200	5220	2200	1850	1030
26	455	925	844	1420	2040	5330	3990	3940	5280	1840	1610	804
27	620	e540	672	1040	2840	4510	3570	3990	5220	2030	1600	672
28	686	e285	551	1070	1770	4450	3830	3720	5210	2010	1320	1060
29	420	e790	527	1600	---	4120	4200	3840	e6210	1890	1490	1240
30	891	e513	655	1210	---	4010	3940	4070	e5850	2030	1340	691
31	1020	---	566	1300	---	4210	---	3360	---	2030	2320	---
TOTAL	21521	14694	20690	60262	86190	98000	100150	115570	164160	98060	53289	41071
MEAN	694	490	667	1944	3078	3161	3338	3728	5472	3163	1719	1369
MAX	1250	986	1330	4710	4900	7260	4200	4420	6820	5770	2760	1940
MIN	420	145	162	242	870	1850	2130	3040	3700	1840	899	672
AC-FT	42690	29150	41040	119500	171000	194400	198600	229200	325600	194500	105700	81460

e Estimated.

## 11444500 SOUTH FORK AMERICAN RIVER NEAR PLACERVILLE, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	516	764	1304	1892	1795	1944	2058	2528	2035	1208	955	833
MAX	935	3806	5386	9673	6613	5561	5382	6159	6496	3648	1719	1401
(WY)	1984	1984	1965	1997	1986	1983	1982	1995	1983	1983	1998	1995
MIN	204	106	320	188	125	124	255	295	228	88.2	142	244
(WY)	1988	1978	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1965 - 1998	
ANNUAL TOTAL	794926		873657			
ANNUAL MEAN	2178		2394		1484	
HIGHEST ANNUAL MEAN					3275	
LOWEST ANNUAL MEAN					224	
HIGHEST DAILY MEAN	57100		7260		57100	
LOWEST DAILY MEAN	145		145		.20	
ANNUAL SEVEN-DAY MINIMUM	398		398		20	
INSTANTANEOUS PEAK FLOW			8970		71000	
INSTANTANEOUS PEAK STAGE			9.98		17.40	
ANNUAL RUNOFF (AC-FT)	1577000		1733000		1075000	
10 PERCENT EXCEEDS	3950		4430		3360	
50 PERCENT EXCEEDS	1330		2030		1000	
90 PERCENT EXCEEDS	501		513		337	

## 11446200 FOLSOM LAKE NEAR FOLSOM, CA

LOCATION.—Lat 38°42'29", long 121°09'22", in NW 1/4 NE 1/4 sec.24, T.10 N., R.7 E., Sacramento County, Hydrologic Unit 18020128, near center of dam on American River, 0.7 mi downstream from South Fork American River, and 2.3 mi northeast of Folsom.

DRAINAGE AREA.—1,861 mi<sup>2</sup>.

PERIOD OF RECORD.—February 1955 to current year. Prior to October 1959, published as Folsom Reservoir near Folsom.

REVISED RECORDS.—WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by U.S. Bureau of Reclamation).

REMARKS.—Reservoir is formed by concrete gravity-type dam with rolled-earth-wing dams, auxiliary dams, and dikes, completed May 14, 1956; storage began Feb. 25, 1955. Total capacity, 1,010,300 acre-ft between elevations 205.5 ft, invert of lower tier of river outlets, and 466.0 ft gross pool elevation, all of which are available for release. Spillway design flood pool elevation, 475.4 ft, capacity, 1,120,200 acre-ft. Records, including extremes, represent usable contents at 2400 hours. See schematic diagram of lower Sacramento River Basin.

COOPERATION.—Records provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 1,024,400 acre-ft, June 15, 1963, elevation, 467.23 ft; minimum since storage pool first filled, 140,600 acre-ft, Nov. 20, 21, 1977, elevation, 347.57 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 950,100 acre-ft, July 17, elevation, 463.58 ft; minimum, 416,600 acre-ft, Jan. 3, elevation, 405.42 ft.

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

(Based on survey by U.S. Bureau of Reclamation in 1992)

345	123,600	380	258,600	440	703,800
350	137,900	390	314,100	460	908,400
360	170,600	400	376,900	479	1,125,000
370	210,500	420	525,500		

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	555400	488300	432200	418900	541600	559300	683500	760500	750800	909800	925100	832300
2	554200	484400	431500	417200	553000	562600	685800	763600	752800	912100	922900	829700
3	551800	481400	430700	416600	553000	567300	690900	767000	757500	915200	920200	826800
4	549300	477100	428700	419000	563000	572000	697100	768700	761300	918300	917900	824100
5	546100	477000	426800	420200	526700	575700	699100	769100	767400	922000	916700	820500
6	543000	473800	424600	422900	517900	580500	701900	769900	773900	925900	912400	816900
7	540700	471400	429800	423800	528600	584000	705800	768800	785900	930100	909500	814000
8	537600	469300	436800	424200	536900	588000	706800	766900	798100	933800	906300	811200
9	536700	465200	439200	424400	536900	592300	708400	766600	807100	937000	901600	810700
10	535800	462000	439700	425300	534700	594000	709700	766000	814800	939700	897000	811700
11	533000	459300	438800	435800	535600	595900	710100	766100	824600	943200	894200	808700
12	531700	457400	437700	470700	538000	597300	709500	766600	833200	946100	891700	806300
13	530900	455300	436100	482800	540000	599400	718300	765400	847200	948000	889800	803900
14	530000	453000	436300	481200	550000	601000	726000	761400	860200	949300	888200	799600
15	529400	451500	435500	512500	550100	603300	730600	756200	871900	949300	884600	795600
16	527300	449600	434900	541000	542900	607200	733100	750900	878800	950000	880700	791100
17	526700	447600	434400	561400	535100	611700	733900	745200	882100	950100	876500	787000
18	525300	446100	434700	562300	527400	615700	734300	739200	885000	949200	873200	782000
19	523300	443700	434400	566200	523300	614000	735200	733200	888100	948200	870300	777700
20	521000	441500	434100	562700	524300	608800	738000	731000	892500	947200	866600	773300
21	516300	441400	433600	557200	528800	603300	740900	730000	898400	946200	864800	768700
22	512100	438800	433100	552100	537500	599300	745500	732300	903900	944700	861300	762900
23	508300	435400	434000	548500	544200	601700	751700	734100	907100	942300	858100	756900
24	503800	432700	433000	545500	551000	634000	757800	735900	909100	941700	855600	751200
25	500900	432200	431500	543900	555400	659900	760000	740700	910900	940900	853900	745400
26	499000	435300	430000	542300	556200	666100	761800	748500	912300	938800	851100	738900
27	497300	437100	430200	540500	557600	667200	761200	750700	910800	936500	847600	732200
28	495700	436300	428400	537900	558800	668600	760300	751700	910100	934600	844100	725700
29	493600	434700	425300	540500	---	670600	760700	753800	909400	931700	840200	719600
30	491800	433300	422800	542400	---	674600	760100	753800	908700	929800	836300	712900
31	491000	---	421200	542000	---	680300	---	752100	---	926900	833900	---
MAX	555400	488300	439700	566200	595300	680300	761800	769900	912300	950100	925100	832300
MIN	491000	432200	421200	416600	517900	559300	683500	730000	750800	909800	833900	712900
a	415.38	407.75	406.07	421.70	423.70	437.26	445.50	444.69	459.79	461.47	452.75	440.68
b	-65100	-57700	-12100	+120800	+16800	+121500	+79800	-8000	+156600	+18200	-93000	-121000
c	2347	868	624	1264	660	1807	2804	2771	4636	7013	6989	4400

CAL YR 1997 b -75700

WTR YR 1998 b +156800

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, provided by U.S. Bureau of Reclamation; not reviewed by U.S. Geological Survey.

## 11446500 AMERICAN RIVER AT FAIR OAKS, CA

LOCATION.—Lat 38°38'08", long 121°13'36", in SE 1/4 NE 1/4 sec.17, T.9 N., R.7 E., Sacramento County, Hydrologic Unit 18020111, on right bank 2,100 ft downstream from Nimbus Dam, 2.4 mi east of Fair Oaks, 8.1 mi downstream from South Fork, and at mile 22.2.

DRAINAGE AREA.—1,888 mi<sup>2</sup>.

PERIOD OF RECORD.—November 1904 to current year. Monthly discharge only for some periods, published in WSP 1315-A.

WATER TEMPERATURE: Water years 1961–65.

CHEMICAL DATA: Water years 1960–62.

REVISED RECORDS.—WSP 1181: 1928(M). WSP 1515: 1907(M), 1910, 1931(M), 1943(M). WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 71.53 ft above sea level. See WSP 2131 for history of changes prior to July 15, 1970.

REMARKS.—Records good. Flow regulated by Folsom Lake beginning Feb. 25, 1955 (station 11446200). Some minor regulation of high flows by temporary pondage during period of construction January 1953 to February 1955. Diurnal fluctuations from Folsom Powerplant re-regulated by Nimbus Reservoir, capacity, 2,800 acre-ft between normal operating elevations 118.5 and 125.0 ft and by Nimbus Powerplant. Many diversions upstream from station for irrigation, municipal, and domestic water supply. Diversions for San Juan Suburban Water District, city of Folsom, city of Roseville, and State of California are made at Folsom Dam. Diversion to Folsom South Canal from Nimbus Reservoir started in June 1973. Some inflow from Bear and Yuba River Basins. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 180,000 ft<sup>3</sup>/s, Nov. 21, 1950, gage height, 31.85 ft, site and datum then in use; minimum, 3.6 ft<sup>3</sup>/s, Aug. 16, 1924. Maximum discharge since regulation by Folsom Lake in 1955, 134,000 ft<sup>3</sup>/s, Feb. 19, 1986, gage height, 27.96 ft; minimum daily, 160 ft<sup>3</sup>/s, Apr. 17, 1955.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1750	2580	2380	2380	4570	5450	7100	e10100	e8980	7470	4030	4000
2	1740	2600	2370	2420	5130	4980	7160	e10400	e8430	6590	4030	4000
3	2190	2520	2380	2400	18700	4400	7170	e9750	e7020	5740	4020	4010
4	2240	2570	2380	2350	33700	4310	7140	e9930	e6030	5240	4030	4020
5	2240	2570	2380	2400	28600	4410	7180	e10600	e5370	4950	4020	4030
6	2240	2560	2360	1470	17900	4370	7170	e10700	e5290	4900	4000	4020
7	2240	2470	2380	2220	17000	4380	7210	e10800	e5720	4410	4000	4000
8	2210	2400	2400	2170	18400	4390	7250	e10900	e5960	4000	4010	3510
9	2200	2390	2390	2200	14300	4410	7280	e10700	e5960	3950	4000	2110
10	2210	2400	2390	2230	11900	4410	7220	e9320	e6000	3970	4010	1940
11	2220	2430	2370	2180	10000	4440	7260	e8920	e6030	3940	4000	3940
12	2210	2480	2390	5530	9270	4410	7320	e8890	e6020	3940	4010	3950
13	2220	2480	2370	9800	9290	4370	7350	e10100	e6020	3950	4000	3950
14	2230	2370	2390	8710	10700	4360	7360	e11000	e6140	3960	4020	3970
15	2230	2330	2400	7880	15300	4340	7290	e10900	e7700	3960	4020	3980
16	2230	2330	2400	7670	14700	4320	7270	e10100	e9070	3970	4020	3990
17	2340	2360	2390	10600	13400	4360	7300	e10900	e9980	3970	4030	4000
18	2470	2370	2390	14800	12300	5150	7270	e10700	e9690	4000	4020	4030
19	2480	2390	2390	13900	11100	7800	7260	e10200	e8750	3990	4010	4000
20	e2600	2410	2380	11500	9980	9540	7160	e8890	e8000	3990	4020	3970
21	e2940	2410	2410	9490	9160	9560	e7220	e7540	e8170	3990	4020	3980
22	e3400	2370	2400	8170	9160	9610	e7220	e6560	e8900	4000	3990	4530
23	e3360	2400	2400	7280	8850	9470	e7230	e5950	8820	3990	3980	4620
24	e3600	2410	2410	6090	7830	9100	e7850	e5980	8810	3980	3980	4690
25	e2800	2430	2380	5260	7240	10500	e8900	e5860	8870	4010	4010	4620
26	e2370	2480	2370	4820	7090	11800	e8540	e6050	8780	4010	4000	4520
27	e2120	2400	2380	4550	6630	11600	e8360	e6520	8890	4020	4000	4500
28	e2560	2370	2370	4580	6030	10600	e9280	e8770	8990	4010	3980	4490
29	e2400	2390	2380	4610	---	9080	e9630	e8890	8800	4010	3990	4500
30	e2460	2400	2390	4620	---	7670	e9770	e8860	8360	4010	3990	4540
31	e2390	---	2380	4590	---	7030	---	e8580	---	4020	4000	---
TOTAL	74890	73070	73950	178870	348230	204620	228720	283360	229550	134940	124240	120410
MEAN	2416	2436	2385	5770	12440	6601	7624	9141	7652	4353	4008	4014
MAX	3600	2600	2410	14800	33700	11800	9770	11000	9980	7470	4030	4690
MIN	1740	2330	2360	1470	4570	4310	7100	5860	5290	3940	3980	1940
AC-FT	148500	144900	146700	354800	690700	405900	453700	562000	455300	267700	246400	238800

e Estimated.



## 11446500 AMERICAN RIVER AT FAIR OAKS, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1954, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	455	1327	2504	4483	5831	6647	8258	8656	5149	1293	342	269
MAX	1430	16450	17360	24290	15540	24710	15640	18200	17720	6336	1497	813
(WY)	1905	1951	1951	1909	1909	1907	1907	1952	1911	1906	1907	1907
MIN	100	85.0	254	284	650	879	1998	1488	206	26.8	15.8	24.4
(WY)	1930	1930	1906	1918	1920	1924	1924	1924	1924	1924	1924	1924

## SUMMARY STATISTICS

## WATER YEARS 1905 - 1954

ANNUAL MEAN	3752	
HIGHEST ANNUAL MEAN	7896	1907
LOWEST ANNUAL MEAN	731	1924
HIGHEST DAILY MEAN	132000	Nov 21 1950
LOWEST DAILY MEAN	4.6	Jul 29 1924
ANNUAL SEVEN-DAY MINIMUM	4.8	Jul 29 1924
INSTANTANEOUS PEAK FLOW	180000	Nov 21 1950
INSTANTANEOUS PEAK STAGE	31.85	Nov 21 1950
ANNUAL RUNOFF (AC-FT)	2718000	
10 PERCENT EXCEEDS	9980	
50 PERCENT EXCEEDS	1420	
90 PERCENT EXCEEDS	216	

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1922	2424	3994	5579	5644	5203	4296	4358	3820	3654	2795	2291
MAX	4102	11700	19360	31780	31140	19340	17760	14270	9828	10710	4500	4014
(WY)	1970	1984	1965	1997	1986	1983	1982	1995	1983	1995	1983	1998
MIN	284	272	252	350	408	273	258	520	1135	869	855	602
(WY)	1978	1978	1978	1962	1991	1977	1977	1977	1977	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1956 - 1998

ANNUAL TOTAL	1946090	2074850	
ANNUAL MEAN	5332	5685	
HIGHEST ANNUAL MEAN			3825
LOWEST ANNUAL MEAN			8854
HIGHEST DAILY MEAN	106000	Jan 2	778
LOWEST DAILY MEAN	629	Sep 18	131000
ANNUAL SEVEN-DAY MINIMUM	1030	Sep 13	215
INSTANTANEOUS PEAK FLOW			237
INSTANTANEOUS PEAK STAGE			134000
ANNUAL RUNOFF (AC-FT)	3860000	4115000	27.96
10 PERCENT EXCEEDS	8030	10000	7680
50 PERCENT EXCEEDS	2410	4360	2520
90 PERCENT EXCEEDS	1930	2370	918

## 11447000 AMERICAN RIVER AT SACRAMENTO, CA

LOCATION.—Lat 38°34'05", long 121°25'20", in Rio de Americanos Grant, Sacramento County, Hydrologic Unit 18020111, at Guy A. West Bridge at California State University, Sacramento, and 1,200 ft downstream from Howe Avenue Bridge, and 4.1 mi southeast of State Capitol.

DRAINAGE AREA.—1,936 mi<sup>2</sup>.

PERIOD OF RECORD.—Water years 1978, 1996 to current year.

CHEMICAL DATA.—October 1977 to September 1978, February 1996 to current year.

SEDIMENT DATA.—February 1996 to current year.

REMARKS.—Discharge values were obtained from the 11446500 American River at Fair Oaks, CA gaging station.. This site was relocated 2,000 ft downstream of the H Street Bridge in October 1977 through September 1978. The site was reestablished and relocated as described in the current location description in February 1996.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED CENT SATUR- ATION (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
24...	0900	--	47	7.4	16.2	759	9.3	95	4.9	1.4
NOV										
21...	1425	2470	50	7.4	14.4	764	10.9	106	5.3	1.5
DEC										
11...	1130	2370	57	7.4	11.3	774	10.6	95	6.1	1.8
JAN										
23...	1000	7450	59.	7.5	9.3	764	11.2	97	5.7	2.2
FEB										
12...	1000	9300	62	7.6	9.1	764	11.5	99	6.2	2.6
MAR										
12...	1000	4400	68	7.5	9.4	757	11.5	101	6.4	3.0
APR										
16...	0940	7260	57	7.6	10.4	766	12.1	108	6.0	2.4

DATE	SODIUM DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED AS SIO2 (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT										
24...	1.9	18	.8	18	1.7	1.3	<.1	8.8	38	34
NOV										
21...	1.9	17	.7	17	1.5	1.4	<.1	9.1	38	36
DEC										
11...	2.2	17	.8	22	2.4	1.9	<.1	9.0	43	40
JAN										
23...	2.1	16	.7	22	2.5	1.9	<.1	9.3	47	40
FEB										
12...	2.2	15	.7	24	3.0	2.3	<.1	11	45	45
MAR										
12...	2.6	16	.7	27	.9	2.0	<.1	12	52	46
APR										
16...	2.3	16	.6	22	2.2	1.6	<.1	12	48	42

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

[illegible]

## SACRAMENTO RIVER BASIN

11447000 AMERICAN RIVER AT SACRAMENTO, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
24...N	0900	--	16.2	11	--	82
NOV						
21...N	1425	2470	14.4	4	27	84
DEC						
11...N	1130	2370	11.3	5	32	74
JAN						
23...N	1000	7450	9.3	11	221	93
FEB						
12...N	1000	9300	9.1	12	301	100
MAR						
12...N	1000	4400	9.4	3	36	100
APR						
16...N	0940	7260	10.4	3	59	100

## 11447293 DRY CREEK AT VERNON STREET BRIDGE AT ROSEVILLE, CA

LOCATION.—Lat 38°44'04", long 121°17'55", NW 1/4, SW 1/4 sec.11, T.10 N, R6 E, in Placer County, Hydrologic Unit 18021111, on right bank upstream side of bridge and 0.5 mi below confluence of Cirby Creek, at Roseville, Ca.

DRAINAGE AREA.—80.08 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1996 to current year.

GAGE.—Water-stage recorder. Datum of gage is 99.86 ft above sea level (levels by City of Roseville).

REMARKS.—Records good. Records computed only for gage heights above the bottom of the stilling well (11.55 ft and above), as the well sits above the intakes. Low summer flow sustained by groundwater seepage and residential and industrial waste water.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 7,950 ft<sup>3</sup>/s, Jan. 22, 1997, gage height, 24.39 ft.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than a base discharge of 1,500 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 7	1445	2,010	15.74	Feb. 3	1500	7,490	23.88
Jan. 12	1900	2,050	15.82	Feb. 7	2245	2,540	16.74
Jan. 15	1615	2,270	16.27	Feb. 14	1330	2,000	15.71
Jan. 18	2145	1,560	14.80				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	2160	---	---	---	---	---	---	---
3	---	---	---	---	4420	---	e343	---	---	---	---	---
4	---	---	---	e598	888	---	---	---	---	---	---	---
5	---	---	---	---	576	---	---	e448	---	---	---	---
6	---	---	---	---	913	e579	---	---	---	---	---	---
7	---	---	e949	---	1420	---	---	---	---	---	---	---
8	---	---	---	---	1290	---	---	---	---	---	---	---
9	---	---	---	---	578	---	---	---	---	---	---	---
10	---	---	---	---	400	---	---	---	---	---	---	---
11	---	---	---	620	364	---	---	---	---	---	---	---
12	---	---	---	1310	498	---	---	---	---	---	---	---
13	---	---	---	557	452	---	---	---	---	---	---	---
14	---	---	---	529	1380	---	---	---	---	---	---	---
15	---	---	---	1530	633	---	---	---	---	---	---	---
16	---	---	---	727	430	---	---	---	---	---	---	---
17	---	---	---	479	543	---	---	---	---	---	---	---
18	---	---	---	706	305	---	---	---	---	---	---	---
19	---	---	---	647	641	---	---	---	---	---	---	---
20	---	---	---	363	446	---	---	---	---	---	---	---
21	---	---	---	---	623	---	---	---	---	---	---	---
22	---	---	---	---	470	---	---	---	---	---	---	---
23	---	---	---	---	444	---	---	---	---	---	---	---
24	---	---	---	---	e348	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	e463	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	e716	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

e Estimated.

## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA

LOCATION.—Lat 38°38'01", long 121°22'54", in Del Paso Grant, Sacramento County, Hydrologic Unit 18021111, on right bank 500 ft upstream from bridge on Watt Avenue and at intersection with Longview Drive, and 1.3 mi east of Del Paso Heights.

DRAINAGE AREA.—31.5 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—July 1963 to June 1978, December 1995 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 50 ft above sea level, from topographic map. Prior to December 1995, at site 0.3 mi upstream at different datum.

REMARKS.—Records good except for discharges below 1 ft<sup>3</sup>/s which are poor. Low summer flow sustained by residential and industrial waste water.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 3,320 ft<sup>3</sup>/s, Feb. 3, 1998, gage height, 15.63; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than a base discharge of 500 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 26	0545	876	10.77	Feb. 3	1300	3,320	15.63
Dec. 7	1700	1,660	12.84	Feb. 7	2300	1,380	12.21
Dec. 14	1915	549	9.23	Feb. 14	1030	1,180	11.70
Jan. 4	0645	670	9.95	Mar. 6	0215	611	9.59
Jan. 12	1700	1,090	12.03	May 28	2000	961	11.05

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	.84	7.2	.24	76	3.1	21	41	2.8	2.1	3.1	2.0
2	19	.68	2.5	64	1220	2.9	3.4	67	2.1	2.4	3.1	2.0
3	2.2	.59	1.6	52	1910	2.5	124	53	1.8	2.4	3.1	2.2
4	1.1	.52	1.3	253	78	2.3	57	40	1.7	2.7	3.1	2.1
5	.94	.27	34	6.4	95	51	9.9	8.9	1.8	2.6	2.8	2.1
6	1.0	.42	13	2.3	271	193	4.9	6.0	1.8	2.5	3.0	6.4
7	1.0	.69	746	3.6	538	9.4	11	2.8	4.0	2.6	2.8	2.9
8	1.6	.23	37	1.5	351	11	3.2	2.3	1.5	2.8	2.9	2.5
9	150	.08	4.8	10	53	4.2	2.4	30	1.3	2.9	2.9	8.2
10	8.4	9.8	2.3	97	33	3.0	2.1	18	1.3	2.7	2.8	2.4
11	6.2	33	1.5	197	37	2.8	2.0	14	1.3	2.8	3.0	1.9
12	2.3	3.0	1.0	592	162	2.5	6.7	80	1.3	3.0	2.7	2.1
13	1.5	44	.80	62	58	2.4	74	30	1.5	2.9	3.1	2.3
14	1.1	47	247	158	614	2.0	7.5	6.3	1.6	2.5	3.0	1.9
15	1.5	60	43	578	49	2.1	2.8	2.8	1.7	2.8	2.8	1.8
16	1.4	12	3.9	58	79	3.3	2.2	2.3	1.4	3.1	2.8	2.1
17	1.7	2.2	1.9	14	134	2.2	2.3	2.4	1.4	3.2	2.5	1.9
18	1.1	1.1	1.2	269	17	2.2	2.0	2.1	1.7	3.6	2.3	1.6
19	1.0	42	.76	77	279	2.1	2.3	2.0	2.7	3.5	2.2	1.6
20	1.1	5.1	.73	11	40	2.1	2.2	2.1	2.5	3.5	2.4	1.6
21	.81	2.0	.59	5.2	205	2.1	2.2	1.9	2.4	2.8	2.6	1.9
22	.60	1.2	.47	2.8	41	8.9	2.4	2.4	2.3	2.7	2.6	1.7
23	.89	.71	.35	2.0	98	37	83	2.0	2.4	3.4	2.5	1.6
24	.62	2.6	.33	2.5	31	62	74	2.1	2.7	3.4	2.5	1.7
25	.44	7.0	.20	1.4	9.0	65	5.6	3.8	2.5	3.4	2.2	1.6
26	.22	437	.23	2.9	5.9	6.3	3.4	2.0	2.9	3.5	2.0	1.7
27	.00	58	.07	14	4.6	3.3	3.0	2.1	2.4	3.1	2.3	3.9
28	.00	4.8	.04	1.4	3.6	2.3	2.8	314	2.3	3.1	2.3	3.0
29	.36	2.2	.06	351	---	9.7	2.7	95	2.1	2.5	2.1	2.2
30	.61	149	.09	13	---	2.4	3.2	12	2.0	2.8	2.2	1.6
31	1.2	---	.09	6.8	---	40	---	4.6	---	3.0	2.4	---
TOTAL	210.57	928.03	1154.01	2909.04	6492.1	545.1	525.2	854.9	61.2	90.3	82.1	72.5
MEAN	6.79	30.9	37.2	93.8	232	17.6	17.5	27.6	2.04	2.91	2.65	2.42
MAX	150	437	746	592	1910	193	124	314	4.0	3.6	3.1	8.2
MIN	.00	.08	.04	.24	3.6	2.0	2.0	1.9	1.3	2.1	2.0	1.6
AC-FT	418	1840	2290	5770	12880	1080	1040	1700	121	179	163	144

## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4.73	23.3	36.0	70.3	47.9	18.8	11.9	5.90	3.27	3.55	3.14	3.39
MAX	13.7	76.0	92.4	227	232	64.0	34.7	27.6	5.90	10.0	5.53	14.0
(WY)	1976	1974	1997	1969	1998	1975	1996	1998	1975	1974	1975	1965
MIN	.65	2.67	.51	3.15	.93	.85	.12	.64	.000	.000	.001	1.02
(WY)	1966	1976	1964	1976	1971	1966	1977	1965	1977	1977	1977	1996

## SUMMARY STATISTICS                      FOR 1997 CALENDAR YEAR                      FOR 1998 WATER YEAR                      WATER YEARS 1963 - 1998

ANNUAL TOTAL	8549.15			13925.05					
ANNUAL MEAN	23.4			38.2			18.1		
HIGHEST ANNUAL MEAN							38.2		
LOWEST ANNUAL MEAN							2.64		
HIGHEST DAILY MEAN	1090	Jan 26		1910	Feb 3		1910	Feb 3	1998
LOWEST DAILY MEAN	.00	Oct 27		.00	Oct 27		.00	Oct 27	1963
ANNUAL SEVEN-DAY MINIMUM	.11	Dec 25		.11	Dec 25		.00	Dec 31	1963
INSTANTANEOUS PEAK FLOW				3320			3320		
INSTANTANEOUS PEAK STAGE				15.63			15.63		
ANNUAL RUNOFF (AC-FT)	16960			27620			13150		
10 PERCENT EXCEEDS	15			74			24		
50 PERCENT EXCEEDS	1.4			2.7			2.5		
90 PERCENT EXCEEDS	.72			.92			.40		

## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1996 to current year.

CHEMICAL DATA: Water years 1996 to current year.

SPECIFIC CONDUCTANCE: July 1997 to current year.

WATER TEMPERATURE: July 1997 to current year.

SEDIMENT DATA: Water years 1996 to current year.

PERIOD OF DAILY RECORD.—

SPECIFIC CONDUCTANCE: July 1997 to current year.

WATER TEMPERATURE: July 1997 to current year.

INSTRUMENTATION.—Water-quality monitor since July 1997.

REMARKS.—Interruptions in record were due to malfunction of the sensing instrument. National Water-Quality Assessment (NAWQA) Program, urban runoff study. Variability of chemical concentrations result from fluctuations in discharge and storm-drain runoff.

EXTREMES FOR CURRENT YEAR.—

SPECIFIC CONDUCTANCE: Maximum recorded, 414 microsiemens, Dec. 28; minimum recorded, 27 microsiemens, Mar. 24.

WATER TEMPERATURE: Maximum recorded, 23.0°C, Apr. 29; minimum recorded, 3.0°C, Dec. 27, 28.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT- ANCE	PH WATER WHOLE FIELD (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	
		(00061)	(00095)	(00400)	(00010)	(00025)	(00300)	(00301)	(00915)	(00925)	(00930)	(00932)	
OCT													
08...	0930	.79	269	7.4	14.7	759	6.3	62	20	7.0	18	32	
17...	1020	1.5	255	7.4	15.2	761	6.9	69	22	6.5	14	27	
NOV													
07...	0940	.65	337	7.4	13.6	762	5.6	54	26	10	21	29	
14...	0900	57	98	7.1	12.0	758	9.0	84	8.0	2.3	5.0	25	
DEC													
19...	0950	.75	242	7.7	7.2	763	9.8	81	22	6.4	14	26	
JAN													
09...	0930	1.5	277	7.7	8.4	755	9.2	79	25	6.9	18	29	
FEB													
13...	0930	50	122	7.6	10.9	762	9.8	89	13	3.3	6.3	22	
MAR													
09...	1000	4.2	243	7.8	9.5	766	10.4	91	23	6.1	15	28	
APR													
23...	1000	2.1	345	7.7	17.8	756	6.6	70	29	8.1	25	33	
DATE		POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT													
08...	4.4	69	8.7	27	.2	33	190	166	.26	.02	.42	.04	
17...	4.1	52	11	27	.1	29	170	156	.23	.04	.82	.09	
NOV													
07...	5.5	94	10	37	.2	40	233	212	.32	.04	.21	<.02	
14...	3.2	22	5.7	6.1	.1	7.8	86	59	.12	.05	1.0	.22	
DEC													
19...	4.0	65	15	19	<.1	22	172	151	.23	<.01	1.4	<.02	
JAN													
09...	3.7	68	16	25	<.1	23	195	171	.27	.05	2.0	.06	
FEB													
13...	2.4	50	5.8	5.5	<.1	12	97	79	.13	.02	.35	.06	
MAR													
09...	2.5	77	14	14	<.1	19	167	147	.23	.01	.97	.04	
APR													
23...	3.5	100	16	31	.1	22	214	199	.29	.03	.55	.10	



## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)
OCT												
08...	.8	.7	.21	.13	.12	8	<1	4	74	<1	<1	1
17...	1.2	.8	.17	.07	.07	--	--	--	--	--	--	--
NOV												
07...	.8	.5	.23	.06	.07	9	<1	3	99	<1	<1	2
14...	2.0	.9	.43	.11	.11	--	--	--	--	--	--	--
DEC												
19...	1.0	.7	.15	.07	.08	8	<1	1	76	<1	<1	1
JAN												
09...	1.1	1.1	.12	.07	.08	6	<1	1	84	<1	<1	1
FEB												
13...	.8	.4	.28	.16	.15	11	<1	2	49	<1	<1	2
MAR												
09...	.7	.6	.15	.08	.08	7	<1	1	70	<1	<1	2
APR												
23...	1.1	.8	.26	.18	.15	6	<1	1	86	<1	<1	3

DATE	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
OCT												
08...	<1	3	120	<1	33	1	3	<1	<1	3	<1	8.6
17...	--	--	67	--	35	--	--	--	--	--	--	6.4
NOV												
07...	<1	2	81	<1	91	2	2	<1	<1	3	<1	5.8
14...	--	--	130	--	15	--	--	--	--	--	--	13
DEC												
19...	<1	5	78	<1	17	1	4	<1	<1	9	<1	8.8
JAN												
09...	<1	5	58	<1	14	1	3	<1	<1	13	<1	7.5
FEB												
13...	<1	4	75	<1	9	<1	2	<1	<1	12	<1	6.9
MAR												
09...	<1	4	38	<1	14	<1	3	<1	<1	10	<1	6.3
APR												
23...	<1	3	87	<1	34	<1	3	<1	<1	7	<1	6.1

DATE	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	ACETONE WATER TOTAL (UG/L) (81552)	ACRO- LEIN TOTAL (UG/L) (34210)	ACRYLO- NITRILE TOTAL (UG/L) (34215)	1,2,3- TRI- CHLORO BENZENE WAT, WH REC (UG/L) (77613)	BENZENE 1,2,4- TRI- CHLORO- WAT UNF REC (UG/L) (34551)	BENZENE 1,3-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34566)	BENZENE 1,4-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34571)	ISO- PROPYL- BENZENE WATER WHOLE REC (UG/L) (77223)	BENZENE N-BUTYL WATER UNFLTRD REC (UG/L) (77342)	BENZENE N-PROPY WATER UNFLTRD REC (UG/L) (77224)	BENZENE O-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34536)
OCT												
08...	.3	<19.6	--	<4.90	<1.06	<.752	<.216	<.2	<.128	<.744	<.168	<.192
17...	.8	<9.81	--	<2.45	<.532	<.376	<.108	E.01	<.064	<.372	<.084	<.096
NOV												
07...	.3	<9.81	--	<2.45	<.532	<.376	<.108	<.1	<.064	<.372	<.084	<.096
14...	6.5	<9.81	--	<2.45	<.532	<.376	<.108	<.1	<.064	<.372	<.084	<.096
DEC												
19...	.2	<9.81	<50	<2.45	<.532	<.376	<.108	<.1	<.064	<.372	<.084	<.096
JAN												
09...	.4	<9.81	<500	<2.45	<.532	<.376	<.108	<.1	<.064	<.372	<.084	<.096
FEB												
13...	.8	<9.81	<500	<2.45	<.532	<.376	<.108	<.1	<.064	<.372	<.084	<.096
MAR												
09...	.5	<9.81	<500	<2.45	<.532	<.376	<.108	<.1	<.064	<.372	<.084	<.096
APR												
23...	.3	<9.81	--	<2.45	<.532	<.376	<.108	<.1	<.064	<.372	<.084	<.096

## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	BENZENE SEC BUTYL- WATER UNFLTRD REC (UG/L) (77350)	BENZENE TERT- BUTYL- WATER UNFLTRD REC (UG/L) (77353)	BENZENE TOTAL (UG/L) (34030)	BROMO- BENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	BENZENE 14BRFL- SURROG VOC UNFLTRD REC PERCENT (99834)	BROMO- ETHENE WATER UNFLTRD RECOVER (UG/L) (50002)	BROMO- FORM TOTAL (UG/L) (32104)	CARBON DI- SULFIDE WATER TOTAL (UG/L) (77041)	CARBON TETRA- CHLO- RIDE TOTAL (UG/L) (32102)	CHLORO- BENZENE TOTAL (UG/L) (34301)	CHLORO- DI- BROMO- METHANE TOTAL (UG/L) (32105)	CHLORO- ETHANE TOTAL (UG/L) (34311)
OCT												
08...	<.192	<.384	<.128	<.144	100	<.4	<.416	<.32	<.352	<.112	<.728	<.48
17...	<.096	<.192	<.064	<.072	102	<.2	<.208	<.16	<.176	<.056	<.364	<.24
NOV												
07...	<.096	<.192	<.064	<.072	75	<.2	<.208	<.16	<.176	<.056	<.364	<.24
14...	<.096	<.192	<.064	<.072	65	<.2	<.208	<.16	<.176	<.056	<.364	<.24
DEC												
19...	<.096	<.192	<.064	<.072	90	<.2	<.208	<.16	<.176	<.056	<.364	<.24
JAN												
09...	<.096	<.192	E.019	<.072	92	<.2	<.208	<.16	<.176	<.056	<.364	<.24
FEB												
13...	<.096	<.192	<.064	<.072	89	<.2	<.208	<.16	<.176	<.056	<.364	<.24
MAR												
09...	<.096	<.192	E.011	<.072	102	<.2	<.208	<.16	<.176	<.056	<.364	<.24
APR												
23...	<.096	<.192	<.064	<.072	73	<.2	<.208	<.16	<.176	<.056	<.364	<.24
DATE	CHLORO- FORM TOTAL (UG/L) (32106)	CIS-1,2 -DI- CHLORO- ETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DI- CHLORO- PROPENE TOTAL (UG/L) (34704)	DIBROMO CHLORO- PROPANE WATER WHOLE TOT.REC (UG/L) (82625)	1,2- DIBROMO ETHANE WATER WHOLE TOTAL (UG/L) (77651)	DI- BROMO- METHANE WATER WHOLE RECOVER (UG/L) (30217)	BROMO- DI- CHLORO- METHANE TOTAL (UG/L) (32101)	DI- CHLORO- DI- FLUORO- METHANE TOTAL (UG/L) (34668)	ETHANE 12DICL SURROG VOC UNFLTRD REC PERCENT (99832)	DI-ISO- PROPYL- ETHER, WATER, UNFLTRD RECOVER (81577)	ETHANE HEXA- CHLORO- WATER UNFLTRD RECOVER (34396)	
OCT												
08...	E.02	<.152	<.368	<.856	<.144	<.2	<.192	<.384	98	<.392	<.145	
17...	E.1	<.076	<.184	<.428	<.072	<.1	<.096	<.192	98	<.196	<.724	
NOV												
07...	<.104	<.076	<.184	<.428	<.072	<.1	<.096	<.192	109	<.196	<.724	
14...	E.019	<.076	<.184	<.428	<.072	<.1	<.096	<.192	100	<.196	<.724	
DEC												
19...	<.104	<.076	<.184	<.428	<.072	<.1	<.096	<.192	106	<.196	<.724	
JAN												
09...	E.025	<.076	<.184	<.428	<.072	<.1	<.096	<.192	93	<.196	<.724	
FEB												
13...	E.037	<.076	<.184	<.428	<.072	<.1	<.096	<.192	117	<.196	<.724	
MAR												
09...	E.03	<.076	<.184	<.428	<.072	<.1	<.096	<.192	127	<.196	<.724	
APR												
23...	E.044	<.076	<.184	<.428	<.072	<.1	<.096	<.192	113	<.196	<.724	
DATE	ETHANE, 1112- TETRA- CHLORO- WAT UNF REC (UG/L) (77562)	ETHANE, 1,1,2,2 TETRA- CHLORO- WAT UNF REC (UG/L) (34516)	ETHER TERT- BUTYL ETHYL UNFLTRD RECOVER (UG/L) (81576)	ETHER TERT- BUTYL ETHYL UNFLTRD RECOVER (UG/L) (50004)	ETHER TERT- PENTYL METHYL UNFLTRD RECOVER (UG/L) (50005)	ETHYL- BENZENE TOTAL (UG/L) (34371)	FURAN, TETRA- HYDRO- WATER UNFLTRD RECOVER (UG/L) (81607)	FREON- 113 WATER UNFLTRD REC (UG/L) (77652)	HEXA- CHLORO- BUT- ADIENE TOTAL (UG/L) (39702)	BENZENE 135-TRI METHYL WATER UNFLTRD REC (UG/L) (77226)	ISO- DURENE WATER UNFLTRD RECOVER (50000)	
OCT												
08...	<.176	<.528	<.68	<.216	<.448	<.12	<.459	<.128	<.568	<.176	<.96	
17...	<.088	<.264	<.34	<.108	<.224	<.06	<.230	<.064	<.284	<.088	<.48	
NOV												
07...	<.088	<.264	<.34	<.108	<.224	<.06	<.230	<.064	<.284	<.088	<.48	
14...	<.088	<.264	<.34	<.108	<.224	<.06	<.230	<.064	<.284	<.088	<.48	
DEC												
19...	<.088	<.264	<.34	<.108	<.224	<.06	<.230	<.064	<.284	<.088	<.48	
JAN												
09...	<.088	<.264	<.34	<.108	<.224	<.06	<.230	<.064	<.284	<.088	<.48	
FEB												
13...	<.088	<.264	<.34	<.108	<.224	<.06	<.230	<.064	<.284	<.088	<.48	
MAR												
09...	<.088	<.264	<.34	<.108	<.224	<.06	<.230	<.064	<.284	<.088	<.48	
APR												
23...	<.088	<.264	<.34	<.108	<.224	<.06	E3.25	<.064	<.284	<.088	<.48	

## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

	META/ PARA- XYLENE WATER UNFLTRD REC (UG/L) (85795)	METHANE BROMO- CHLORO- WAT UNFLTRD REC (UG/L) (77297)	METHYL ACRY- LATE WATER UNFLTRD RECOVER (UG/L) (49991)	METHAC- RYLATE ETHYL- WATER UNFLTRD RECOVER (UG/L) (73570)	METHAC- RYLATE METHYL WATER UNFLTRD RECOVER (UG/L) (81597)	METH- ACRYLO- NITRITE WATER UNFLTRD RECOVER (UG/L) (81593)	METHYL IODIDE WATER UNFLTRD RECOVER (UG/L) (77424)	METHYL TERT- BUTYL ETHER WAT UNF REC (UG/L) (78032)	METHYL- CHLO- RIDE TOTAL (UG/L) (34413)	METHYL- CHLO- RIDE TOTAL (UG/L) (34418)	METHYL ENE CHLO- RIDE TOTAL (UG/L) (34423)
OCT											
08...	<.256	<.176	<2.45	<1.11	<1.4	<2.28	<.304	<.448	<.592	<1.02	<1.53
17...	E.06	<.088	<1.22	<.556	<.7	<1.14	<.152	1.36	<.296	<.508	<.764
NOV											
07...	<.128	<.088	<1.22	<.556	<.7	<1.14	<.152	.668	<.296	<.508	<.764
14...	<.128	<.088	<1.22	<.556	<.7	<1.14	<.152	.427	<.296	<.508	<.764
DEC											
19...	<.128	<.088	<1.22	<.556	<.7	<1.14	<.152	.443	<.296	<.508	<.764
JAN											
09...	E.026	<.088	<1.22	<.556	<.7	<1.14	<.152	.688	<.296	<.508	<.764
FEB											
13...	<.128	<.088	<1.22	<.556	<.7	<1.14	<.152	.493	<.296	<.508	<.764
MAR											
09...	<.128	<.088	<1.22	<.556	<.7	<1.14	<.152	.373	<.296	<.508	<.764
APR											
23...	<.128	<.088	<1.22	<.556	<.7	<1.14	<.152	.256	<.296	<.508	<.764
DATE	METHYL- ETHYL- KETONE WATER WHOLE TOTAL (UG/L) (81595)	METHYL ISO- BUTYL KETONE WAT. WH. TOTAL (UG/L) (78133)	O- CHLORO- TOLUENE WATER WHOLE TOTAL (UG/L) (34696)	O- XYLENE WATER WHOLE TOTAL (UG/L) (77135)	1,1-DI- CHLORO- ETHANE TOTAL (UG/L) (34496)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L) (34501)	1,1-DI- CHLORO- PRO- PENE, WAT, WH TOTAL (UG/L) (77168)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L) (34506)	1,1,2- TRI- CHLORO- ETHANE TOTAL (UG/L) (34511)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L) (32103)	
OCT											
08...	<6.6	<1.50	<1	<.168	<.256	<.264	<.176	<.104	<.128	<.256	<.536
17...	<3.3	<.748	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
NOV											
07...	<3.3	<.748	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
14...	<3.3	<.748	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
DEC											
19...	<3.3	<.748	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
JAN											
09...	<3.3	E.25	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
FEB											
13...	<3.3	<.748	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
MAR											
09...	<3.3	<.748	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
APR											
23...	<3.3	<.748	<.5	<.084	<.128	<.132	<.088	<.052	<.064	<.128	<.268
DATE	1,2-DI- CHLORO- PROPANE TOTAL (UG/L) (34541)	123-TRI CHLORO- PROPANE WATER WHOLE TOTAL (UG/L) (77443)	TRANS- 1,2-DI- CHLORO- ETHENE TOTAL (UG/L) (34546)	P-ISO- PROPYL- TOLUENE WATER WHOLE REC (UG/L) (77356)	PREH- NITENE WATER UNFLTRD RECOVER (UG/L) (49999)	1,3-DI- CHLORO- PROPANE WAT. WH TOTAL (UG/L) (77173)	PROPENE 3- CHLORO- WATER UNFLTRD RECOVER (UG/L) (78109)	BENZENE 124-TRI METHYL UNFILT RECOVER (UG/L) (77222)	SET NUMBER SCHED- ULE 2090 (NO.) (99827)	STYRENE TOTAL (UG/L) (77128)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L) (34475)
OCT											
08...	<.272	<.28	<.128	<.44	<.92	<.464	<.784	<.224	971000	<.168	<.152
17...	<.136	<.14	<.064	<.22	<.46	<.232	<.392	<.112	971000	<.084	<.076
NOV											
07...	<.136	<.14	<.064	<.22	<.46	<.232	<.392	<.112	971000	<.084	<.076
14...	<.136	<.14	<.064	E.029	<.46	<.232	<.392	E.019	971000	E.011	<.076
DEC											
19...	<.136	<.14	<.064	<.22	<.46	<.232	<.392	<.112	971000	<.084	<.076
JAN											
09...	<.136	<.14	<.064	<.22	<.46	<.232	<.392	<.112	980000	<.084	E.003
FEB											
13...	<.136	<.14	<.064	<.22	<.46	<.232	<.392	<.112	980000	<.084	<.076
MAR											
09...	<.136	<.14	<.064	<.22	<.46	<.232	<.392	<.112	980000	<.084	<.076
APR											
23...	<.136	<.14	<.064	<.22	<.46	<.232	<.392	<.112	980000	<.084	<.076

## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TOLUENE O-ETHYL WATER UNFLTRD RECOVER (UG/L) (77220)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	TOLUENE TOTAL (UG/L) (34010)	TOLUENE D8 SURROG VOC UNFLTRD REC PERCENT (99833)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L) (34699)	TRI- CHLORO- ETHYL- ENE TOTAL (UG/L) (39180)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L) (34488)	2BUTENE TRANS-1 4-DI- CHLORO UNFLTRD RECOVER (UG/L) (73547)	2-HEXA- NONE WATER TOTAL (UG/L) (77103)	2,2-DI CHLORO- PRO- PANE WAT, WH TOTAL (UG/L) (77170)	VINYL CHLO- RIDE TOTAL (UG/L) (39175)
OCT											
08...	<.4	<.224	<.152	104	<.536	<.152	<.368	<2.77	<2.98	<.312	<.448
17...	<.2	<.112	E.1	101	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224
NOV											
07...	<.2	<.112	E.087	90	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224
14...	<.2	<.112	E.088	87	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224
DEC											
19...	<.2	<.112	E.078	102	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224
JAN											
09...	<.2	<.112	E.087	99	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224
FEB											
13...	<.2	<.112	E.057	97	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224
MAR											
09...	<.2	<.112	E.161	100	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224
APR											
23...	<.2	<.112	<.076	91	<.268	<.076	<.184	<1.38	<1.49	<.156	<.224

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
08...N	0930	.79	14.7	46	.10	86
17...N	1020	1.5	15.2	66	.27	90
NOV						
07...N	0940	.65	13.6	122	.21	94
14...N	0900	57	12.0	319	49	95
DEC						
19...N	0950	.75	7.2	28	.06	87
JAN						
09...N	0930	1.5	8.4	20	.08	92
FEB						
13...N	0930	50	10.9	70	9.4	92
MAR						
09...N	1000	4.2	9.5	20	.23	98
APR						
23...N	1000	2.1	17.8	7	.04	100

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	373	321	301	291	167	147	379	365	247	97	335	322
2	352	243	308	301	184	167	366	98	106	41	342	334
3	253	178	316	308	200	184	119	98	93	42	352	342
4	218	188	323	316	216	200	146	83	232	93	404	350
5	254	218	328	323	222	191	192	146	249	122	401	118
6	243	232	334	328	209	189	225	192	151	72	143	99
7	262	243	339	334	207	134	260	223	120	61	181	143
8	395	262	334	321	199	154	271	260	151	63	227	181
9	395	71	322	311	209	198	278	128	146	120	273	227
10	129	95	311	215	222	209	145	74	224	146	316	273
11	153	129	216	178	233	222	117	77	192	140	365	298
12	174	153	195	173	243	233	128	98	168	86	333	316
13	196	174	173	106	253	243	205	108	133	91	334	327
14	215	196	106	94	256	178	288	101	124	53	330	321
15	231	215	122	106	189	178	126	98	196	99	359	330
16	250	231	134	121	205	189	213	126	231	93	362	348
17	260	250	148	134	221	205	---	---	---	---	348	338
18	270	260	160	148	236	221	---	---	---	---	356	340
19	271	266	165	150	381	236	---	---	---	---	357	350
20	266	256	164	150	386	372	---	---	---	---	350	343
21	256	249	176	164	390	381	---	---	---	---	343	341
22	249	246	189	176	397	390	---	---	---	---	341	276
23	257	244	200	189	393	381	---	---	---	---	276	69
24	257	250	206	200	387	379	---	---	---	---	94	27
25	258	249	272	197	387	383	---	---	---	---	102	28
26	264	254	221	122	386	382	---	---	---	---	91	53
27	---	---	154	142	384	376	---	---	---	---	106	91
28	---	---	170	154	414	376	222	200	323	310	106	105
29	---	---	184	170	380	372	213	45	---	---	174	58
30	277	258	187	131	377	364	173	107	---	---	134	116
31	291	277	---	---	377	366	232	173	---	---	118	55
MONTH	---	---	339	94	414	134	---	---	---	---	404	27
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	92	74	316	149	---	---	---	---	---	---	---	---
2	97	91	207	158	---	---	---	---	---	---	---	---
3	94	49	214	76	---	---	---	---	---	---	---	---
4	58	50	142	86	---	---	---	---	---	---	---	---
5	69	58	143	110	---	---	---	---	---	---	---	---
6	81	69	160	128	---	---	---	---	---	---	---	---
7	92	81	193	160	---	---	---	---	---	---	---	---
8	99	92	204	193	---	---	---	---	---	---	---	---
9	107	98	218	181	---	---	---	---	---	---	---	---
10	114	107	224	206	---	---	---	---	---	---	---	---
11	121	114	268	158	---	---	---	---	---	---	---	---
12	131	121	158	113	---	---	---	---	---	---	---	---
13	125	66	---	---	---	---	---	---	---	---	---	---
14	66	61	---	---	---	---	---	---	---	---	---	---
15	71	62	---	---	---	---	---	---	---	---	---	---
16	83	69	---	---	---	---	---	---	---	---	---	---
17	105	83	---	---	---	---	---	---	---	---	---	---
18	138	105	---	---	---	---	---	---	---	---	---	---
19	167	138	---	---	---	---	---	---	---	---	---	---
20	216	167	---	---	---	---	---	---	---	---	---	---
21	310	216	---	---	---	---	---	---	---	---	---	---
22	339	310	---	---	---	---	---	---	---	---	---	---
23	345	53	---	---	---	---	---	---	---	---	---	---
24	106	52	---	---	---	---	---	---	---	---	---	---
25	157	106	---	---	---	---	---	---	---	---	---	---
26	204	157	---	---	---	---	---	---	---	---	---	---
27	234	204	---	---	---	---	---	---	---	---	---	---
28	254	233	---	---	---	---	---	---	---	---	---	---
29	313	233	---	---	---	---	---	---	---	---	---	---
30	312	283	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	345	49	---	---	---	---	---	---	---	---	---	---

## 11447360 ARCADE CREEK NEAR DEL PASO HEIGHTS, CA—Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

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

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA

LOCATION.—Lat 38°27'15", long 121°29'54", in SW 1/4 SW 1/4 sec.13, T.7 N., R.4 E., Sacramento County, Hydrologic Unit 18020109, on left bank 630 ft downstream from drawbridge at Freeport and 11 mi south of Sacramento.

DRAINAGE AREA.—Indeterminate.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—January 1904 to July 1905 (gage heights only), June to November 1921, October 1948 to current year. Prior to October 1979, published as Sacramento River at Sacramento (station 11447500).

REVISED RECORD.—WDR CA-96-4: 1994–1995 (P).

GAGE.—Water-stage recorder and acoustic-velocity system. Datum of gage is sea level.

REMARKS.—Records good. Natural flow of stream affected by storage reservoirs, power development, diversions for irrigation, return flow from irrigated areas, and tide. Floodflows bypass station through Sacramento Weir Spill to Yolo Bypass (stations 11426000 and 11453000). See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD (since 1949).—Maximum discharge, 117,000 ft<sup>3</sup>/s, Feb. 19, 1986, elevation, 25.00 ft; minimum daily, 3,970 ft<sup>3</sup>/s, Oct. 15, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.—Maximum discharge known prior to Nov. 21, 1950, 103,000 ft<sup>3</sup>/s, Jan. 17, 1909, elevation, 29.6 ft, site then in use at present datum, from reports of California Department of Water Resources.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12900	10700	23700	14300	70000	73000	72300	45700	69000	37500	23700	26100
2	13900	10600	29400	14300	71900	71400	70900	46400	70500	36100	23800	26500
3	13900	10600	27400	15600	84300	70400	70600	47300	69000	34600	24000	26900
4	14100	10700	24000	18900	94100	69700	70800	48600	67100	33600	24400	27400
5	13900	10700	21800	25300	90300	68900	70100	49300	65500	32600	24300	28300
6	12800	11200	20200	28100	86100	69000	69400	49500	64600	32100	24400	28500
7	13600	11700	21000	26400	84300	68100	69000	49700	64100	31400	24600	28600
8	13100	11800	25500	23900	86800	66900	68800	48800	63500	29900	24300	28400
9	13500	11500	29400	24200	84000	65700	68600	46800	62600	29200	24700	27800
10	13200	11400	30700	24500	81400	64500	67900	44900	60400	28700	25100	27200
11	13700	11900	27700	25300	79600	62600	66900	44400	58400	28000	25400	28600
12	13600	11800	24300	34500	78100	59800	65100	44500	56600	26900	25000	27900
13	13200	11700	21500	53600	78000	56900	63200	46000	56300	26000	25100	26400
14	12600	12900	20000	58500	80300	54100	61600	49100	56700	25700	25500	24600
15	11700	13200	20800	63700	86700	52200	59500	50100	58200	25200	25400	23600
16	11000	14300	23800	71700	86100	51200	56700	49900	60300	24500	24900	23100
17	10800	14500	27500	73600	84700	49900	53900	49800	60600	24100	24500	23200
18	10900	14900	25900	77800	83000	47600	50600	51000	59200	23400	24500	24200
19	10500	15900	24100	79400	80900	47700	47400	51800	56300	23200	24900	24100
20	10700	16600	23900	77400	81000	50500	45800	50600	52400	23000	25300	24100
21	11300	17000	22800	75300	79100	51800	45000	48100	49800	23100	25800	23800
22	11900	17700	21100	73600	80700	54300	44100	45700	48800	22900	25800	23000
23	11800	17000	19000	71800	81100	58400	43900	43500	47700	22700	25800	23800
24	11700	16000	17800	70300	80000	64700	44900	42200	46300	22700	26000	23700
25	10600	15300	17000	68800	78300	72200	46700	42100	44800	23000	e26100	23600
26	9980	16200	16300	67800	77200	76400	47700	43000	42200	23200	e26200	23300
27	10000	20300	15900	67600	75900	77700	47500	45500	40700	23100	e26300	23300
28	10200	24900	15500	67700	74400	77900	48000	49100	40300	e23300	26400	23200
29	10400	26600	15000	69500	---	76700	47400	52200	39800	e23500	26200	23000
30	10400	24200	14700	71200	---	75100	46200	57000	39000	e23700	26000	23300
31	10400	---	14600	70700	---	73400	---	63200	---	23800	26100	---
TOTAL	372280	443800	682300	1605300	2278300	1978700	1730500	1495800	1670700	830700	780500	759500
MEAN	12010	14790	22010	51780	81370	63830	57680	48250	55690	26800	25180	25320
MAX	14100	26600	30700	79400	94100	77900	72300	63200	70500	37500	26400	28600
MIN	9980	10600	14600	14300	70000	47600	43900	42100	39000	22700	23700	23000
AC-FT	738400	880300	1353000	3184000	4519000	3925000	3432000	2967000	3314000	1648000	1548000	1506000

e Estimated.

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	12410	16380	26480	35400	40940	37790	30150	25110	18470	14830	14440	14900
MAX	28690	48820	74510	87110	81370	78290	76580	69820	55690	31000	25180	25320
(WY)	1963	1984	1984	1997	1998	1983	1982	1952	1998	1983	1998	1998
MIN	4494	6380	7208	8984	8003	6573	5961	6414	6865	6345	7061	6838
(WY)	1978	1993	1960	1991	1977	1977	1977	1992	1977	1949	1949	1977

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1949 - 1998	
ANNUAL TOTAL	9423850		14628380			
ANNUAL MEAN	25820		40080		23860	
HIGHEST ANNUAL MEAN					46900	
LOWEST ANNUAL MEAN					7608	
HIGHEST DAILY MEAN	113000	Jan 3	94100	Feb 4	115000	Feb 19 1986
LOWEST DAILY MEAN	9360	May 18	9980	Oct 26	3970	Oct 15 1977
ANNUAL SEVEN-DAY MINIMUM	9670	May 6	10300	Oct 25	4060	Oct 13 1977
INSTANTANEOUS PEAK FLOW			97900	Feb 4	117000	Feb 19 1986
INSTANTANEOUS PEAK STAGE			20.96	Feb 4	25.00	Feb 19 1986
ANNUAL RUNOFF (AC-FT)	18690000		29020000		17280000	
10 PERCENT EXCEEDS	71700		73600		56700	
50 PERCENT EXCEEDS	17000		28700		16000	
90 PERCENT EXCEEDS	10800		13200		8890	



## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water year 1957 to current year.

CHEMICAL DATA: Water years 1959 to current year.

BIOLOGICAL DATA: Water years 1974–81.

SPECIFIC CONDUCTANCE: Water years 1974–75, 1989–94, 1995 to September 1998 (discontinued).

WATER TEMPERATURE: Water year 1960 to current year.

SEDIMENT DATA: Water year 1957 to current year (prior to water year 1980, published as 11447500 Sacramento River at Sacramento).

PERIOD OF DAILY RECORD.—

CHEMICAL DATA: June 1960 to June 1963.

SPECIFIC CONDUCTANCE: Water years 1974–75, 1989–94, October 1995 to September 1998 (discontinued).

WATER TEMPERATURE: June 1960 to current year.

SUSPENDED SEDIMENT: October 1956 to current year.

INSTRUMENTATION.—Temperature recorder June 1960 to November 1988. Water-quality monitor since November 1988.

REMARKS.—Records of sediment discharge from 1957 to 1979 were obtained at Sacramento and are considered equivalent. Additional specific-conductance and monthly chemical and trace-element data are available in files of the U.S. Geological Survey. Interruption in record was due to malfunction of recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.—

SPECIFIC CONDUCTANCE: Maximum recorded, 318 microsiemens, Nov. 22, 1974; minimum recorded, 32 microsiemens, Apr. 6, 1974.

WATER TEMPERATURE: Maximum recorded, 27.0°C, Sept. 8, 1977; minimum recorded, 3.0°C, Dec. 25–27, 1990.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,960 mg/L, Dec. 24, 1964; minimum daily, 2 mg/L, Jan. 27, 31, and Nov. 21, 1991.

SEDIMENT LOAD: Maximum daily, 525,000 tons, Dec. 24, 1964; minimum daily, 35 tons, Jan. 31, 1991.

EXTREMES FOR CURRENT YEAR.—

SPECIFIC CONDUCTANCE: Maximum recorded, 203 microsiemens, Dec. 16; minimum recorded, 67 microsiemens, May 29.

WATER TEMPERATURE: Maximum recorded, 22.5°C, on several days during July and August; minimum recorded, 7.0°C, Dec. 25–29.

SEDIMENT CONCENTRATION: Maximum daily mean, 444 mg/L, Jan. 15, minimum daily mean, 9 mg/L, Oct. 17.

SEDIMENT LOAD: Maximum daily, 76,300 tons, Jan. 15; minimum daily, 251 tons, Oct. 17.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
23...	1100	9250	126	7.9	16.6	761	10.2	105	10	5.3
NOV										
20...	1130	13400	179	8.1	12.2	768	6.5	60	13	7.4
DEC										
12...	1200	25000	155	7.5	9.3	774	10.4	91	12	6.8
JAN										
15...	1030	63000	129	7.5	10.0	760	10.2	91	10	5.4
FEB										
09...	1430	83400	77	7.3	9.3	766	10.9	94	7.0	3.3
MAR										
19...	1100	47200	146	7.8	13.8	761	11.9	115	13	6.5
APR										
07...	1030	69400	117	7.8	11.7	764	12.2	112	11	5.3
MAY										
21...	1050	48600	100	7.8	14.6	764	10.2	100	8.9	4.2
JUN										
09...	1030	63200	115	8.0	16.6	759	9.9	102	--	--
JUL										
30...	1000	e23700	120	7.8	21.1	759	9.4	106	10	5.3
AUG										
13...	1200	24200	119	7.7	21.4	763	14.2	160	9.6	5.1
SEP										
15...	1030	25900	146	8.0	19.9	758	8.5	94	12	6.5

11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT										
23...	7.2	24	1.3	51	5.4	4.8	<.1	16	96	86
NOV										
20...	11	26	1.8	57	7.6	6.5	<.1	19	104	111
DEC										
12...	10	26	1.9	54	9.5	6.0	<.1	19	111	105
JAN										
15...	6.9	23	1.4	47	5.4	6.5	<.1	16	82	83
FEB										
09...	3.3	18	1.1	31	2.9	1.8	<.1	12	58	53
MAR										
19...	6.8	20	1.1	55	7.9	5.9	<.1	17	98	96
APR										
07...	5.3	19	.8	47	5.4	2.9	<.1	17	82	80
MAY										
21...	4.5	19	.8	42	4.2	2.2	<.1	16	74	69
JUN										
09...	--	--	--	49	--	--	--	--	--	--
JUL										
30...	7.1	24	.9	57	5.5	3.0	<.1	17	88	82
AUG										
13...	6.5	23	.9	46	4.9	2.7	<.1	16	76	77
SEP										
15...	9.1	26	1.1	--	5.5	4.1	<.1	17	97	95

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT										
23...	.13	<.01	.09	.02	<.2	<.2	.02	.01	.02	7
NOV										
20...	.14	<.01	.17	<.02	.3	.2	.06	.04	.03	5
DEC										
12...	.15	<.01	.20	<.02	.5	.2	.14	.03	.03	6
JAN										
15...	.11	.01	.26	<.02	.4	.2	.10	.03	.04	8
FEB										
09...	.08	<.01	.16	.03	.2	.1	.05	.02	.04	9
MAR										
19...	.13	<.01	.20	.03	.2	<.1	.06	<.01	.02	9
APR										
07...	.11	.01	.13	.03	.2	<.1	.07	.02	.02	8
MAY										
21...	.10	.01	.16	.05	.2	.2	.07	<.01	.01	8
JUN										
09...	--	.02	.12	.03	<.1	<.1	.03	<.01	.02	10
JUL										
30...	.12	<.01	.09	<.02	.2	.1	.05	.02	.03	7
AUG										
13...	.10	<.01	.08	.08	.2	<.1	.04	.02	.02	7
SEP										
15...	.13	.01	.11	.05	.2	.1	.06	.03	.03	5

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
OCT 23...	<1	1	19	<1	<1	<1	<1	1	19	<1
NOV 20...	<1	<1	25	<1	<1	1	<1	1	24	<1
DEC 12...	<1	1	24	<1	<1	1	<1	3	22	<1
JAN 15...	<1	1	19	<1	<1	<1	<1	2	26	<1
FEB 09...	<1	<1	12	<1	<1	<1	<1	2	24	<1
MAR 19...	<1	<1	24	<1	<1	<1	<1	1	<10	<1
APR 07...	<1	<1	19	<1	<1	<1	<1	2	11	<1
MAY 21...	<1	1	16	<1	<1	<1	<1	2	11	<1
JUN 09...	<1	<1	19	<1	<1	<1	<1	1	--	<1
JUL 30...	<1	1	20	<1	<1	<1	<1	1	10	<1
AUG 13...	<1	2	18	<1	<1	<1	<1	2	<10	<1
SEP 15...	<1	1	23	<1	<1	1	<1	1	16	<1

DATE	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)
OCT 23...	2	<1	3	<1	<1	2	<1	1.6	.2
NOV 20...	2	<1	1	<1	<1	<1	<1	2.3	.3
DEC 12...	3	<1	2	<1	<1	2	<1	3.7	.7
JAN 15...	5	<1	1	<1	<1	3	<1	3.1	1.3
FEB 09...	3	<1	<1	<1	<1	2	<1	.3	.5
MAR 19...	3	<1	<1	<1	<1	2	<1	1.3	.5
APR 07...	3	<1	<1	<1	<1	1	<1	1.6	.2
MAY 21...	1	<1	<1	<1	<1	<1	<1	1.6	.2
JUN 09...	2	<1	<1	<1	<1	<1	<1	1.3	.3
JUL 30...	2	<1	<1	<1	<1	1	<1	1.3	.4
AUG 13...	1	<1	<1	<1	<1	2	<1	1.5	.3
SEP 15...	1	<1	1	<1	<1	1	<1	2.0	.3

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
16...	0950	13000	16.0	13	456	93
23...N	1100	9250	16.6	15	375	99
NOV						
20...N	1130	13400	12.2	19	687	97
DEC						
04...	1250	24000	10.5	116	7520	92
12...N	1200	25000	9.3	85	5740	95
JAN						
08...	1003	24500	8.0	74	4900	92
15...N	1030	63000	10.0	368	62600	84
FEB						
05...N	1230	91100	9.5	35	8610	91
09...	0942	84000	10.0	114	25900	54
09...N	1430	83400	9.3	79	17800	69
MAR						
19...	1100	47200	13.8	91	11600	88
APR						
07...N	1030	69400	11.7	44	8240	76
08...	1240	68800	12.0	58	10800	57
MAY						
19...	0950	52000	14.0	107	15000	77
21...N	1050	48600	14.6	59	7740	80
JUN						
09...N	1030	63200	16.6	49	8360	65
JUL						
22...	0842	24700	21.0	40	2670	93
30...N	1000	e23700	21.1	40	2560	97
AUG						
13...N	1200	24200	21.4	44	2870	85
20...	1121	27700	19.5	46	3440	85
SEP						
15...N	1030	25900	19.9	46	3220	92

## PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	NUMBER OF SAM- PLING POINTS (COUNT)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00063)	TEMPER- ATURE WATER (DEG C) (00010)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
DEC												
04...	1320	1	25000	10.5	10	25	34	41	64	94	100	--
04...	1325	1	25000	10.5	3	11	14	51	94	99	100	--
04...	1330	1	25000	10.5	--	1	2	17	70	97	100	--
04...	1335	1	25000	10.5	--	1	12	74	98	99	100	--
04...	1340	1	25000	10.5	1	1	2	27	95	100	--	--
FEB												
09...	1000	1	84000	10.0	--	--	3	30	78	96	99	100
09...	1005	1	84000	10.0	--	--	6	74	92	93	94	100
09...	1010	1	84000	10.0	--	--	7	68	93	95	97	100
09...	1015	1	84000	10.0	--	--	21	94	99	99	99	100
09...	1020	1	84000	10.0	--	1	42	98	100	--	--	--

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	131	122	140	128	181	151	179	161	125	114	123	118
2	127	120	151	130	183	134	178	163	125	117	122	120
3	128	118	138	131	134	115	185	162	117	91	124	120
4	126	117	150	135	164	130	184	151	91	69	124	121
5	123	116	148	137	181	163	166	152	75	68	128	122
6	121	114	146	137	195	181	162	146	89	75	130	126
7	120	113	163	142	201	188	156	120	89	80	134	127
8	120	114	152	145	201	187	147	126	80	74	136	130
9	140	116	156	147	201	177	156	133	78	74	136	132
10	123	113	155	147	185	135	156	139	85	78	141	135
11	116	109	151	145	151	132	155	137	88	85	143	134
12	119	112	153	147	172	151	160	140	94	88	148	137
13	123	115	165	149	180	162	140	104	97	93	150	135
14	119	113	157	151	186	168	104	97	100	97	152	139
15	121	112	192	155	193	169	129	102	99	92	152	137
16	126	120	165	157	203	179	124	102	96	90	153	138
17	129	122	173	161	200	152	115	102	105	96	153	140
18	160	122	180	169	163	131	107	102	110	105	155	139
19	132	121	184	171	175	152	103	96	111	108	152	137
20	144	119	183	171	185	168	101	96	112	109	142	124
21	123	120	178	171	190	175	102	100	111	109	138	125
22	136	120	182	174	193	177	103	101	112	108	132	121
23	134	118	179	167	197	166	111	101	109	104	121	111
24	121	115	175	164	181	164	122	111	109	105	124	115
25	134	116	169	161	185	166	123	118	---	---	122	112
26	133	110	172	160	183	164	127	121	112	108	113	96
27	126	119	179	161	185	165	127	122	115	111	96	90
28	173	122	190	170	187	164	131	123	119	115	93	89
29	154	137	175	134	180	164	133	127	---	---	92	89
30	141	133	151	139	188	163	128	109	---	---	96	92
31	136	128	---	---	179	164	114	109	---	---	98	96
MONTH	173	109	192	128	203	115	185	96	---	---	155	89

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	104	97	122	112	90	79	104	95	118	112	131	127
2	111	104	114	107	112	90	106	96	119	114	130	125
3	117	107	111	104	118	111	106	99	124	118	131	124
4	117	108	109	101	118	113	106	99	121	116	130	123
5	116	108	106	100	120	112	107	101	122	117	127	122
6	118	113	106	99	120	112	109	100	123	117	128	122
7	128	115	105	99	121	114	110	100	125	118	125	119
8	133	126	106	100	123	114	111	100	123	117	125	120
9	134	126	106	100	121	112	110	104	121	115	129	122
10	133	124	108	103	118	109	109	101	118	114	133	127
11	134	130	107	101	118	109	109	102	120	114	134	122
12	136	132	106	98	115	109	113	107	121	116	132	125
13	136	129	100	94	116	108	116	104	122	116	141	129
14	136	130	100	95	111	100	122	109	122	117	149	137
15	135	130	102	99	106	100	124	108	120	117	151	140
16	135	130	102	95	104	97	129	113	123	114	153	142
17	134	126	102	96	102	96	129	108	122	113	152	139
18	138	128	103	96	105	98	124	111	124	120	148	134
19	139	130	103	98	108	100	128	116	124	119	143	125
20	139	128	103	98	108	101	128	117	124	119	135	126
21	139	128	102	98	109	102	127	119	124	119	137	127
22	138	128	102	94	108	101	128	118	125	121	129	105
23	133	125	99	92	107	99	129	116	127	123	127	103
24	132	124	96	87	106	97	123	115	128	124	125	113
25	128	118	90	84	107	99	124	112	127	123	126	111
26	124	116	87	76	110	101	127	119	125	120	123	111
27	122	116	79	71	110	102	126	116	127	120	120	109
28	126	114	74	69	108	98	126	114	130	122	116	108
29	128	120	74	67	105	97	126	114	129	121	117	110
30	127	122	74	71	105	95	121	114	130	124	116	108
31	---	---	80	72	---	---	118	112	132	126	---	---
MONTH	139	97	122	67	123	79	129	95	132	112	153	103

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

## SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	12900	14	488	10700	12	347	23700	79	5030
2	13900	14	518	10600	12	343	29400	121	9600
3	13900	13	483	10600	12	343	27400	120	8870
4	14100	12	462	10700	12	347	24000	111	7190
5	13900	12	465	10700	12	347	21800	76	4460
6	12800	13	441	11200	12	363	20200	52	2810
7	13600	13	483	11700	12	375	21000	53	2980
8	13100	14	479	11800	10	331	25500	70	4820
9	13500	14	508	11500	10	311	29400	91	7250
10	13200	15	517	11400	10	308	30700	93	7690
11	13700	15	548	11900	10	321	27700	79	5910
12	13600	14	523	11800	10	319	24300	66	4320
13	13200	14	485	11700	11	335	21500	56	3220
14	12600	13	443	12900	14	485	20000	49	2650
15	11700	12	394	13200	12	427	20800	44	2450
16	11000	12	343	14300	11	407	23800	49	3170
17	10800	9	251	14500	12	484	27500	135	10000
18	10900	10	290	14900	15	596	25900	138	9640
19	10500	10	293	15900	18	762	24100	84	5450
20	10700	11	307	16600	21	954	23900	53	3390
21	11300	11	334	17000	26	1170	22800	43	2670
22	11900	11	362	17700	31	1500	21100	37	2100
23	11800	12	370	17000	40	1850	19000	31	1610
24	11700	12	377	16000	41	1770	17800	27	1300
25	10600	12	346	15300	41	1690	17000	25	1160
26	9980	13	338	16200	43	1870	16300	24	1080
27	10000	13	351	20300	56	3070	15900	25	1090
28	10200	14	372	24900	81	5460	15500	23	972
29	10400	14	387	26600	133	9560	15000	21	861
30	10400	13	360	24200	86	5620	14700	21	824
31	10400	12	338	---	---	---	14600	19	758
TOTAL	372280	---	12656	443800	---	42065	682300	---	125325
JANUARY			FEBRUARY			MARCH			
1	14300	19	734	70000	113	21400	73000	95	18800
2	14300	20	778	71900	131	25500	71400	96	18500
3	15600	29	1240	84300	171	38900	70400	80	15300
4	18900	45	2280	94100	169	43000	69700	72	13600
5	25300	68	4650	90300	122	29800	68900	78	14400
6	28100	89	6780	86100	110	25600	69000	74	13900
7	26400	77	5510	84300	131	29700	68100	67	12300
8	23900	69	4450	86800	126	29500	66900	82	14800
9	24200	61	3990	84000	116	26400	65700	82	14500
10	24500	60	3970	81400	106	23400	64500	87	15200
11	25300	65	4440	79600	106	22800	62600	99	16800
12	34500	160	14900	78100	110	23200	59800	104	16700
13	53600	315	45600	78000	113	23800	56900	102	15700
14	58500	346	54600	80300	112	24200	54100	108	15800
15	63700	444	76300	86700	100	23400	52200	134	18900
16	71700	311	60300	86100	82	19000	51200	181	25000
17	73600	237	47200	84700	89	20300	49900	149	20000
18	77800	201	42300	83000	92	20500	47600	130	16700
19	79400	173	37100	80900	96	20900	47700	121	15600
20	77400	148	30800	81000	106	23100	50500	111	15200
21	75300	144	29400	79100	90	19200	51800	97	13500
22	73600	139	27600	80700	104	22600	54300	105	15500
23	71800	132	25600	81100	95	20900	58400	123	19400
24	70300	118	22500	80000	104	22400	64700	144	25100
25	68800	118	21900	78300	109	23100	72200	180	35100
26	67800	101	18600	77200	108	22500	76400	143	29500
27	67600	98	17800	75900	110	22500	77700	125	26300
28	67700	92	16800	74400	113	22700	77900	105	22100
29	69500	118	22100	---	---	---	76700	89	18500
30	71200	133	25600	---	---	---	75100	78	15800
31	70700	125	23800	---	---	---	73400	78	15500
TOTAL	1605300	---	699622	2278300	---	690300	1978700	---	564000

## 11447650 SACRAMENTO RIVER AT FREEPORT, CA—Continued

## SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	72300	71	13900	45700	70	8630	69000	81	15100
2	70900	66	12600	46400	70	8810	70500	83	15800
3	70600	72	13800	47300	71	9020	69000	75	14000
4	70800	64	12200	48600	71	9320	67100	68	12300
5	70100	73	13800	49300	71	9500	65500	69	12100
6	69400	59	11100	49500	65	8700	64600	68	11800
7	69000	62	11500	49700	53	7150	64100	71	12200
8	68800	64	11900	48800	59	7830	63500	59	10000
9	68600	66	12200	46800	59	7500	62600	47	7930
10	67900	75	13700	44900	69	8330	60400	55	8900
11	66900	71	12900	44400	76	9070	58400	65	10200
12	65100	68	11900	44500	80	9660	56600	64	9820
13	63200	67	11500	46000	57	7050	56300	71	10800
14	61600	69	11500	49100	55	7320	56700	89	13600
15	59500	64	10300	50100	53	7200	58200	77	12000
16	56700	69	10600	49900	52	6950	60300	95	15400
17	53900	101	14700	49800	52	7010	60600	97	15900
18	50600	131	17900	51000	62	8550	59200	75	12000
19	47400	108	13800	51800	100	14000	56300	53	8100
20	45800	98	12200	50600	92	12600	52400	72	10100
21	45000	81	9880	48100	75	9700	49800	69	9300
22	44100	79	9390	45700	62	7690	48800	65	8590
23	43900	81	9650	43500	66	7770	47700	68	8760
24	44900	72	8750	42200	72	8160	46300	73	9100
25	46700	77	9720	42100	74	8360	44800	78	9430
26	47700	105	13500	43000	72	8320	42200	84	9510
27	47500	126	16200	45500	60	7380	40700	89	9750
28	48000	109	14200	49100	64	8530	40300	80	8700
29	47400	80	10300	52200	70	9860	39800	69	7370
30	46200	71	8870	57000	74	11400	39000	68	7110
31	---	---	---	63200	77	13200	---	---	---
TOTAL	1730500	---	364460	1495800	---	274570	1670700	---	325670
JULY			AUGUST			SEPTEMBER			
1	37500	69	7030	23700	51	3270	26100	46	3260
2	36100	70	6860	23800	52	3340	26500	44	3130
3	34600	63	5920	24000	53	3440	26900	42	3020
4	33600	64	5780	24400	53	3510	27400	41	3040
5	32600	59	5180	24300	50	3300	28300	41	3160
6	32100	49	4270	24400	47	3100	28500	42	3190
7	31400	41	3450	24600	44	2960	28600	42	3220
8	29900	39	3120	24300	45	2930	28400	42	3210
9	29200	41	3200	24700	45	3020	27800	42	3150
10	28700	40	3090	25100	46	3090	27200	42	3080
11	28000	39	2960	25400	44	2990	28600	42	3250
12	26900	40	2890	25000	41	2790	27900	43	3210
13	26000	41	2850	25100	39	2660	26400	43	3080
14	25700	41	2870	25500	38	2590	24600	44	2910
15	25200	42	2870	25400	39	2700	23600	44	2830
16	24500	43	2860	24900	42	2850	23100	45	2800
17	24100	45	2900	24500	44	2910	23200	45	2820
18	23400	44	2760	24500	41	2700	24200	44	2870
19	23200	42	2650	24900	40	2680	24100	39	2540
20	23000	41	2560	25300	45	3060	24100	34	2230
21	23100	40	2490	25800	43	3030	23800	30	1940
22	22900	38	2360	25800	43	2990	23000	28	1740
23	22700	30	1860	25800	42	2960	23800	31	2020
24	22700	29	1770	26000	42	2950	23700	35	2230
25	23000	30	1830	e26100	41	2920	23600	35	2230
26	23200	30	1880	e26200	41	2910	23300	35	2200
27	23100	31	1910	e26300	42	2990	23300	35	2200
28	e23300	32	2000	26400	43	3070	23200	35	2190
29	e23500	36	2280	26200	44	3130	23000	35	2170
30	e23700	41	2620	26000	47	3270	23300	35	2200
31	23800	49	3150	26100	48	3410	---	---	---
TOTAL	830700	---	100220	780500	---	93520	759500	---	81120
YEAR	14628380		3373528						

e Estimated.



## 11449500 KELSEY CREEK NEAR KELSEYVILLE, CA

LOCATION.—Lat 38°55'39", long 122°50'33", in SE 1/4 SE 1/4 sec.34, T.13 N., R.9 W., Lake County, Hydrologic Unit 18020116, on left bank 1.6 mi downstream from Widow Creek and 3.5 mi south of Kelseyville.

DRAINAGE AREA.—36.6 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1946 to current year.

REVISED RECORDS.—WSP 1285: 1947–48(M), 1950–52(P). WSP 1931: Drainage area. WDR CA-96-4: 1956–93(P).

GAGE.—Water-stage recorder. Datum of gage is 1,475.44 ft above sea level. Prior to July 16, 1955, at site 600 ft upstream at different datum.

REMARKS.—Records good. Some minor diversions upstream from station. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 8,600 ft<sup>3</sup>/s, Mar. 9, 1995, gage height, 13.80 ft; minimum daily, 0.13 ft<sup>3</sup>/s, Sept. 6–11, 1992.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 2,400 ft<sup>3</sup>/s, or maximum:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 3	0015	5,400	11.81	Feb. 19	1230	2,620	9.36

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	6.4	85	18	634	201	183	73	189	29	13	7.6
2	4.7	6.4	52	91	1400	182	141	75	148	29	13	7.5
3	4.3	6.2	52	309	2060	167	215	70	125	28	12	7.4
4	4.1	6.2	79	577	641	150	188	64	109	27	11	7.5
5	4.1	6.1	184	212	1470	141	162	63	96	26	11	7.6
6	3.9	6.2	111	165	1960	133	148	63	86	25	10	8.0
7	3.9	6.5	264	198	1710	120	135	61	79	24	10	7.8
8	4.9	6.3	205	126	925	119	118	59	74	23	10	7.7
9	17	6.3	115	105	551	107	127	56	70	22	10	7.7
10	7.7	6.9	75	205	454	98	124	54	66	22	10	7.8
11	6.2	7.5	54	497	363	92	115	54	64	22	9.9	7.7
12	5.8	6.8	43	915	370	117	119	62	61	21	9.5	7.5
13	5.6	7.5	36	407	307	233	193	58	60	20	9.2	7.3
14	5.4	11	285	369	629	139	162	54	56	19	8.8	7.2
15	5.3	21	159	520	426	117	164	51	52	19	8.5	7.3
16	5.2	189	95	338	577	107	150	51	50	18	8.5	7.2
17	5.1	106	90	292	511	98	127	51	48	17	8.7	7.3
18	5.2	27	79	841	366	90	114	48	46	17	8.7	7.5
19	5.4	58	59	548	1190	84	104	46	45	16	9.0	7.5
20	5.5	31	48	328	635	79	94	45	43	16	8.9	7.5
21	5.6	19	41	237	1310	78	86	44	42	15	9.1	7.4
22	5.6	16	35	186	679	131	81	42	41	15	8.8	7.5
23	5.6	18	31	161	774	567	92	41	39	15	8.8	7.7
24	5.8	51	28	141	524	405	84	41	38	15	8.5	7.8
25	5.8	72	25	125	393	303	75	42	36	14	8.3	7.8
26	5.8	735	24	630	312	233	71	40	35	14	8.4	7.9
27	6.0	193	22	476	263	192	67	43	33	14	8.2	8.2
28	6.0	72	21	276	227	171	64	447	32	13	8.1	8.8
29	6.1	91	20	732	---	147	61	1280	31	13	7.9	8.5
30	6.2	267	19	346	---	128	59	470	30	14	7.9	8.2
31	6.4	---	18	301	---	175	---	260	---	14	7.8	---
TOTAL	178.0	2062.3	2454	10672	21661	5104	3623	3908	1924	596	291.5	230.4
MEAN	5.74	68.7	79.2	344	774	165	121	126	64.1	19.2	9.40	7.68
MAX	17	735	285	915	2060	567	215	1280	189	29	13	8.8
MIN	3.8	6.1	18	18	227	78	59	40	30	13	7.8	7.2
AC-FT	353	4090	4870	21170	42960	10120	7190	7750	3820	1180	578	457

## 11449500 KELSEY CREEK NEAR KELSEYVILLE, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	11.4	45.8	128	212	211	152	77.9	32.0	13.3	5.76	3.57	3.77
MAX	154	334	688	929	919	640	429	163	64.1	19.2	9.40	16.3
(WY)	1963	1974	1956	1995	1986	1983	1982	1983	1998	1998	1998	1957
MIN	1.22	3.55	4.19	4.83	8.97	11.4	5.67	6.12	1.98	.46	.20	.16
(WY)	1992	1991	1991	1991	1977	1977	1977	1977	1977	1977	1977	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1947 - 1998			
ANNUAL TOTAL	25928.6				52704.2							
ANNUAL MEAN	71.0				144				74.0			
HIGHEST ANNUAL MEAN									206			
LOWEST ANNUAL MEAN									4.78			
HIGHEST DAILY MEAN	3500				2060				6020			
LOWEST DAILY MEAN	2.9				3.8				.13			
ANNUAL SEVEN-DAY MINIMUM	3.1				4.1				.13			
INSTANTANEOUS PEAK FLOW					5400				8600			
INSTANTANEOUS PEAK STAGE					11.81				13.80			
ANNUAL RUNOFF (AC-FT)	51430				104500				53610			
10 PERCENT EXCEEDS	135				398				154			
50 PERCENT EXCEEDS	14				50				13			
90 PERCENT EXCEEDS	3.6				6.4				2.5			

## 11450000 CLEAR LAKE AT LAKEPORT, CA

LOCATION.—Lat 39°02'21", long 122°54'44", in NE 1/4 NE 1/4 sec.25, T.14 N., R.10 W., Lake County, Hydrologic Unit 18020116, on pier behind 410 Esplanade Street in Lakeport.

DRAINAGE AREA.—528 mi<sup>2</sup>.

PERIOD OF RECORD.—1874–1900 (incomplete), January 1913 to April 1982, October 1984 to current year.

GAGE.—Water-stage recorder. Datum of gage is 1,318.26 ft above sea level (California State Land Commission Benchmark). Prior to July 8, 1947, nonrecording gage, and July 8, 1947, to Mar. 17, 1949, at municipal wharf at foot of Third Street in Lakeport at datum 0.33 ft higher. Mar. 18, 1949, to Sept. 30, 1967, at private pier at foot of Fourth Street at datum 0.33 ft higher. Gage relocated at same datum, Apr. 20, 1982, and published as "at Clearlake" for 1982–84.

REMARKS.—This natural lake is regulated by gates on a dam at outlet, completed in 1915. Capacity between gage heights 0.00 and 7.56 ft, limits stipulated by court decree of 1920, about 319,000 acre-ft. Water is released down natural channel of Cache Creek (station 11451000), from which it is diverted for irrigation. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum gage height, 11.44 ft, Feb. 24, 1998, minimum observed, -3.50 ft, Sept. 24–27, 1920.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of Mar. 4, 1983, reached a stage of 11.24 ft, present datum, from floodmarks.

## GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.59	1.32	2.10	3.01	6.97	10.82	7.59	7.50	7.52	6.75	5.28	4.01
2	1.57	1.31	2.13	3.07	7.19	10.66	7.52	7.49	7.46	6.70	5.24	3.99
3	1.55	1.31	2.18	3.11	7.94	10.48	7.48	7.49	7.44	6.65	5.21	3.96
4	1.52	1.31	2.20	3.29	8.32	10.33	7.43	7.48	7.44	6.61	5.17	3.93
5	1.51	1.30	2.26	3.42	8.69	10.17	7.38	7.48	7.43	6.57	5.13	3.90
6	1.44	1.29	2.26	3.53	9.25	10.00	7.36	7.49	7.42	6.53	5.07	3.88
7	1.43	1.28	2.32	3.62	9.89	9.86	7.38	7.47	7.42	6.49	5.03	3.86
8	1.45	1.27	2.43	3.70	10.34	9.73	7.41	7.43	7.42	6.44	4.98	3.82
9	1.49	1.29	2.51	3.78	10.50	9.57	7.45	7.40	7.41	6.39	4.94	3.77
10	1.46	1.29	2.55	3.83	10.56	9.41	7.45	7.40	7.38	6.33	4.91	3.75
11	1.44	1.30	2.57	3.94	10.50	9.26	7.42	7.38	7.39	6.28	4.88	3.71
12	1.44	1.30	2.60	4.23	10.47	9.13	7.43	7.43	7.38	6.23	4.84	3.69
13	1.44	1.31	2.63	4.55	10.41	9.10	7.48	7.39	7.37	6.17	4.80	3.67
14	1.44	1.33	2.67	4.80	10.40	9.01	7.47	7.36	7.36	6.12	4.76	3.64
15	1.44	1.39	2.75	5.14	10.42	8.90	7.48	7.35	7.32	6.07	4.70	3.61
16	1.43	1.46	2.80	5.40	10.43	8.78	7.47	7.32	7.30	6.01	4.65	3.58
17	1.43	1.49	2.85	5.56	10.47	8.67	7.47	7.32	7.28	5.97	4.59	3.50
18	1.42	1.52	2.89	5.74	10.45	8.54	7.45	7.30	7.26	5.93	4.55	3.47
19	1.41	1.52	2.91	6.03	10.61	8.42	7.44	7.27	7.23	5.88	4.51	3.45
20	1.40	1.53	2.91	6.18	10.86	8.28	7.41	7.24	7.21	5.84	4.46	3.43
21	1.40	1.54	2.94	6.23	11.05	8.18	7.41	7.22	7.19	5.80	4.42	3.40
22	1.39	1.55	2.95	6.23	11.25	8.14	7.41	7.21	7.15	5.75	4.38	3.37
23	1.37	1.55	2.95	6.23	11.37	8.10	7.42	7.19	7.12	5.71	4.33	3.33
24	1.38	1.56	2.96	6.20	11.40	8.11	7.42	7.17	7.08	5.66	4.30	3.30
25	1.36	1.60	2.97	6.18	11.35	8.10	7.45	7.12	7.02	5.62	4.26	3.28
26	1.34	1.74	2.97	6.27	11.25	8.02	7.46	7.12	7.00	5.58	4.22	3.25
27	1.33	1.87	2.97	6.48	11.12	7.94	7.47	7.16	6.96	5.53	4.19	3.22
28	1.32	1.90	2.98	6.58	10.97	7.86	7.47	7.26	6.91	5.48	4.15	3.19
29	1.32	1.95	2.99	6.71	---	7.79	7.48	7.43	6.86	5.42	4.11	3.18
30	1.31	2.06	3.00	6.84	---	7.69	7.48	7.55	6.80	5.36	4.08	3.15
31	1.31	---	3.00	6.86	---	7.67	---	7.56	---	5.31	4.04	---
MEAN	1.42	1.48	2.68	5.06	10.16	8.93	7.45	7.35	7.25	6.04	4.65	3.58
MAX	1.59	2.06	3.00	6.86	11.40	10.82	7.59	7.56	7.52	6.75	5.28	4.01
MIN	1.31	1.27	2.10	3.01	6.97	7.67	7.36	7.12	6.80	5.31	4.04	3.15

## 11451000 CACHE CREEK NEAR LOWER LAKE, CA

LOCATION.—Lat 38°55'27", long 122°33'53", in sec.6, T.12 N., R.6 W., Lake County, Hydrologic Unit 18020116, on left bank 500 ft downstream from Clear Lake Dam, 1.9 mi downstream from Copsey Creek, and 2.5 mi northeast of Lower Lake.

DRAINAGE AREA.—528 mi<sup>2</sup>.

PERIOD OF RECORD.—May 1944 to current year.

GAGE.—Water-stage recorder and rain gage (station 385525122335501). Datum of gage is 1,279.64 ft above sea level. Prior to Oct. 2, 1987, at datum 1.00 ft higher.

REMARKS.—Records fair except for estimated daily discharges, which are poor. Flow completely regulated by Clear Lake (station 11450000) 500 ft upstream. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 10,200 ft<sup>3</sup>/s, Feb. 17, 1998, gage height, 11.01 ft, present datum; no flow, Nov. 8–20, 1977, Apr. 5, 6, 1987.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	240	3.9	3.4	3.6	2900	4990	3450	442	2120	802	482	369
2	266	3.9	3.3	3.6	3600	4730	3370	503	1750	768	483	275
3	140	4.0	3.5	3.7	3910	4360	3350	517	1040	718	484	273
4	9.7	4.2	3.7	4.2	3430	3320	2870	486	776	698	485	273
5	7.2	4.4	3.6	4.1	4360	4750	2220	486	563	697	472	272
6	6.6	4.4	3.5	4.2	4890	4680	932	493	464	720	467	274
7	4.7	4.7	3.6	4.6	5840	4670	532	522	459	730	463	274
8	4.4	4.7	3.8	4.6	5100	4490	556	530	467	705	455	267
9	4.6	4.4	3.5	4.7	4880	4470	665	541	471	686	457	251
10	4.6	4.4	3.4	5.0	4850	4400	963	516	475	698	456	254
11	4.7	7.8	3.6	5.1	4800	4310	1050	497	475	695	454	260
12	4.7	4.0	3.5	6.8	4910	4320	688	494	480	696	454	260
13	4.5	4.2	3.7	5.4	4850	4310	1720	577	486	742	451	260
14	4.5	3.7	3.9	5.7	5180	4230	1750	516	492	777	450	260
15	4.7	3.6	3.9	6.7	5090	4140	e1150	488	493	774	450	261
16	4.8	3.4	4.0	879	5300	4060	1010	500	480	742	450	261
17	5.0	3.0	4.1	1590	e6850	3890	788	498	481	618	453	264
18	4.9	2.9	4.2	1910	e7200	3720	1080	502	491	607	456	263
19	4.8	3.0	4.0	1960	e5600	3780	1090	510	522	614	455	260
20	4.7	3.0	4.1	1960	e5380	3620	953	504	558	611	456	260
21	4.4	3.0	4.2	1960	e5580	3640	502	518	592	612	453	258
22	4.2	3.0	4.2	1900	e5290	3560	293	523	566	619	453	257
23	3.7	3.1	4.1	1930	e4990	3650	287	517	578	612	451	259
24	3.4	3.3	4.3	2010	e4920	3590	259	486	676	598	448	260
25	3.3	3.2	4.2	1950	e5180	3600	229	495	686	549	446	261
26	3.4	4.2	3.7	2300	e5110	3620	237	492	715	495	444	260
27	3.4	3.5	3.5	2290	4540	3510	237	485	780	498	445	258
28	3.4	3.2	3.7	2220	5130	3500	242	493	784	529	444	261
29	3.5	3.0	3.5	2530	---	3460	241	1360	790	516	444	264
30	3.6	3.8	3.6	2360	---	3380	309	2150	796	531	444	265
31	3.9	---	3.6	2440	---	3450	---	2140	---	521	448	---
TOTAL	775.3	114.9	116.9	32261.0	139660	124200	33023	19781	20506	20178	14153	7994
MEAN	25.0	3.83	3.77	1041	4988	4006	1101	638	684	651	457	266
MAX	266	7.8	4.3	2530	7200	4990	3450	2150	2120	802	485	369
MIN	3.3	2.9	3.3	3.6	2900	3320	229	442	459	495	444	251
AC-FT	1540	228	232	63990	277000	246400	65500	39240	40670	40020	28070	15860
a	0.56	8.89	3.97	10.07	20.27	3.66	1.93	4.91	0.22	0.0	0.03	0.05

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	30.0	16.4	115	647	865	825	551	319	373	397	315	165
MAX	191	683	2584	3047	4988	4919	3538	951	684	651	500	325
(WY)	1996	1984	1984	1997	1998	1983	1958	1983	1998	1998	1946	1995
MIN	.40	.17	.14	.18	.17	.32	.42	.40	.29	.41	.71	.55
(WY)	1978	1978	1991	1991	1991	1955	1990	1990	1991	1977	1977	1977

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1945 - 1998

ANNUAL TOTAL	230953.1	412763.1	
ANNUAL MEAN	633	1131	382
HIGHEST ANNUAL MEAN			1342
LOWEST ANNUAL MEAN			.67
HIGHEST DAILY MEAN	4670	Jan 25	7200
LOWEST DAILY MEAN	2.9	Nov 18	2.9
ANNUAL SEVEN-DAY MINIMUM	3.0	Nov 17	3.0
INSTANTANEOUS PEAK FLOW			10200
INSTANTANEOUS PEAK STAGE			11.01
ANNUAL RUNOFF (AC-FT)	458100	818700	277100
10 PERCENT EXCEEDS	2740	4260	626
50 PERCENT EXCEEDS	266	481	58
90 PERCENT EXCEEDS	3.7	3.6	1.0

e Estimated.

a Precipitation, in inches.

## 11451100 NORTH FORK CACHE CREEK AT HOUGH SPRINGS, NEAR CLEARLAKE OAKS, CA

LOCATION.—Lat 39°09'56", long 122°37'08", in SE 1/4 NW 1/4 sec.10, T.15 N., R.7 W., Lake County, Hydrologic Unit 18020116, on right bank 0.5 mi upstream from Spanish Creek, 0.9 mi upstream from Hough Springs, and 10 mi northeast of Clearlake Oaks.

DRAINAGE AREA.—60.2 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1971 to current year.

GAGE.—Water-stage recorder and crest-stage gage. Elevation of gage is 1,534.13 ft above sea level. Prior to Jan. 13, 1980, at datum 2.0 ft higher. Recording rain gage (station 391056122420801) 4.7 mi northwest of gage. Elevation of rain gage is 2,050 ft above sea level, from topographic map.

REMARKS.—Records fair. No regulation or diversion upstream from station. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 13,200 ft<sup>3</sup>/s, Jan. 1, 1997, gage height, 14.14 ft, from rating curve extended above 3,900 ft<sup>3</sup>/s on basis of slope-area measurement at gage height 11.23 ft; no flow at times in 1972, 1976–77, 1987–88, 1990–92, 1994.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s, or maximum.

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 12	1300	2,800	9.17	Feb. 21	1000	4,320	10.36
Feb. 3	0130	7,820	12.17				

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	7.0	198	84	1010	320	269	113	243	42	16	7.3
2	3.7	6.8	146	223	1540	300	255	115	202	42	15	7.1
3	3.6	6.6	151	337	3650	292	284	112	176	41	15	6.7
4	3.5	6.4	158	696	1440	262	287	106	152	39	14	6.6
5	3.4	6.3	237	382	2340	243	269	102	135	37	13	7.0
6	3.4	6.6	212	308	3310	223	253	99	126	36	13	7.9
7	3.6	7.2	439	312	3020	202	243	96	123	34	12	7.3
8	11	7.1	381	290	2160	195	220	93	109	33	12	7.0
9	93	7.0	265	283	1310	172	226	90	101	32	12	7.0
10	19	8.7	207	374	943	159	235	88	96	31	12	7.7
11	13	10	169	846	774	151	234	87	91	30	12	7.2
12	10	9.5	150	1870	789	198	229	109	95	29	11	6.8
13	8.9	16	137	1170	748	353	260	99	91	28	11	6.4
14	8.2	26	302	1190	1190	272	242	91	80	27	10	6.1
15	7.8	55	266	1770	1060	240	227	86	75	26	9.8	5.9
16	7.4	239	224	1190	864	223	216	84	72	25	9.8	5.7
17	7.1	115	288	1020	808	206	199	80	68	24	9.9	5.6
18	7.1	72	264	1470	704	188	186	77	65	24	10	6.0
19	7.0	192	218	1300	1650	171	173	75	63	23	10	6.3
20	6.8	99	192	814	1290	158	159	74	61	22	10	6.4
21	7.0	74	171	609	2450	167	148	71	58	21	10	6.2
22	6.9	61	153	492	1460	285	142	69	56	21	9.8	6.2
23	6.8	72	139	429	1310	594	166	66	54	21	9.6	6.4
24	6.8	114	128	385	952	616	142	65	53	20	9.3	6.7
25	6.5	148	118	375	650	484	129	65	51	19	9.0	6.6
26	6.5	755	108	1120	499	383	121	64	49	18	8.8	6.9
27	6.7	316	100	1080	413	323	115	68	48	17	8.6	7.4
28	6.6	166	93	706	358	290	111	243	46	17	8.3	7.9
29	6.7	175	89	1080	---	256	107	929	45	16	7.9	7.2
30	7.1	327	86	757	---	229	103	535	43	17	7.5	6.9
31	7.2	---	82	677	---	267	---	323	---	17	7.4	---
TOTAL	305.4	3111.2	5871	23639	38692	8422	5950	4374	2727	829	333.7	202.4
MEAN	9.85	104	189	763	1382	272	198	141	90.9	26.7	10.8	6.75
MAX	93	755	439	1870	3650	616	287	929	243	42	16	7.9
MIN	3.1	6.3	82	84	358	151	103	64	43	16	7.4	5.6
AC-FT	606	6170	11650	46890	76750	16710	11800	8680	5410	1640	662	401
a	2.52	10.23	5.86	17.75	20.82	7.57	2.87	5.61	0.70	0.02	0.48	0.06

a Precipitation, in inches.

## 11451100 NORTH FORK CACHE CREEK AT HOUGH SPRINGS, NEAR CLEARLAKE OAKS, CA—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3.07	56.3	144	327	337	282	118	48.0	16.3	4.72	1.58	1.24
MAX	12.4	405	738	1750	1382	1258	631	242	90.9	26.7	10.8	6.75
(WY)	1980	1982	1997	1995	1998	1995	1982	1995	1998	1998	1998	1998
MIN	.19	1.11	1.17	4.74	9.59	9.88	5.13	3.93	1.69	.19	.000	.000
(WY)	1992	1977	1977	1991	1991	1977	1977	1977	1977	1977	1977	1994

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1972 - 1998

ANNUAL TOTAL	45228.6	94456.7	
ANNUAL MEAN	124	259	111
HIGHEST ANNUAL MEAN			335
LOWEST ANNUAL MEAN			3.67
HIGHEST DAILY MEAN	7300	Jan 1	8340
LOWEST DAILY MEAN	2.9	Sep 28	.00
ANNUAL SEVEN-DAY MINIMUM	3.1	Sep 25	.00
INSTANTANEOUS PEAK FLOW			13200
INSTANTANEOUS PEAK STAGE			14.14
ANNUAL RUNOFF (AC-FT)	89710	187400	80110
10 PERCENT EXCEEDS	208	764	261
50 PERCENT EXCEEDS	29	93	11
90 PERCENT EXCEEDS	3.8	6.9	.47

## 11451300 NORTH FORK CACHE CREEK NEAR CLEARLAKE OAKS, CA

LOCATION.—Lat 39°04'50", long 122°32'07", in SE 1/4 SW 1/4 sec.4, T.14 N., R.6 W., Lake County, Hydrologic Unit 18020116, on right bank 2,500 ft downstream from Indian Valley Dam and 8 mi northeast of Clearlake Oaks.

DRAINAGE AREA.—121 mi<sup>2</sup>.

PERIOD OF RECORD.—October 1983 to September 1985 (operated as a low-flow station only), October 1985 to current year.

GAGE.—Water-stage recorder and crest-stage gage. Elevation of gage is 1,320 ft above sea level, from topographic map. Recording rain gage (station 390500122321601) located on top of Indian Valley Dam.

REMARKS.—Records good except for estimated daily discharges, which are fair. Flow completely regulated by Indian Valley Reservoir, capacity 300,000 acre-ft. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 7,950 ft<sup>3</sup>/s, Feb. 11, 1998, gage height 10.61; maximum gage height, 10.62 ft, Jan. 2, 1997; minimum daily, 0.37 ft<sup>3</sup>/s, Oct. 15, 1994.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of Jan. 26, 1983, reached a stage of 12.74 ft, present datum, discharge about 9,500 ft<sup>3</sup>/s.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	207	9.5	9.0	12	2240	283	19	17	16	221	189
2	33	207	9.5	9.0	15	2200	283	19	17	16	221	274
3	142	194	9.7	9.2	15	2150	283	19	17	16	244	273
4	195	102	9.6	9.6	1230	2090	283	19	17	16	245	250
5	172	7.6	9.9	9.3	2090	1460	284	e18	16	16	258	240
6	173	8.7	9.8	9.5	20	563	286	e18	16	16	270	240
7	188	9.0	10	9.6	588	275	286	e18	16	16	271	244
8	201	9.0	10	9.5	2400	276	286	e18	17	16	271	247
9	192	9.0	10	9.5	5100	276	286	e18	17	16	273	222
10	193	9.2	10	9.5	5890	276	286	e18	17	16	273	163
11	192	9.3	10	10	6690	277	285	e18	17	16	273	107
12	192	9.6	10	11	4630	278	285	e18	16	16	273	106
13	198	10	10	10	797	277	286	e17	15	17	273	106
14	206	10	10	11	744	278	286	e17	15	17	272	106
15	183	10	10	12	756	279	286	e17	15	17	273	106
16	173	11	9.6	11	766	280	287	e17	14	138	259	106
17	173	10	9.8	11	1030	281	288	e17	13	287	239	158
18	173	10	10	12	2290	279	288	e17	13	291	175	229
19	173	10	10	11	1350	280	288	e17	14	298	128	192
20	172	10	10	11	2160	281	289	17	14	304	128	173
21	169	10	10	10	1560	280	289	17	14	301	125	150
22	168	10	10	10	1920	281	198	17	15	300	123	113
23	168	10	9.3	10	1590	282	17	17	15	298	123	83
24	169	9.7	9.0	10	1960	282	17	17	15	297	96	69
25	170	9.5	9.0	10	2420	281	17	17	16	253	68	69
26	170	11	9.0	11	2370	281	17	17	16	212	68	74
27	170	9.6	9.0	11	2320	282	17	17	15	253	68	74
28	170	9.5	9.0	11	2280	281	18	18	15	290	68	38
29	170	9.8	9.0	11	---	281	e18	18	16	280	68	13
30	197	10	9.0	11	---	282	e18	18	16	266	68	13
31	212	---	9.0	11	---	283	---	17	---	251	68	---
TOTAL	5335	961.5	298.7	319.7	54993	17692	6340	546	466	4562	5783	4427
MEAN	172	32.0	9.64	10.3	1964	571	211	17.6	15.5	147	187	148
MAX	212	207	10	12	6690	2240	289	19	17	304	273	274
MIN	33	7.6	9.0	9.0	12	275	17	17	13	16	68	13
AC-FT	10580	1910	592	634	109100	35090	12580	1080	924	9050	11470	8780
a	0.79	6.48	2.07	9.11	14.08	3.53	1.32	3.77	0.41	0.00	0.00	0.01

e Estimated.

a Precipitation, in inches.

## 11451300 NORTH FORK CACHE CREEK NEAR CLEARLAKE OAKS, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	22.5	13.1	11.6	172	316	185	189	202	211	193	132	78.1
MAX	172	35.5	28.3	1675	1964	849	557	717	576	370	342	348
(WY)	1998	1997	1987	1997	1998	1986	1987	1987	1987	1988	1996	1996
MIN	6.65	6.96	7.21	7.02	4.63	1.90	8.26	6.98	8.10	8.16	8.17	9.10
(WY)	1994	1995	1994	1994	1994	1994	1993	1993	1993	1993	1990	1990

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1986 - 1998	
ANNUAL TOTAL	124041.8		101723.9			
ANNUAL MEAN	340		279		143	
HIGHEST ANNUAL MEAN					326	
LOWEST ANNUAL MEAN					8.54	
HIGHEST DAILY MEAN	5790	Jan 3	6690	Feb 11	6690	Feb 11 1998
LOWEST DAILY MEAN	7.6	Jan 17	7.6	Nov 5	.37	Oct 15 1994
ANNUAL SEVEN-DAY MINIMUM	7.9	Jan 15	8.8	Nov 5	1.8	Mar 9 1994
INSTANTANEOUS PEAK FLOW			7950	Feb 11	7950	Feb 11 1998
INSTANTANEOUS PEAK STAGE			10.61	Feb 11	10.62	Jan 2 1997
ANNUAL RUNOFF (AC-FT)	246000		201800		103400	
10 PERCENT EXCEEDS	418		293		373	
50 PERCENT EXCEEDS	193		68		11	
90 PERCENT EXCEEDS	9.9		9.8		7.1	



## 11451715 BEAR CREEK ABOVE HOLSTEN CHIMNEY CANYON, NEAR RUMSEY, CA

LOCATION.—Lat 38°57'28", long 122°20'30", in NW 1/4 SE 1/4 sec.19, T.13 N., R.4 W., Colusa County, Hydrologic Unit 18020116, on left bank, downstream side Highway 16 bridge, 2.9 mi upstream from confluence with Cache Creek, 7.4 mi northwest of Rumsey.

DRAINAGE AREA.—94.90 mi<sup>2</sup>.

PERIOD OF RECORD.—Nov. 20, 1997, to Sept. 30, 1998.

GAGE.—Water-stage recorder and crest-stage gage. Elevation of gage is 920 ft above sea level, from topographic map.

REMARKS.—Records fair except for estimated daily discharges, which are poor. Some minor diversions upstream from station. See schematic diagram of lower Sacramento River Basin.

EXTREMES OUTSIDE PERIOD OF RECORD.—Maximum discharge 9,200 ft<sup>3</sup>/s, Jan. 5, 1965.

EXTREMES FOR CURRENT YEAR.—Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s, or maximum.

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 18	1800	2,090	9.69	Feb. 7	1515	5,050	11.91
Jan. 26	2130	2,110	9.71	Feb. 16	1915	2,070	9.67
Feb. 2	2115	8,510	13.57	Feb. 19	1400	5,420	12.12

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	44	13	772	295	414	65	116	26	8.3	e5.6
2	---	---	20	15	2380	269	178	75	99	25	7.9	e5.4
3	---	---	14	18	2660	246	178	91	107	e24	7.6	e5.1
4	---	---	16	192	603	221	245	83	92	e23	7.4	e5.0
5	---	---	49	58	1600	212	189	84	84	e22	6.8	e5.4
6	---	---	95	43	2110	204	149	72	79	e21	6.1	e6.0
7	---	---	199	135	2460	183	145	69	74	e19	5.9	e5.6
8	---	---	103	75	1200	189	135	64	74	e19	5.9	e5.3
9	---	---	40	51	612	168	127	61	67	17	5.8	e5.3
10	---	---	27	142	531	157	126	65	63	e17	5.2	e6.0
11	---	---	22	228	462	149	121	59	66	e16	4.6	e5.7
12	---	---	18	764	671	157	111	148	65	e16	4.1	e5.4
13	---	---	17	237	472	344	159	172	63	e15	4.0	e5.1
14	---	---	45	326	919	177	122	103	57	e15	4.4	e4.9
15	---	---	77	752	474	143	112	72	50	e14	4.5	e4.8
16	---	---	36	256	889	134	100	65	46	13	5.1	e4.6
17	---	---	29	200	752	120	96	59	45	12	5.7	e4.5
18	---	---	27	788	432	113	92	55	44	11	6.0	e4.7
19	---	---	22	419	1960	108	90	51	41	11	6.2	e4.9
20	---	e6.0	20	178	712	104	89	50	41	10	6.4	e5.1
21	---	5.3	19	133	1770	103	84	48	41	9.7	6.5	e5.2
22	---	5.1	17	109	711	157	81	48	38	9.7	6.6	e5.2
23	---	5.2	16	96	1370	240	93	45	37	10	6.5	e5.2
24	---	5.0	15	94	676	261	96	45	36	10	6.3	e5.3
25	---	5.8	15	79	495	166	84	45	32	9.4	6.3	e5.5
26	---	49	14	635	424	141	76	43	30	8.7	6.2	e5.6
27	---	70	14	571	370	116	74	46	30	7.9	6.1	e5.9
28	---	19	13	185	326	114	73	442	28	7.4	5.8	e6.2
29	---	11	13	568	---	108	69	1050	27	7.3	5.6	e6.0
30	---	172	13	217	---	96	66	319	26	7.5	5.4	e5.8
31	---	---	13	225	---	388	---	155	---	7.9	5.8	---
TOTAL	---	---	1082	7802	28813	5583	3774	3849	1698	441.5	185.0	160.3
MEAN	---	---	34.9	252	1029	180	126	124	56.6	14.2	5.97	5.34
MAX	---	---	199	788	2660	388	414	1050	116	26	8.3	6.2
MIN	---	---	13	13	326	96	66	43	26	7.3	4.0	4.5
AC-FT	---	---	2150	15480	57150	11070	7490	7630	3370	876	367	318

e Estimated.

## 11451800 CACHE CREEK AT RUMSEY, CA

LOCATION.—Lat 38°53'26", long 122°14'14", in Canada de Capay Grant, Yolo County, Hydrologic Unit 18020110, midstream on Arbuckle Bridge at Rumsey.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—Water years 1976, 1996 to current year.

CHEMICAL DATA: February 1996 to current year.

SEDIMENT DATA: December 1975 to September 1976, February 1996 to current year.

REMARKS.—Records of sediment discharge from December 1975 to September 1976 were obtained from the California Department of Water Resources; sediment data was discontinued in September 1976. DWR has provided discharge data from December 1975 to current year. This station replaced former station 11451760 (Cache Creek above Rumsey) in September 1976 and was reestablished February 1996 for NAWQA water-quality and sediment sampling purposes.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT										
16...	1030	76	294	8.3	13.2	753	10.5	101	20	16
NOV										
18...	1300	8.4	928	8.5	11.1	753	10.1	93	31	39
DEC										
18...	1030	121	660	8.6	9.1	752	11.4	100	28	35
JAN										
20...	1300	2630	315	8.4	7.6	750	10.2	--	20	18
FEB										
03...	1230	13000	206	8.4	10.2	731	11.6	108	14	12
MAR										
26...	1040	4050	283	8.2	12.4	748	10.9	104	21	17
APR										
14...	1100	3280	289	8.3	11.1	750	11.4	104	20	18

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
OCT										
16...	15	21	1.3	120	6.5	17	<.1	11	162	157
NOV										
18...	100	48	4.7	230	45	140	.1	11	548	520
DEC										
18...	59	37	2.8	200	42	70	.1	14	388	378
JAN										
20...	16	21	1.8	130	15	12	.2	8.2	173	171
FEB										
03...	9.6	20	1.4	65	14	4.4	<.1	11	131	127
MAR										
26...	13	18	1.6	120	15	8.0	<.1	10	162	160
APR										
14...	13	18	1.6	120	17	9.9	<.1	9.2	173	164

11451800 CACHE CREEK AT RUMSEY, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
OCT										
16...	.22	<.01	.14	.02	<.2	<.2	.04	.03	.03	5
NOV										
18...	.75	.06	.92	.12	.5	.3	.06	.02	.03	6
DEC										
18...	.53	<.01	.59	<.02	.2	.1	.03	.02	.02	6
JAN										
20...	.24	<.01	.12	<.02	.5	.2	.18	<.01	.01	9
FEB										
03...	.18	.01	.10	.04	.3	.1	.03	<.01	.03	8
MAR										
26...	.22	.02	.11	.04	.4	.2	.14	.01	.01	10
APR										
14...	.24	--	--	--	--	--	--	--	--	5

DATE	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT										
16...	<1	2	41	<1	<1	2	<1	<1	<3	<1
NOV										
18...	<1	1	106	<1	<1	4	<1	2	<3	<1
DEC										
18...	<1	<1	79	<1	<1	3	<1	1	<10	<1
JAN										
20...	<1	<1	50	<1	<1	4	<1	<1	<10	<1
FEB										
03...	<1	1	32	<1	<1	3	<1	<1	<10	<1
MAR										
26...	<1	<1	54	<1	<1	2	<1	<1	<10	<1
APR										
14...	<1	2	83	<1	<1	4	<1	2	<10	<1

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT									
16...	3	<1	2	<1	<1	<1	<1	2.3	.3
NOV									
18...	6	<1	3	<1	<1	<1	<1	3.1	.5
DEC									
18...	3	<1	3	<1	<1	<1	<1	2.1	<.2
JAN									
20...	2	<1	2	<1	<1	<1	<1	2.9	.9
FEB									
03...	3	<1	2	<1	<1	<1	<1	2.7	8.3
MAR									
26...	3	<1	2	<1	<1	1	<1	2.6	.8
APR									
14...	32	2	3	<1	<1	<1	2	--	--

## 11451800 CACHE CREEK AT RUMSEY, CA—Continued

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
16...N	1030	76	13.2	8	1.6	95
NOV						
18...N	1300	8.4	11.1	136	3.1	98
DEC						
18...N	1030	121	9.1	30	9.8	95
JAN						
20...N	1300	2630	7.6	307	2180	93
FEB						
03...N	1230	13000	10.2	3820	134000	78
MAR						
26...N	1040	4050	12.4	174	1900	83
APR						
14...N	1100	3280	11.1	186	1650	63

## 11452500 CACHE CREEK AT YOLO, CA

LOCATION.—Lat 38°43'38", long 121°48'22", in Rio Jesus Maria Grant, Yolo County, Hydrologic Unit 18020129, on left bank 35 ft upstream from Interstate 5 highway bridge, 0.5 mi south of Yolo, and 7.3 mi downstream from Moore Dam.

DRAINAGE AREA.—1,139 mi<sup>2</sup>.

PERIOD OF RECORD.—January 1903 to current year. Records for water year 1903 incomplete; yearly estimate published in WSP 1315-A.

WATER TEMPERATURE: Water years 1959–65, November 1966 to February 1967.

SEDIMENT DATA: Water years 1959–65, November 1966 to February 1967 (daily record), 1986 (periodic record).

REVISED RECORDS.—WSP 1315-A: 1914(M). WSP 1345: 1906. WSP 1445: 1955. WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is sea level. See WSP 2131 for history of changes prior to Apr. 25, 1969. Apr. 25, 1969, to July 1976, at site 765 ft upstream at same datum.

REMARKS.—Records good. Some regulation by Clear Lake (station 11450000) beginning in 1915 and Indian Valley Reservoir beginning in 1974, capacity, 300,000 acre-ft. Diversions for irrigation of about 30,000 acres between Capay and Yolo, from data furnished by Clear Lake Water Co. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 41,400 ft<sup>3</sup>/s, Feb. 25, 1958, gage height, 85.35 ft, present datum; maximum stage observed, 86.4 ft (corrected), present datum, Mar. 10, 1904; no flow at times in most years.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	31	431	120	4190	8990	4780	383	2430	148	157	102
2	89	34	214	123	7070	8640	4110	538	2260	150	122	88
3	99	38	159	123	27100	8360	3950	617	1820	139	125	113
4	51	28	140	204	11600	8050	4190	622	1100	103	135	125
5	40	28	148	562	9860	7760	3640	584	1000	82	144	151
6	29	74	182	314	16800	6980	2940	566	694	93	143	180
7	25	88	283	293	19100	5960	1870	555	549	93	133	183
8	21	44	595	413	19400	5730	1660	557	495	133	131	182
9	29	36	342	306	13100	5510	1590	546	430	123	148	164
10	27	33	241	275	13500	5340	1740	519	338	80	175	118
11	40	30	198	440	13700	5190	2010	458	315	83	153	97
12	36	27	175	1460	14200	5010	1970	489	324	90	158	68
13	28	29	160	2720	11100	5470	1650	848	334	90	165	59
14	25	33	156	1020	10500	5240	2910	771	334	96	159	63
15	36	36	217	2350	9910	4910	2250	627	313	135	165	71
16	46	35	260	2190	8480	4730	2270	570	292	121	169	69
17	41	53	197	2680	12100	4550	1570	548	225	142	183	63
18	41	78	172	3040	9210	4320	1620	522	163	166	195	52
19	41	60	181	5500	12500	4340	1770	480	128	182	178	109
20	39	51	171	3450	15800	4230	1720	427	89	193	144	116
21	38	50	159	3020	14800	4050	1550	415	101	187	157	105
22	34	48	152	2800	15400	4200	1110	398	98	183	151	106
23	29	43	145	2670	13100	4220	926	357	109	193	163	100
24	32	36	139	2580	13200	4770	754	311	83	195	185	68
25	34	36	136	2500	11400	4400	665	265	88	211	141	54
26	40	105	132	2620	10500	4340	571	236	120	189	77	53
27	36	282	129	5280	9890	4210	528	256	110	136	67	79
28	30	271	127	3640	9380	4110	480	459	172	119	64	144
29	25	153	125	4010	---	4060	460	2680	159	172	82	163
30	28	175	123	4110	---	3900	412	3780	152	177	104	114
31	26	---	121	3420	---	3990	---	2730	---	165	104	---
TOTAL	1206	2065	6110	64233	356890	165560	57666	23114	14825	4369	4377	3159
MEAN	38.9	68.8	197	2072	12750	5341	1922	746	494	141	141	105
MAX	99	282	595	5500	27100	8990	4780	3780	2430	211	195	183
MIN	21	27	121	120	4190	3900	412	236	83	80	64	52
AC-FT	2390	4100	12120	127400	707900	328400	114400	45850	29410	8670	8680	6270

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1998, BY WATER YEAR (WY)

	MEAN	12.1	61.5	433	1421	2026	1522	878	201	64.1	26.9	12.4	7.57
MAX	335	1593	5644	7446	12750	10930	6353	1655	784	421	189	105	105
(WY)	1963	1984	1984	1914	1998	1983	1958	1904	1906	1907	1907	1998	1998
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1904	1906	1906	1920	1920	1920	1924	1919	1913	1912	1910	1903	1903

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1903 - 1998
ANNUAL TOTAL	324807	703574	
ANNUAL MEAN	890	1928	547
HIGHEST ANNUAL MEAN			2449
LOWEST ANNUAL MEAN			.000
HIGHEST DAILY MEAN	19200	Jan 1	27100
LOWEST DAILY MEAN	15	Jul 11	21
ANNUAL SEVEN-DAY MINIMUM	26	Jul 10	29
INSTANTANEOUS PEAK FLOW			34600
INSTANTANEOUS PEAK STAGE			84.39
ANNUAL RUNOFF (AC-FT)	644300	1396000	396100
10 PERCENT EXCEEDS	2970	5500	1420
50 PERCENT EXCEEDS	73	189	1.3
90 PERCENT EXCEEDS	33	40	.00

## 11453000 YOLO BYPASS NEAR WOODLAND, CA

LOCATION.—Lat 38°40'40", long 121°38'35", unsurveyed, Yolo County, Hydrologic Unit 18020109, on left bank 300 ft upstream from Sacramento and Woodland Railroad Bridge, 6 mi upstream from Sacramento Bypass, 6 mi downstream from Fremont Weir, and 7 mi east of Woodland.

PERIOD OF RECORD.—October 1939 to current year (since October 1977, high-flow records only). Monthly discharge only for some periods, published in WSP 1315-A.

SEDIMENT DATA: Water years 1957-61, 1980.

REVISED RECORDS.—WDR CA-96-4: 1995(M).

GAGE.—Water-stage recorder. Datum of gage is 3.41 ft below sea level. Prior to Dec. 17, 1941, nonrecording gage, and Dec. 18–31, 1941, water-stage recorder, at datum 0.73 ft higher. Prior to Sept. 30, 1977, a supplementary water-stage recorder 6 mi downstream at different datum recorded low flow.

REMARKS.—Flow is from Cache Creek and Knights Landing Ridge Cut plus floodwater passing over Fremont Weir. Beginning October 1977, only flows above 1,000 ft<sup>3</sup>/s are computed. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 374,000 ft<sup>3</sup>/s, Feb. 20, 1986, gage height, 34.87 ft; no flow at times in several years.

EXTREMES FOR CURRENT YEAR.—Maximum discharge, 166,000 ft<sup>3</sup>/s, Feb. 8, gage height, 30.65 ft.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	1040	---	27600	43100	23900	---	10600	---	---	---
2	---	---	2100	---	30100	35700	19500	---	18900	---	---	---
3	---	---	2110	---	64800	31800	18400	---	15900	---	---	---
4	---	---	1330	---	91700	29000	18600	1170	11200	---	---	---
5	---	---	---	---	108000	25200	17400	1360	6530	---	---	---
6	---	---	---	---	137000	22600	15300	1380	4840	---	---	---
7	---	---	---	---	150000	20100	13500	1290	3860	---	---	---
8	---	---	---	---	162000	17300	11000	1200	2930	---	---	---
9	---	---	1200	---	159000	14500	8970	1110	2160	---	---	---
10	---	---	1920	---	150000	11300	6880	1070	1700	---	---	---
11	---	---	1410	---	134000	8540	5200	1010	1470	---	---	---
12	---	---	---	---	117000	7480	4500	---	1680	---	---	---
13	---	---	---	1640	107000	7120	4140	---	2190	---	---	---
14	---	---	---	2760	102000	7030	3960	---	2290	---	---	---
15	---	---	---	3090	109000	6750	4080	1050	2350	---	---	---
16	---	---	---	13200	99500	6440	3820	1130	2140	---	---	---
17	---	---	1440	26800	96900	6090	3660	1160	1760	---	---	---
18	---	---	1020	28600	81300	5750	3220	1040	1570	---	---	---
19	---	---	---	32100	73600	5450	3240	---	1330	---	---	---
20	---	---	---	33000	83800	5270	3190	---	---	---	---	---
21	---	---	---	31800	76800	5120	3050	---	---	---	---	---
22	---	---	---	28500	98800	5030	2730	---	---	---	---	---
23	---	---	---	23200	95500	5090	2180	---	---	---	---	---
24	---	---	---	20000	93300	5340	2000	---	---	---	---	---
25	---	---	---	18100	81100	17600	1880	---	---	---	---	---
26	---	---	---	16200	71200	30000	1590	---	---	---	---	---
27	---	---	---	16500	60600	36100	1250	---	---	---	---	---
28	---	---	---	18500	51400	38100	1190	---	---	---	---	---
29	---	1150	---	22500	---	37000	1030	1730	---	---	---	---
30	---	---	---	30100	---	33200	1030	3790	---	---	---	---
31	---	---	---	28900	---	28400	---	4630	---	---	---	---
TOTAL	---	---	---	---	2713000	557500	210390	---	---	---	---	---
MEAN	---	---	---	---	96890	17980	7013	---	---	---	---	---
MAX	---	---	---	---	162000	43100	23900	---	---	---	---	---
MIN	---	---	---	---	27600	5030	1030	---	---	---	---	---
AC-FT	---	---	---	---	5381000	1106000	417300	---	---	---	---	---

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1977, BY WATER YEAR (WY)

	441	738	5638	13230	11240	3398	3849	430	144	20.7	26.1	51.0
MEAN												
MAX	13420	10890	48790	86470	92890	27910	37310	4546	1420	107	84.9	155
(WY)	1963	1951	1956	1970	1958	1958	1958	1952	1967	1958	1958	1954
MIN	1.01	2.19	.92	2.43	.88	3.55	.083	.55	.53	.000	.000	.63
(WY)	1977	1960	1977	1977	1977	1977	1976	1977	1977	1966	1966	1977

## SUMMARY STATISTICS

## WATER YEARS 1946 - 1977

ANNUAL MEAN	3230
HIGHEST ANNUAL MEAN	13020
LOWEST ANNUAL MEAN	1.53
HIGHEST DAILY MEAN	259000
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	.00
INSTANTANEOUS PEAK FLOW	265000
INSTANTANEOUS PEAK STAGE	32.48
ANNUAL RUNOFF (AC-FT)	2340000
10 PERCENT EXCEEDS	3080
50 PERCENT EXCEEDS	35
90 PERCENT EXCEEDS	1.9

## 11453120 YOLO BYPASS AT INTERSTATE HIGHWAY 80, NEAR WEST SACRAMENTO, CA

LOCATION.—Lat 38°34'04", long 121°36'51", in SE 1/4 NW 1/4 sec. 2, T.8 N., R.3 E, Yolo County, Hydrologic Unit 18020109, at center of bikepath bridge on I-80, 1.9 mi west of West Capitol Avenue, approximately 2.8 mi west of West Sacramento.

DRAINAGE AREA.—Indeterminate.

PERIOD OF RECORD.—January 1997 to current year

CHEMICAL DATA: January 1997 to current year.

SEDIMENT DATA: January 1997 to current year.

INSTRUMENTATION.—None.

REMARKS.—Discharge values were determined from USGS station 11453000, Yolo Bypass Near Woodland, and California Department of Water Resources discharge data.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	
FEB 04...	1230	125000	120	8.0	10.3	755	10.6	95	10	5.7	
MAR 10...	1100	11600	352	8.2	12.1	768	9.5	88	24	17	
DATE	TIME	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)
FEB 04...	6.0	21	1.2	48	5.8	2.8	<.1	15	91	83	
MAR 10...	23	28	1.8	130	27	12	.2	12	207	200	
DATE		SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
FEB 04...	.12	.01	.14	.03	.3	.1	.13	<.01	.04	9	
MAR 10...	.28	<.01	.30	<.02	.5	.2	.13	.03	.04	7	
DATE		ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
FEB 04...	<1	1	26	<1	<1	1	<1	2	20	<1	
MAR 10...	<1	2	61	<1	<1	4	<1	2	<10	<1	

11453120 YOLO BYPASS AT INTERSTATE HIGHWAY 80, NEAR WEST SACRAMENTO, CA—Continued

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
FEB 04...	5	<1	2	<1	<1	2	<1	2.2	3.6
MAR 10...	13	<1	2	<1	<1	<1	<1	2.8	--

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB 04...N	1230	125000	10.3	563	190000	100
MAR 10...N	1100	11600	12.1	78	2440	100



## 11453500 PUTAH CREEK NEAR GUENOC, CA

LOCATION.—Lat 38°46'44", long 122°30'59", in Guenoc Grant, Lake County, on right bank just upstream from Coyote Valley damsite, 2.8 mi upstream from Soda Creek, and 3.2 mi downstream from highway bridge at Guenoc.

DRAINAGE AREA.—113 mi<sup>2</sup>.

PERIOD OF RECORD.—February 1904 to September 1906, July 1930 to September 1976, and Apr. 22 to Sept. 30, 1998. Monthly discharge only for some periods, published in WSP 1315-A.

REVISED RECORDS.—WSP 1285: 1937(M), 1938, 1940, 1943(M), 1951(M).

GAGE.—Water-stage recorder. Datum of gage is 911.18 ft above sea level. February 1904 to September 1906, nonrecording gage 0.2 mi upstream at different datum, July 1930 to September 1976, at datum 3.00 ft higher.

REMARKS.—Records good. Some regulation by Hartmann Dam on Coyote Creek since 1969, capacity, 3,000 acre-ft; diversions and ground-water withdrawals for irrigation of about 1,600 acres above station. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 32,000 ft<sup>3</sup>/s, Dec. 11, 1937, gage height, 22.7 ft, from rating curve extended above 13,000 ft<sup>3</sup>/s; no flow many days in 1964, 1970, 1974–76.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	151	432	62	20	6.8
2	---	---	---	---	---	---	---	164	341	60	19	7.5
3	---	---	---	---	---	---	---	153	289	59	18	6.8
4	---	---	---	---	---	---	---	143	255	57	17	6.4
5	---	---	---	---	---	---	---	137	225	54	16	6.3
6	---	---	---	---	---	---	---	132	203	51	13	8.5
7	---	---	---	---	---	---	---	128	187	48	13	9.2
8	---	---	---	---	---	---	---	124	175	47	11	7.6
9	---	---	---	---	---	---	---	119	161	45	12	6.4
10	---	---	---	---	---	---	---	114	150	45	13	7.2
11	---	---	---	---	---	---	---	113	144	44	13	7.1
12	---	---	---	---	---	---	---	146	138	42	13	7.3
13	---	---	---	---	---	---	---	158	131	39	10	6.5
14	---	---	---	---	---	---	---	130	123	38	9.4	8.0
15	---	---	---	---	---	---	---	119	115	36	10	7.3
16	---	---	---	---	---	---	---	113	109	34	9.1	5.6
17	---	---	---	---	---	---	---	109	104	33	7.6	4.9
18	---	---	---	---	---	---	---	104	99	32	10	4.5
19	---	---	---	---	---	---	---	100	95	31	9.4	4.9
20	---	---	---	---	---	---	---	97	93	28	8.6	5.2
21	---	---	---	---	---	---	---	94	90	28	8.4	5.2
22	---	---	---	---	---	---	e202	91	88	27	8.1	5.7
23	---	---	---	---	---	---	268	88	85	26	7.6	5.9
24	---	---	---	---	---	---	252	86	82	27	7.3	3.7
25	---	---	---	---	---	---	204	85	79	25	7.4	3.5
26	---	---	---	---	---	---	186	83	76	22	6.9	4.7
27	---	---	---	---	---	---	172	87	74	22	7.3	7.3
28	---	---	---	---	---	---	160	644	69	20	6.8	8.7
29	---	---	---	---	---	---	150	2580	67	20	6.4	10
30	---	---	---	---	---	---	144	1180	64	19	5.9	9.4
31	---	---	---	---	---	---	---	616	---	20	5.3	---
TOTAL	---	---	---	---	---	---	---	8188	4343	1141	329.5	198.1
MEAN	---	---	---	---	---	---	---	264	145	36.8	10.6	6.60
MAX	---	---	---	---	---	---	---	2580	432	62	20	10
MIN	---	---	---	---	---	---	---	83	64	19	5.3	3.5
AC-FT	---	---	---	---	---	---	---	16240	8610	2260	654	393

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	16.6	89.6	391	642	653	402	223	70.0	27.7	8.08	3.88	2.79
MAX	329	1005	1684	2288	2107	1326	906	264	165	36.8	12.0	10.0
(WY)	1963	1974	1956	1970	1958	1938	1958	1998	1906	1998	1906	1905
MIN	.27	1.35	2.34	15.2	36.7	55.9	26.6	9.48	1.57	.47	.000	.000
(WY)	1965	1932	1937	1976	1976	1976	1931	1976	1976	1976	1976	1976

## SUMMARY STATISTICS

## WATER YEARS 1905 - 1998

ANNUAL MEAN	208
HIGHEST ANNUAL MEAN	467
LOWEST ANNUAL MEAN	21.8
HIGHEST DAILY MEAN	16500
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	.00
INSTANTANEOUS PEAK FLOW	32000
INSTANTANEOUS PEAK STAGE	22.70
ANNUAL RUNOFF (AC-FT)	150900
10 PERCENT EXCEEDS	443
50 PERCENT EXCEEDS	25
90 PERCENT EXCEEDS	1.6

e Estimated.

## 11453900 LAKE BERRYESSA NEAR WINTERS, CA

LOCATION.—Lat 38°30'48", long 122°06'13", in SE 1/4 NW 1/4 sec.29, T.8 N., R.2 W., Napa County, Hydrologic Unit 18020117, near center of Monticello Dam on Putah Creek and 7.4 mi west of Winters.

DRAINAGE AREA.—566 mi<sup>2</sup>.

PERIOD OF RECORD.—January 1957 to current year.

REVISED RECORDS.—WSP 1735: 1958–60. WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is sea level (levels by U.S. Bureau of Reclamation).

REMARKS.—Reservoir is formed by concrete arch-gravity dam completed November 1956. Usable capacity, 1,592,000 acre-ft between elevations 253.25 ft, invert of outlet valves, and 440 ft crest of glory-hole spillway. Dead storage, 10,340 acre-ft. Water is released down Putah Creek and is diverted into Putah South Canal for irrigation of about 46,000 acres in the lower Sacramento Valley. Total diverted during current year was unknown. Releases for irrigation began in May 1959. Records, including extremes, show total contents at 2400 hours. See schematic diagram of lower Sacramento River Basin.

COOPERATION.—Records provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.—Maximum contents, 1,733,500 acre-ft, Mar. 2, 1983, elevation, 446.67 ft; minimum since irrigation pool first filled, 422,130 acre-ft, Dec. 1, 1992, elevation, 361.73 ft.

EXTREMES FOR CURRENT YEAR.—Maximum contents, 1,695,000 acre-ft, Feb. 7, elevation, 444.75 ft; minimum, 1,331,100 acre-ft, Nov. 9, 10, 12, elevation, 425.41 ft.

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

(Based on survey by U.S. Bureau of Reclamation in 1956)

360	404,550	390	765,730	420	1,236,000
370	511,760	400	911,200	430	1,414,200
380	632,360	410	1,068,100	450	1,799,900

## RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1353700	1334300	1354100	1387900	1551100	1647300	1612900	1603800	1614500	1583400	1537400	1492000
2	1352600	1333800	1354400	1389900	1590000	1642600	1612900	1603400	1614100	1581700	1535700	1490300
3	1351600	1333400	1354400	1393000	1609200	1638300	1612900	1602900	1613500	1580500	1534600	1489200
4	1351000	1333300	1355500	1400100	1616800	1633900	1614700	1602100	1612900	1579400	1533500	1487700
5	1350500	1332700	1357100	1401700	1637900	1630900	1615200	1601500	1611800	1578200	1531200	1486400
6	1349400	1332200	1357700	1403600	1667800	1628000	1615200	1601500	1610800	1577100	1530000	1485300
7	1348500	1332200	1363100	1406900	1695000	1625100	1614700	1601500	1609400	1575900	1528100	1484100
8	1348100	1331700	1365200	1408500	1693400	1622800	1614100	1601500	1609400	1574800	1526600	1479500
9	1348300	1331100	1365800	1409600	1685100	1621000	1613300	1600900	1607700	1573300	1524900	1479500
10	1345800	1331100	1366900	1413100	1677800	1619300	1613300	1600900	1606500	1571900	1523800	1479500
11	1346700	1331700	1367400	1420000	1668200	1618100	1613100	1600400	1606000	1570200	1522100	1478400
12	1346200	1331100	1367400	1440100	1665500	1617400	1612700	1602100	1604800	1569100	1520400	1477800
13	1345600	1331300	1367200	1446600	1660400	1618700	1613300	1602100	1603600	1567900	1519300	1477200
14	1345100	1331800	1371000	1452300	1665700	1617800	1613300	1602100	1603100	1566200	1517600	1476100
15	1344500	1332200	1372300	1461200	1662700	1617000	1612900	1602100	1601900	1565000	1515700	1475000
16	1344000	1333400	1373000	1466400	1663900	1615800	1612700	1601500	1600200	1563300	1514000	1475700
17	1343500	1334000	1375500	1471300	1663300	1615200	1612100	1601500	1599400	1562200	1512300	1472800
18	1342400	1336500	1376500	1485100	1658600	1614100	1611400	1600900	1599000	1560300	1511200	1471300
19	1342000	1337700	1376600	1493700	1678000	1613100	1611000	1600900	1597900	1558600	1509100	1470000
20	1341300	1338300	1377900	1497800	1675500	1612300	1610600	1600400	1596700	1556800	1508300	1468800
21	1340800	1338300	1380400	1500600	1690500	1610600	1609200	1600400	1596100	1555100	1506600	1467400
22	1340200	1338100	1383000	1502700	1686300	1610600	1608700	1599800	1595000	1553400	1505500	1466600
23	1339700	1338300	1382800	1505500	1685500	1612900	1609800	1599200	1593800	1551700	1503800	1465900
24	1338500	1338600	1383400	1507000	1679200	1615000	1609800	1598600	1592100	1549400	1502700	1462200
25	1337600	1339200	1387200	1508700	1672200	1615200	1608700	1598000	1590700	1547700	1501000	1460300
26	1337000	1347800	1387200	1513000	1665100	1615200	1607500	1596900	1589800	1546500	1499300	1459200
27	1336100	1349600	1387200	1519700	1658800	1614500	1606900	1596900	1588600	1545400	1498200	1458300
28	1335800	1349600	1386600	1522700	1652600	1613500	1606300	1599600	1586900	1543700	1497100	1457000
29	1335100	1350500	1387000	1532100	---	1612700	1605800	1610000	1585700	1542000	1495400	1456600
30	1334900	1353900	1387500	1536500	---	1611800	1605200	1611900	1584600	1540300	1494300	1456400
31	1334300	---	1388300	1540100	---	1613100	---	1614500	---	1538600	1493100	---
MAX	1353700	1353900	1388300	1540100	1695000	1647300	1615200	1614500	1614500	1583400	1537400	1492000
MIN	1334300	1331100	1354100	1387900	1551100	1610600	1605200	1596900	1584600	1538600	1493100	1456400
a	425.59	426.68	428.58	436.75	442.59	440.56	440.15	440.63	439.08	436.67	434.26	432.29
b	-20100	+19600	+34400	+151800	+112500	-39500	-7900	+9300	-29900	-46000	-45500	-36700
c	4362	1444	1554	975	806	3108	3991	4506	7681	9892	9279	6851

CAL YR b -166200

WTR YR b +102000

a Elevation, in feet, at end of month.

b Change in contents, in acre-feet.

c Evaporation, in acre-feet, provided by U.S. Bureau of Reclamation, not reviewed by U.S. Geological Survey.

## 11454000 PUTAH CREEK NEAR WINTERS, CA

LOCATION.—Lat 38°30'55", long 122°04'51", in NE 1/4 NE 1/4 sec.28, T.8 N., R.2 W., Yolo County, Hydrologic Unit 18020109, on left bank 1 mi downstream from Cold Canyon, 1.3 mi downstream from Monticello Dam, and 6 mi west of Winters.

DRAINAGE AREA.—574 mi<sup>2</sup>.

PERIOD OF RECORD.—July 1930 to current year.

CHEMICAL DATA: Water years 1951–66, 1973–81.

WATER TEMPERATURE: Water years 1966–81.

REVISED RECORDS.—WSP 901: 1937–38(M). WSP 1285: 1932(M), 1935–36(M), 1940(M), 1942–43(M), 1951, 1952(M). WSP 1565: 1957. WSP 1931: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 160.75 ft above sea level (river-profile survey). June 28, 1930, to Feb. 29, 1940, at datum about 1 ft higher.

REMARKS.—Records good. Flow completely regulated by Lake Berryessa (station 11453900) beginning January 1957. See schematic diagram of lower Sacramento River Basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 81,000 ft<sup>3</sup>/s, Feb. 27, 1940, gage height, 30.5 ft, present datum, from rating curve extended above 30,000 ft<sup>3</sup>/s; no flow, Sept. 6–15, 1950, July 26 to Sept. 1, Sept. 6–9, 1955. Since completion of Monticello Dam in 1957, maximum discharge, 18,700 ft<sup>3</sup>/s, Mar. 2, 1983, gage height, 19.55 ft; minimum daily, 6.1 ft<sup>3</sup>/s, Dec. 19, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.—Maximum stage known since at least 1905, that of Feb. 27, 1940, on basis of records for station at Winters.

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

## DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	130	84	91	124	4720	1260	778	768	688	646	513
2	362	130	57	94	501	4300	1250	762	766	657	624	513
3	354	130	31	88	1210	3890	1250	749	739	647	621	503
4	329	130	50	95	1160	3520	1320	696	818	637	671	514
5	308	131	80	82	1900	3230	1360	618	982	597	700	563
6	278	132	92	75	e4800	2920	1350	460	956	619	688	584
7	247	127	93	77	e8500	2580	1320	417	909	671	660	584
8	225	119	69	78	10900	2320	1300	415	859	707	632	550
9	199	106	82	78	9860	2070	1260	402	827	736	595	511
10	171	69	78	72	8550	1780	1240	384	789	729	617	482
11	163	56	93	64	7550	1450	1230	367	761	695	639	477
12	162	55	120	109	6730	1350	1210	370	745	672	639	433
13	162	71	97	79	6180	1370	1260	373	722	672	655	403
14	186	86	60	68	6320	1380	1260	371	705	663	632	396
15	221	86	54	76	6370	1340	1240	366	691	630	590	404
16	258	86	73	74	6070	1300	1210	365	638	654	567	428
17	245	72	75	69	6410	1260	1180	355	566	715	584	450
18	226	67	75	86	6000	1210	1130	350	562	743	600	471
19	211	83	114	96	6650	1170	1090	349	606	741	623	499
20	198	82	106	83	8050	1140	1050	320	611	734	621	460
21	198	82	77	77	8710	1100	1020	299	596	725	575	428
22	198	82	77	74	9630	1070	985	333	633	701	534	447
23	222	82	91	71	9030	1080	972	375	668	672	535	456
24	244	72	108	70	8680	1270	998	427	724	643	582	472
25	251	57	100	69	7690	1320	966	472	726	627	605	463
26	250	52	91	82	6790	1330	928	450	685	609	587	399
27	210	53	91	81	5960	1330	892	456	692	609	572	354
28	151	76	91	64	5260	1300	855	362	710	630	585	347
29	151	86	92	79	---	1260	825	520	703	640	568	273
30	167	89	92	73	---	1210	802	751	697	658	511	247
31	151	---	93	67	---	1220	---	748	---	667	503	---
TOTAL	7031	2679	2586	2441	175585	57790	34013	14460	21854	20788	18761	13624
MEAN	227	89.3	83.4	78.7	6271	1864	1134	466	728	671	605	454
MAX	362	132	120	109	10900	4720	1360	778	982	743	700	584
MIN	151	52	31	64	124	1070	802	299	562	597	503	247
AC-FT	13950	5310	5130	4840	348300	114600	67460	28680	43350	41230	37210	27020

e Estimated.

## 11454000 PUTAH CREEK NEAR WINTERS, CA—Continued

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1956, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	8.62	96.0	993	1284	1716	976	514	137	42.1	12.5	6.94	5.84
MAX	45.4	807	5110	3957	6468	3506	2729	452	156	63.7	31.7	20.8
(WY)	1951	1951	1956	1952	1938	1938	1941	1941	1942	1941	1941	1941
MIN	.89	3.17	7.16	44.6	66.7	118	40.8	12.3	6.72	2.39	.000	1.47
(WY)	1956	1956	1931	1947	1948	1932	1931	1931	1931	1955	1955	1931

## SUMMARY STATISTICS

## WATER YEARS 1931 - 1956

ANNUAL MEAN	477
HIGHEST ANNUAL MEAN	1387
LOWEST ANNUAL MEAN	48.1
HIGHEST DAILY MEAN	54500
LOWEST DAILY MEAN	.00
ANNUAL SEVEN-DAY MINIMUM	.00
INSTANTANEOUS PEAK FLOW	81000
INSTANTANEOUS PEAK STAGE	30.5
ANNUAL RUNOFF (AC-FT)	345500
10 PERCENT EXCEEDS	924
50 PERCENT EXCEEDS	38
90 PERCENT EXCEEDS	3.0

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	225	89.3	110	517	717	765	642	544	594	624	546	401
MAX	476	263	1625	4406	6271	7791	5023	1018	773	802	681	610
(WY)	1972	1987	1984	1970	1998	1983	1982	1983	1981	1984	1975	1968
MIN	13.3	14.9	11.6	11.6	21.6	40.9	110	155	328	338	298	175
(WY)	1960	1963	1961	1960	1960	1962	1960	1960	1960	1960	1960	1960

## SUMMARY STATISTICS

## FOR 1997 CALENDAR YEAR

## FOR 1998 WATER YEAR

## WATER YEARS 1960 - 1998

ANNUAL TOTAL	307628	371612	
ANNUAL MEAN	843	1018	480
HIGHEST ANNUAL MEAN			1580
LOWEST ANNUAL MEAN			132
HIGHEST DAILY MEAN	14100	Jan 26	10900
LOWEST DAILY MEAN	31	Dec 3	31
ANNUAL SEVEN-DAY MINIMUM	67	Dec 2	67
INSTANTANEOUS PEAK FLOW			11100
INSTANTANEOUS PEAK STAGE			17.12
ANNUAL RUNOFF (AC-FT)	610200	737100	347700
10 PERCENT EXCEEDS	1220	1370	717
50 PERCENT EXCEEDS	506	566	354
90 PERCENT EXCEEDS	90	77	52

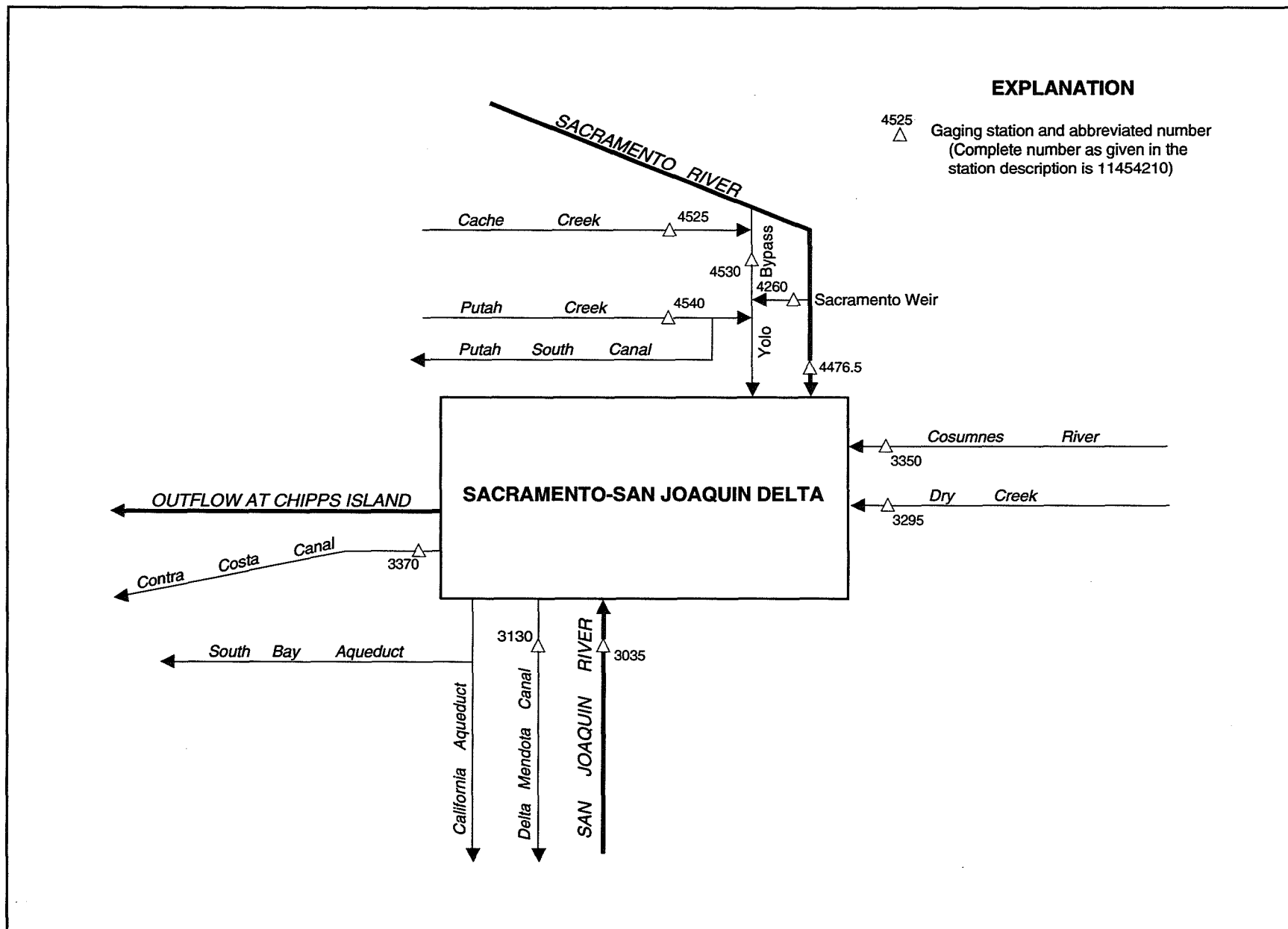


Figure 35. Principal inflows and diversions, Sacramento-San Joaquin Delta.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the U.S. Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-or flood-flow analyses, depending on the type of data collected.

Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Drainage area (mi <sup>2</sup> )	Period of record	Measurements	
					Date	Discharge (ft <sup>3</sup> /s)
Sacramento River Basin						
11341900	Dog Creek at Delta, CA	Lat 40°56'17", long 122°25'13", in SE 1/4	17.3	a1975,	10-01-97	b4.77
		NE 1/4 sec.34, T.36 N., R.5 W., Shasta		1976-84,	03-02-98	200
		County, Hydrologic Unit 18020005, 0.1 mi upstream from mouth, 0.5 mi southwest of Delta, and 25 mi north of Redding		1986-98	04-14-98	196

a Published as a miscellaneous measurement.

b Base flow.

Water-quality partial-record stations are particular sites where chemical-quality, biological, and (or) sediment data are collected systematically over a period of years for use in hydrologic analyses. These data are collected usually less than quarterly. Samples collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin are referred to as miscellaneous sites.

## SACRAMENTO RIVER BASIN

403633122264301 SACRAMENTO RIVER BELOW KESWICK DAM, CA

LOCATION.—Lat 40°36'33", long 122°26'43", in NE 1/4 SW 1/4 sec. 21, T.32 N., R.5 W, Shasta County, Hydrologic Unit 18020005, on right bank, 0.35 mi downstream of Keswick Dam, 1.2 mi southeast of Keswick.

DRAINAGE AREA.—Not to be determined.

PERIOD OF RECORD.—October 1996 to current year.

CHEMICAL DATA: October 1996 to current year.

SEDIMENT DATA: October 1996 to current year.

INSTRUMENTATION.—None..

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	ALKA- LITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L) AS SO4 (00945)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL (00940)	FLUO- RIDE, DIS- SOLVED (MG/L) AS F (00950)
FEB											
19...	1700	81	7.7	8.9	742	13.4	119	38	3.9	1.3	<.1
20...	1710	94	7.9	8.9	747	12.9	114	42	3.9	1.4	<.1
DATE	TIME	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N (00631)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L) AS N (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L) AS N (00623)	PHOS- PHORUS TOTAL (MG/L) AS P (00665)	PHOS- PHORUS DIS- SOLVED (MG/L) AS P (00666)	PHOS- PHORUS ORTHOR- THO, DIS- SOLVED (MG/L) AS P (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L) AS C (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L) AS C (00689)
FEB											
19...	74	<.01	.12	<.02	<.1	<.1	.02	.01	.03	1	.2
20...	83	<.01	.13	<.02	<.1	<.1	.02	.01	.03	1.1	.2

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB				
19...N	1700	8.9	24	95
20...N	1710	8.9	17	82

## SACRAMENTO RIVER BASIN

403741122275901 WHISKEYTOWN LAKE AT SPRING CREEK POWERPLANT, NEAR KESWICK, CA

LOCATION.—Lat 40°37'41", long 122°27'59", in SE 1/4 NE 1/4 sec. 18, T.32 N., R.5 W, Shasta County, Hydrologic Unit 18020005, at Spring Creek Powerplant, near Keswick.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—February 1998 to September 1998.

CHEMICAL DATA: February 1998 to September 1998.

SEDIMENT DATA: February 1998 to September 1998.

INSTRUMENTATION.—None.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	ALKA- LITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L) AS SO4 (00945)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL (00940)	FLUO- RIDE, DIS- SOLVED (MG/L) AS F (00950)	
FEB 20...	1030	52	7.5	8.4	746	11.1	97	22	2.8	.8	<.1	
		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N (00631)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L) AS N (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L) AS N (00623)	PHOS- PHORUS TOTAL (MG/L) AS P (00665)	PHOS- PHORUS DIS- SOLVED (MG/L) AS P (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L) AS P (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L) AS C (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L) AS C (00689)	
FEB 20...	54	<.01	.10	<.02	<.1	<.1	.05	.01	.03	1.6	.2	

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB 20...N	1030	8.4	35	99



## SACRAMENTO RIVER BASIN

403746122280301 SPRING CREEK BELOW IRON MOUNTAIN ROAD, NEAR KESWICK, CA

LOCATION.—Lat 40°37'46", long 122°28'03", in NE 1/4 SE 1/4 sec. 18, T.32 N., R.5 W, Shasta County, Hydrologic Unit 18020005, 0.15 mile east of spillway, near Keswick.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—February 1998 to September 1998.

CHEMICAL DATA: February 1998 to September 1998.

SEDIMENT DATA: February 1998 to September 1998.

INSTRUMENTATION.—None.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	ALKA- LITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
FEB 20...	1010	104	5.1	9.2	746	12.2	108	.00	44	.4	<.1
	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)
FEB 20...	86	<.01	.10	<.02	<.1	<.1	<.01	<.01	.01	.7	.3

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE- (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB 20...N	1010	9.2	5	100

## SACRAMENTO RIVER BASIN

403808122301501 SOUTH FORK SPRING CREEK AT BENSON ROAD, NEAR WHISKEYTOWN LAKE, CA

LOCATION.—Lat 40°38'08", long 122°30'15", in NE 1/4 NE 1/4 sec. 14, T.32 N., R.6 W, Shasta County, Hydrologic Unit 18020005, north end of Rodeo Grounds, San Buenaventura Land Grant.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—February 1998 to September 1998.

CHEMICAL DATA: February 1998 to September 1998.

SEDIMENT DATA: February 1998 to September 1998.

INSTRUMENTATION.—None.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	ALKA- LITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L) AS SO4 (00945)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL (00940)	FLUO- RIDE, DIS- SOLVED (MG/L) AS F (00950)	
FEB 19...	1810	38	7.4	10.2	742	12.2	111	15	2.8	.5	<.1	
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L) AS N (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L) AS N (00623)	PHOS- PHORUS TOTAL (MG/L) AS P (00665)	PHOS- PHORUS DIS- SOLVED (MG/L) AS P (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L) AS P (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L) AS C (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L) AS C (00689)	
FEB 19...	47	<.01	.08	<.02	<.1	<.1	<.01	<.01	.02	1.5	.3	

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB 19...N	1810	10.2	34	56

## SACRAMENTO RIVER BASIN

403935122294801 BOULDER CREEK AT MOUTH, NEAR MINNESOTA, CA

LOCATION.—Lat 40°39'35", long 122°29'48", in SE 1/4 NW 1/4 sec. 01, T.32 N., R.6 W, Shasta County, Hydrologic Unit 18020005, 0.5 mile west of Minnesorta at mouth of Boulder Creek.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—February 1998 to September 1998.

CHEMICAL DATA: February 1998 to September 1998.

SEDIMENT DATA: February 1998 to September 1998.

INSTRUMENTATION.—None.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	ALKA- LITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L) AS SO4 (00945)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL (00940)	FLUO- RIDE, DIS- SOLVED (MG/L) AS F (00950)	
FEB 19...	1220	81	4.5	7.9	745	13.0	112	<3.0	30	.3	<.1	
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L) AS N (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L) AS N (00623)	PHOS- PHORUS TOTAL (MG/L) AS P (00665)	PHOS- PHORUS DIS- SOLVED (MG/L) AS P (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L) AS P (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L) AS C (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L) AS C (00689)	
FEB 19...	54	<.01	.10	<.02	.3	<.1	.15	<.01	.01	.7	2.5	

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB 19...N	1220	7.9	1280	62

## SACRAMENTO RIVER BASIN

403940122290501 MINNESOTA FLAT TREATMENT PLANT AT FILTRATE PUMP STATION, CA

LOCATION.—Lat 40°39'40", long 122°29'05", in SE 1/4 NE 1/4 sec. 01, T.32 N., R.6 W, Shasta County, Hydrologic Unit 18020005, 0.1 mile east of Spring Creek School near Minnesota.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—February 1998 to September 1998.

CHEMICAL DATA: February 1998 to September 1998.

SEDIMENT DATA: February 1998 to September 1998.

INSTRUMENTATION.—None.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	ALKA- LITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL; (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	
FEB 19...	1130	1840	7.9	17.8	745	9.8	106	9.0	1100	.8	.6	

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB 19...N	1130	17.8	17	98

## SACRAMENTO RIVER BASIN

404259122252501 SACRAMENTO RIVER BELOW SHASTA DAM, CA

LOCATION.—Lat 40°42'59", long 122°25'25", in SE 1/4 SW 1/4 sec. 15, T.33 N., R.5 N, Shasta County, Hydrologic Unit 18020005, on right bank 0.28 mi downstream of Shasta Dam and 2.3 mi northwest of Summit City.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—October 1996 to current year.

CHEMICAL DATA: October 1996 to current year.

SEDIMENT DATA: October 1996 to current year.

INSTRUMENTATION.—None.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	ALKA- LINITY WAT.DIS GRAN T. FIELD CACO3 (MG/L) (29802)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	
FEB 20...	1440	100	7.9	8.9	744	13.2	117	45	3.3	1.7	<.1	
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDEDED TOTAL (MG/L AS C) (00689)	
FEB 20...	83	<.01	.13	<.02	<.1	<.1	.02	.01	.03	1.1	.2	

## PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB 20...N	1440	8.9	9	100



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## CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	$2.54 \times 10^1$	millimeter
	$2.54 \times 10^{-2}$	meter
foot (ft)	$3.048 \times 10^{-1}$	meter
mile (mi)	$1.609 \times 10^0$	kilometer
<i>Area</i>		
acre	$4.047 \times 10^3$	square meter
	$4.047 \times 10^{-1}$	square hectometer
	$4.047 \times 10^{-3}$	square kilometer
square mile (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometer
<i>Volume</i>		
gallon (gal)	$3.785 \times 10^0$	liter
	$3.785 \times 10^0$	cubic decimeter
	$3.785 \times 10^{-3}$	cubic meter
million gallons (Mgal)	$3.785 \times 10^3$	cubic meter
	$3.785 \times 10^{-3}$	cubic hectometer
cubic foot (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeter
	$2.832 \times 10^{-2}$	cubic meter
cubic-foot-per-second day [(ft <sup>3</sup> /s) d]	$2.447 \times 10^3$	cubic meter
	$2.447 \times 10^{-3}$	cubic hectometer
acre-foot (acre-ft)	$1.233 \times 10^3$	cubic meter
	$1.233 \times 10^{-3}$	cubic hectometer
	$1.233 \times 10^{-6}$	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liter per second
	$2.832 \times 10^1$	cubic decimeter per second
	$2.832 \times 10^{-2}$	cubic meter per second
gallon per minute (gal/min)	$6.309 \times 10^{-2}$	liter per second
	$6.309 \times 10^{-2}$	cubic decimeter per second
	$6.309 \times 10^{-5}$	cubic meter per second
million gallons per day (Mgal/d)	$4.381 \times 10^1$	cubic decimeter per second
	$4.381 \times 10^{-2}$	cubic meter per second
<i>Mass</i>		
ton (short)	$9.072 \times 10^{-1}$	megagram or metric ton

*Sea level:* In this report “sea level” refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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